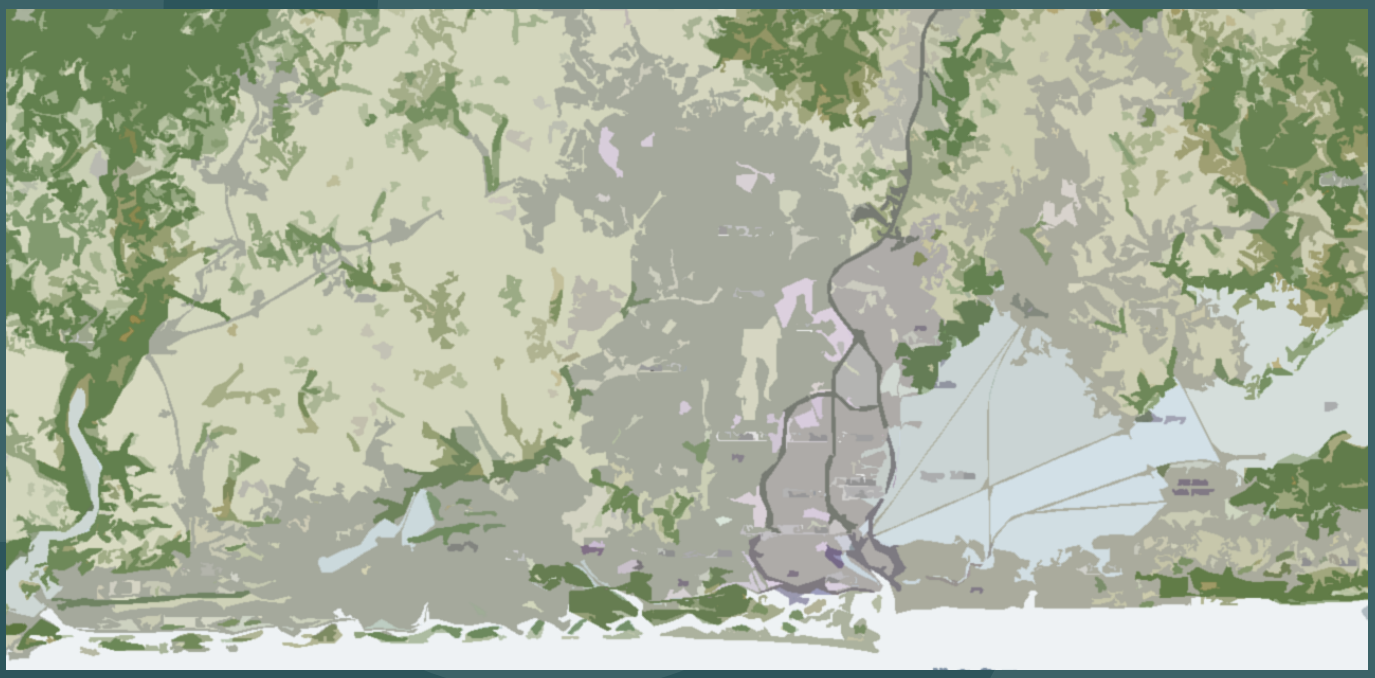
WATERWAYS INVESTMENT FOR THE DEVELOPMENT OF THE ENVIRONMENT IN LAGOS STATE



View of the Lagos Lagoon

PREPARATION OF AN ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA), ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) AND RESETTLEMENT POLICY FRAMEWORK (RPF) FOR THE PRIORITY FERRY ROUTES (TERMINALS, FERRIES, AND NAVIGATION CHANNELS)

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (Output 1.4)

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ABBREVIATIONS	
AFD	French Development Agency
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
ESF	Environmental and Social Framework
ESMP	Environmental and Social Management Plan
ESRMP	Environmental and Social Risk Management Policy
E&S	Environmental and Social
FCN	Future Cities Nigeria
FMEnv	Federal Ministry of Environment
IMM	Impact Mitigation Monitoring
LAMATA	Lagos Metropolitan Area Transport Authority
LASEPA	Lagos State Environmental Protection Agency
LASG	Lagos State Government
LASWA	The Lagos Waterways Authority
LSSTMP	Lagos State Strategic Transport Master Plan
LUTP	Lagos Urban Transport Project
MRTS	Mass Rapid Transit System
NESREA	National Environmental Standard Regulatory Enforcement Agency
NOSDRA	National Oil Spill Detection and Response Agency
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
SEP	Stakeholder Engagement Plan
TOR	Terms of Reference
WB	World Bank

EXECUTIVE SUMMARY

To be completed in the Final Report

CHAPTER I

1 — INTRODUCTION

1.1 PROJECT BACKGROUND

Lagos is a very large city with an estimated population of over 23 million people resulting in a high transport need in the Greater Lagos Area. The Lagos Metropolitan Area Transport Authority (LAMATA) is the public body responsible for the regulation of road-based transport, transport planning coordination, infrastructure implementation and maintenance. LAMATA is in charge of the establishment of the Strategic Transport Master Plan (STMP) in Lagos, covering inland waterways. Passenger transport in Lagos is nowadays essentially road-based with very heavy e congestion as a consequence.

The Lagos State Government (LASG) therefore aims for a major modal shift in passenger transport to 60% of travel by road, 20% by rail, and 20% by water to be achieved by 2025. Lagos avails of large water areas that could be used to offer sustainable, fast, safe, and comfortable transport services, but the waterways are rather underutilized. Fortunately, it is fully recognized that water transport for passengers can play a significant role in reducing road traffic congestion and air pollution if made more attractive, affordable, and safer.

It is in this perspective that the Waterways Investment for the Development of the Environment in Lagos State (WIDE-LAG) Project's Development Objective (PDO) is to improve sustainable mobility and improve quality of life in Lagos through the development of public waterways-mass transportation. Waterways transport has immense potential as 17 of the 20 local governments of Lagos State are reachable by water. Also, while the water surface of Lagos State accounts for 22% of its total surface, and more than 60% is land surface less than 5 m above sea level, waterways transportation is expected to play an increasing role in adaptation to climate change. Further, since boats are one of the cleanest means of motorized transport, its development would help mitigate climate change impacts.

In line with the priorities on adaptation and mitigation of the Climate Action Plan 2020 – 2025 of the Lagos State Government (LASG), the Project Specific Objectives (PSO) are to:

(i) Construct priority Inland Waterways Transportation (IWT) routes and associated facilities.

(ii) Establish sustainable IWT operations.

The Lagos Waterways Authority (LASWA) was established in 2008 as the inland waterways regulatory authority for Lagos State, operating in coordination with the Lagos Metropolitan Area Transport Authority (LAMATA). LASWA is in charge of the regulation, management, implementation and maintenance of infrastructures to enhance inland waterways network navigability. LASWA aims to ensure the long-term growth and development of water transportation as a complimentary mode to the Mass Rapid Transit System (MRTS). To this end, LASWA grants ferry licenses and concessions for the operation of terminals to the private sector.

1.2 OBJECTIVES OF THE ESIA

The purpose of an ESIA is to establish the baseline condition of the proposed WIDE-LAG project area before the commencement of the project and also to identify and assess environmental, health, safety and social impacts in order to provide guidance to minimize or avoid any adverse impacts that may emanate from project implementation from baseline to construction, operation and decommissioning in compliance with the Federal Ministry of Environment (FMEnv) EIA Act 86 of 1992 now EIA Act AP E12 LFN 2004, the World Bank (WB) Environmental & Social Standard Framework (ESS1-10) and the AFD's Environmental and Social Risk Management Policy (ESRMP).

The specific objectives of the ESIA are to:

- Identify and meet relevant national and international legal requirements and guidelines, including AFD/Word Bank environmental and social standards and international best practices
- Assist Project design and planning by identifying and quantifying those aspects of location, construction, operations and decommissioning which may cause adverse environmental, social, health and economic effects;
- Describe project components and activities of relevance to the environmental and social impacts assessments
- Establish and document the existing biophysical and socio-economic baseline conditions of the study areas and the affected communities
- Identify all stakeholders and ensure proper consultation and engagement of all stakeholders, including the communities bordering the proposed project, and document and address environmental and social concerns raised by stakeholders and the Public in consultation events and activities
- Assess associated/potential environmental, social, health and safety impacts of the project
- Describe what preventive and mitigative environmental and social measures the project proponent commits to implement to address adverse impacts identified
- Develop the corresponding Environmental and Social Management Plan (ESMP) and corresponding monitoring programme for the project
- Prepare a detailed report presenting clear and concise information on the findings of the ESIA

1.3 ESIA PROCESS IN NIGERIA

The ESIA study will be conducted in accordance to the FMEnv EIA procedural guidelines. Accordingly, the ESIA process follows the following steps sequentially as outlined in the procedural guideline as shown in Figure 1 below.

Project Proposal: As soon as a proponent decides to embark on any development project (for which EIA is mandatory), a project proposal shall be submitted to FMEnv along with completed "EIA Notification Form" for registration.

Screening: FMEnv shall carry out Initial Environmental Examination and assign the project to a category and provide screening reports to the proponent.

A screening is a systematic approach to documenting the environmental effects of a proposed project and determining needs to eliminate or minimize (mitigate) the adverse effects, to modify the project plan or to recommend further assessment through mediation or an assessment by a review panel.

Based on the screening process, Projects are categorized into Category A, B and C projects and it is determined whether a full, partial or no EIA is required. The present project is categorized as Category A Project requiring a full EIA.

Screenings will vary in time, length and depth of analysis, depending on the circumstances of the proposed project, the existing environment, and the likely environmental effects. Some screenings may require only a brief analysis of the available information and a brief report; others may need new background studies and will be more thorough and rigorous. This may involve site verification visits by the officers of the Ministry, and the expenses transferred to the proponent.

The responsible authority must prepare or ensure the preparation of a report which summarizes the findings of the screening.

A responsible authority must determine the significance of the environmental effects of the project. This in turn governs whether the responsible authority can take action that will enable the project to proceed (i.e., whether to proceed with the project itself when it is the proponent, or otherwise to provide the funding, land, permit or other authorization).

If the screening has identified the need for further review, the responsible authority must ask the Minister of the Environment to refer the project to a mediator or a review panel.

Further review is necessary when:

- it is uncertain whether the project is likely to cause significant adverse environmental effects
- the project is likely to cause significant adverse environmental effects and it is uncertain whether these effects are justified in the circumstances
- public concerns warrant it.

However, the responsible authority cannot take any action that enables the project to proceed, if the project is likely to cause significant adverse environmental effects (taking into account any appropriate mitigation measures) that cannot be justified in the circumstances.

Scoping: After receipt of screening report, the proponent shall carry out scoping exercises to ensure all significant impacts and reasonable alternatives are addressed in the ESIA. The scoping exercises normally involve stakeholders, particularly people affected by the project. The proponent shall submit Terms of Reference (ToR) to the Ministry indicating scope of the proposed EIA study as well as evidence of consultation.

- **Commencement of ESIA:** The proponent shall undertake the ESIA study according to the TOR agreed with the Ministry. Field work may be conducted twice (during dry and rainy seasons) as will be stated in the approved ToR.
- **Submission of the Draft Reports**: After their completion, 5 copies of the ESIA, ESMP and RAP are submitted to the Federal Ministry of Environment (FMEnv) for review.
- **Review Process**: The ministry shall evaluate the form of review of the report, which may be in-house, panel sitting in public, public display or mediation. The method of review shall be communicated to the proponent and the review comments shall be furnished to the proponent to address issues raised in the final report. A provisional approval may be granted at this stage, if the Ministry is satisfied that the report presented is acceptable except for minor corrections, which shall be corrected and final report submitted within stipulated time frame.
- **Public Display:** The reports will be displayed at various centers including Abuja, Lagos, Lagos State Ministry of Environment and LGA Offices for 21 working days for members of the general public to review and submit comments. The display centers and dates will be advertised by radio jingles and newspapers through 2 national dailies and one local. Associated costs will be paid by the proponent.

- **Panel Review:** A review panel is a group of experts selected based on their knowledge and expertise and appointed by the Minister of the Environment. The regulatory agencies at all three levels of Government (Federal, State and Local Government) are also represented on the panel, because environmental protection is on the concurrent list of the Nigerian Constitution. The Minister also appoints one of the panel members as chairperson. The panel review reports and assesses the project including a visit to the project site. The proponent will be required to make presentations to the panel and the panel presents its findings during the public meeting, in the presence of all stakeholders. After completing the public hearings and its analysis, the panel prepares a report which summarizes its rationale, conclusions and recommendations, and includes a summary of comments received from the public display center as well as those presented during the public meeting. This report is submitted to the Minister of the Environment, who will use it to guide decisions on the project. Associated costs are paid by the project proponent and depend on the number of participants.
- **Final Report:** The proponent incorporates Panel Review comments on ESIA, ESMP and RAP. Once the reports are modified accordingly, the 5 to 10 hard copies and a soft copy of the final reports are submitted to the FMEnv. The FMEnv issues a provisional ESIA approval and the proponent can start project implementation. The FMEnv will then undertake Impact Mitigation Monitoring (IMM) activities. If it is satisfactory, the proponent will pay a final access charge and the final ESIA report will be approved. The FMEnv will issue the EIS and the ESIA certificate.

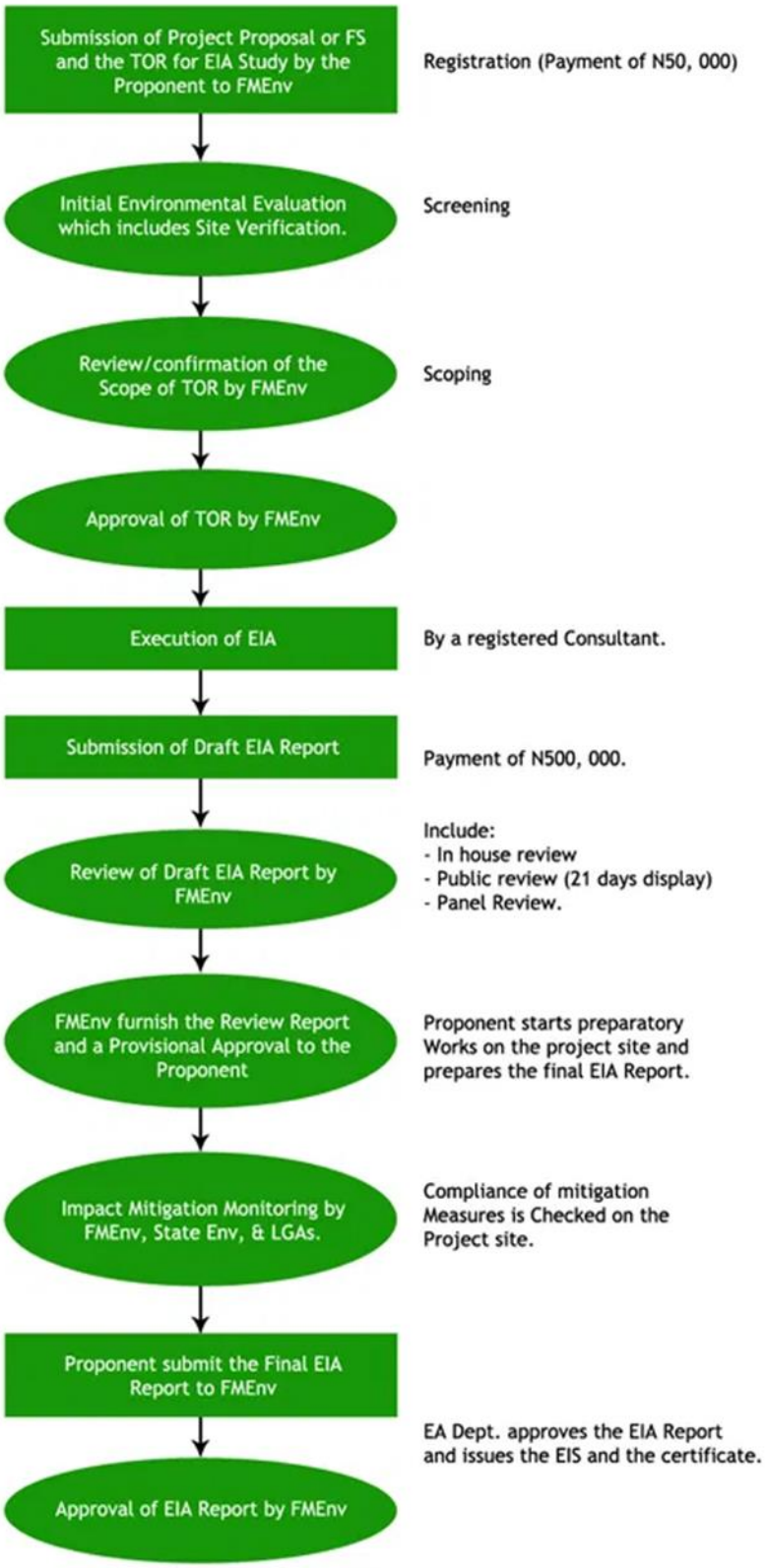

Figure 1: Overview of FMEnv EIA Process Flowchart

1.4 ESIA TEAM MEMBERS

SETEC

Marieme MBOUP FALL (International Environmental Specialist)

Yann LE GALLIC (International Environmental Expert)

Yannick CALUZIO (Senior Waterways Engineer)

Cedric MALAVAL (Senior Hydrologist and Climate Resilience expert)

Kevin MBUSNUM GWETH (International Environmental Specialist)

Mariana ESCOBAR (International Social Specialist

Vincent LAGUILLE (International GIS Specialist)

Ndiaga SAMB (International Social Development Specialist)

GREENSTAD

Adesua OLATUNDA (National Environmental Specialist)

Oluwatoyin OJO (National Social Development Specialist)

1.5 MAIN STAKEHOLDERS OF THE PROJECT

1. Federal Ministry of the Environment (FMENv)

FMEnv is the chief regulatory body for environmental protection in Nigeria. It took over this function from FEPA in 1999. FMENv has developed instruments of intervention to halt environmental degradation in form of policies, standards, guidelines and regulations. Part of the guidelines is a mandatory requirement for an Environmental and Social Impact Assessment (ESIA) to be conducted for major development projects.

2. The Lagos Waterways Authority (LASWA) is the project proponent

LASWA was established in 2008 as the inland waterways regulatory authority for Lagos State, operating in coordination with the Lagos Metropolitan Area Transport Authority (LAMATA). LASWA is in charge of the regulation, management, implementation and maintenance of infrastructures to enhance inland waterways network navigability. LASWA aims to ensure the long-term growth and development of water transportation as a complimentary mode to the Mass Rapid Transit System (MRTS). To this end, LASWA grants ferry licenses and concessions for the operation of terminals to the private sector.

3. Lagos Metropolitan Area Transport Authority (LAMATA)

LAMATA is in charge of the establishment of the Strategic Transport Master Plan (STMP) in Lagos, covering inland waterways. Passenger transport in Lagos is nowadays essentially road-based with very heavy traffic congestion as a consequence.

4. French Development Agency (AFD)

AFD is France's bilateral development policy donor in charge of implementing the French Official Development Assistance worldwide. AFD has allocated funds for the completion of project preparation studies for the further development and implementation of ferry operations in the Greater Lagos Lagoon area including, amongst others, the packages presented in chapter IV.

5. Association of Tourist Boat Operators and Water Transporters of Nigeria (ATBOWATON)

ATBOWATON is the association that gives direction to all investors in the water transport business in Nigeria. ATBOWATON records numerous numbers of tourists using their facilities especially in the coastal areas of Lagos, Warri, Port Harcourt etc.

6. United Ferry Transporters Associations and Integrated Ferry Operators

7. The Maritime Workers' Union of Nigeria (MWUN)

The Maritime Workers' Union of Nigeria (MWUN) is a trade union representing sailors, dockworkers and those in related trades in Nigeria.

1.6 ESIA REPORT STRUCTURE

The reporting of this ESIA study conforms to the recommended format and guidelines by the Federal Ministry of Environment (FMEnv). As such, the report has been structured into nine chapters as provided for in the FMEnv EIA Procedural Guidelines.

Preliminary Sections: These include Table of Contents; List of Tables; List of Figures, Acknowledgement and Executive Summary.

Chapter I: Introduction and project background

The chapter contains an overview of the Project, the ESIA objective, processes and scope. The chapter also presents the Main stakeholders and ESIA report structure.

Chapter II: Policy, regulatory and institutional framework

This chapter describes all the applicable legal and institutional framework for the project, the environmental and social guidelines and standards of the World Bank, AFD, and the national environmental and social legislation within which the impact assessment is being conducted.

Chapter III: Project justification

The chapter contains the rationale for the Project as well as the analysis of Project alternatives i.e. a comparison of all the feasible alternatives to the project sites, design and operation including the "without project" situation in terms of their potential environmental and social impacts.

Chapter IV: Project Description

This presents an overview of the project and its components. It describes the technical elements of the proposed project including the site locations, technical aspects of the projects, project components, additional project requirements, resource requirements like land requirement, raw materials, water, power requirements, manpower requirements, Project phases and activities, Project benefits and Cost of the Project. It also includes a map showing the project site and the area affected by the project's direct, indirect and cumulative impacts.

Chapter V: Description of the Existing Environment

This chapter describes the available baseline data on the environment and socio-economic resources and receptors within the Project study area including the source and reliability of the sources of data collection.

Chapter VI: Stakeholder consultation and disclosure

This chapter presents an overview of consultation activities undertaken during the ESIA programme, the issues and concerns raised. The identification of stakeholders and records of consultations held with the stakeholders notably the elders, women, youths etc. in the host communities.

Chapter VII: Assessment of environmental and social Impacts, and mitigation measures

This presents the associated and potential impacts of the Project including impact assessment approach. The characterisation of impacts identified cut across the pre-construction, construction, operation and decommission phases of the Project. In addition, mitigation and ameliorative measures that would be adopted to eliminate or reduce to acceptable levels significant identified and assessed environmental and social impacts.

Chapter VIII: Environmental and Social Management Plan (ESMP)

This chapter presents the Environmental and Social Management Plan (ESMP) including its objectives and implementation plan, proposed ESMP, grievance redressal mechanism, monitoring and evaluation framework, environmental and social performance indicators, ESMP Budgeting, institutional setting and implementation arrangement.

Chapter IX: Remediation Plan after Decommissioning/ Closure

This chapter briefly presents the details of decommissioning and remediation plan to be applied after the project closure.

Chapter X: Conclusions and Recommendations

This chapter presents the summary of conclusions and recommendation drawn from key findings of the ESIA and provides key recommendations for future work.

References

Appendices

CHAPTER II

2 — POLICY, REGULATORY AND INSTITUTIONAL FRAMEWORK

This section presents an overview of the state, federal and international policies, regulations and guidelines including the World Bank E&S standards and also analyses the existing gaps between the Nigerian legal framework, AFD and World Bank requirements that are applicable to the project.

2.1 POLICY FRAMEWORK

Environmental and Social Impact Assessment (ESIA) studies in Nigeria are guided by several rules and regulations. These regulations occur at three (3) tiers, namely: Local (State level), national and international. Responsibility for environmental management and protection at the national level lies primarily with the Federal Ministry of Environment (FMEnv), However, state environmental protection agencies (SEPAs) and/or State Ministries of Environment also play significant roles in this regard, although, they are subject to the FMEnv. The FMEnv provides minimum standards, which must be complied with, but states are allowed to establish more stringent regulations, depending on the peculiarities of the state environment.

2.1.1 National Constitution, 1999

The Constitution of the Federal Republic of Nigeria (1999) recognizes the importance of improving and protecting the environment and makes provision for it in the following relevant sections:

- Section 20 makes it an objective of the Nigerian State to improve and protect the air, land, water, forest and wildlife of Nigeria.
- Section 12 establishes, though impliedly, that international treaties (including environmental treaties) ratified by the National Assembly should be implemented as law in Nigeria.
- Sections 33 and 34 which guarantee fundamental human rights to life and human dignity, respectively, have also been argued to be linked to the need for a healthy and safe environment to give these rights effect.

2.1.2 National Environmental Policy (NEP), 1989 (Revised 2017)

Launched by Government in November 1989, this document prescribed guidelines for achieving sustainable development in fourteen vital sectors of the nation's economy, namely: Human Population; Land Use and Soil Conservation; Water Resources Management; Forestry, Wildlife and Protected Natural Areas; Marine and Coastal Area Resources; Sanitation and Waste Management; Toxic and Hazardous Substances; Mining and Mineral Resources; Agricultural Chemicals; Energy Production; Air Pollution; Noise in the Working Environment; Settlements; Recreational Spaces, Green Belts, Monuments, and Cultural Property.

It also contains Nigeria's commitment to ensure that the country's natural and built environment is safeguarded for the use of present and future generations. This commitment demands that efficient resource management and minimization of environmental impacts be the core requirements of all development activities. Accordingly, this Policy seeks to promote good environmental practices through environmental awareness and education.

2.1.3 Social Protection Policies

Social protection policy has been on the agenda since 2004, when the National Planning Commission, supported by the international community, drafted a social protection strategy. More recently, the National Social Insurance Trust Fund drafted a social security strategy. The social protection policy approached social protection using a life cycle and gender lens, recognizing both economic and social risks, including, for example, job discrimination and harmful traditional practices. The policy was organized around four main themes: social assistance, social insurance, child protection and the labour market.

However, only a few of the instruments of this approach were adopted in the national implementation plan, most notably the provision of specific and limited social assistance, social insurance (such as expanding national health insurance to the informal sector) and labour market programmes (such as developing labor-intensive programmes). Moreover, in practice, programmes to date have been focused largely on conditional cash transfers and two health financing mechanisms driven by the federal government with little inter-sectoral or state-federal coordination. A significant number of actors are involved in funding and implementing social protection, including those from government, donors, international non-governmental organizations and civil society. Federal government-led social protection includes three main programmes:

- the conditional cash transfer In Care of the People (COPE) (funded initially through the DRG fund) targeted at households with specific social categories (those with children of school-going age that are female-headed or contain members who are elderly, physically challenged, or are fistula or HIV/ AIDS patients

- the health fee waiver for pregnant women and children under five (financed through the DRG fund)
- the community-based health insurance scheme, which was redesigned in 2011 because the previous scheme had design challenges

Other social assistance programmes are implemented in an ad hoc manner by various government ministries, departments and agencies at state level, and some are funded by international donors. These include conditional cash transfer programmes for girls' education (in three states), child savings accounts, disability grants, health waivers, education support (such as free uniforms) and nutrition support. HIV and AIDS programming at state level also include social protection sub-components (although not as the primary objective), including nutrition, health and education support. Labour market programmes include federal- and state-level youth skills and employment programmes, and Nigeria also has agricultural subsidies/inputs.

2.1.4 National Policy on Climate Change, 2013

Given Nigeria's status as a fossil-fuel dependent economy with a large climate sensitive agricultural sector, the development of a climate change policy and response strategy is critical; as climate change portends a serious threat to poverty eradication and sustainable development in general. One of the key pillars of the Vision 20:2020 is investment in low carbon fuels and renewable energy. Achieving the goal of low carbon, high growth and resilient socio-economic system for equitable and sustainable socio-economic and environmental development faces some challenges which include stability and sustainability of enabling environment, adequate institutional and human resources capacity and availability of adequate resources to address mitigation and adaptation initiatives to address climate change. Thus, Government need to ensure that economic growth, resource management and climate change mitigation and adaptation can all happen simultaneously if this will be done effectively (Department of Climate Change, 2017).

2.1.5 Gender Policy Framework

The 1999 Constitution, the Federal Republic of Nigeria, prohibits discrimination based on origin, sex, religion, status, ethnic or linguistic association. Successive governments have consistently demonstrated commitment to upholding and promoting gender equality and women's empowerment in varying degrees. To facilitate gender equality and women's empowerment, the FGN created favourable national legal and policy frameworks and placed institutional mechanisms in this regard.

Moreover, as a member of the United Nations, Nigeria signed and ratified the various relevant international instruments, treaties, and conventions without reservation. These instruments have always emphasized that member nations put the necessary mechanisms needed to eliminate gender discrimination and ensure equality and human dignity to all men and women.

The government of Nigeria in 2000 adopted a National Policy on Women; it was reviewed and upgraded in 2006 to become the National Gender Policy. Other key government policies with gender equality and empowerment of women frameworks include the National Economic Empowerment and Development Strategies (NEEDS) in May 2004; and the Transformation Agenda.

2.1.6 National Gender Policy, 2016

The overall goal of the National Gender Policy of Nigeria is to promote the welfare and rights of Nigerian women and children in all aspects of life: political, social and economic. The policy seeks to plan, coordinate, implement, monitor and evaluate the development of women in the county. In concrete terms, the National Gender Policy in Nigeria focuses on:

- Contribution towards women's empowerment and the eradication of unequal gender power relations in the workplace and economy, in trade unions and broader society;
- Encouragement of the participation, support and co-operation of men in taking shared responsibility for the elimination of sexism and redefining of oppressive gender roles;
- Increase the involvement of women in leadership and decision-making;
- Ensure that through labour legislation and collective bargaining, the particular circumstances of women are considered and that measures are promoted to eliminate discrimination based on gender;
- Ensure that there is a gender perspective in all sectors of development.

2.2 STATE REGULATIONS

This entire project falls within Lagos state and as such, the various Lagos state regulations that relate to this project, directly and/or indirectly, are presented below:

2.2.1 Lagos State Environmental Protection Agency (LASEPA) Edict, 1996

The Edict establishing the Lagos State Environmental Protection Agency (LASEPA) was signed into law in November 1996. The Edict spells out clearly the functions of the Agency, the authority of the Agency, and acts that are prohibited within the State together with associated penalties for flouting such prohibitions. The functions of the Agency that are relevant to this present study include:

- The monitoring and controlling of disposal of wastes generated within the State;
- The monitoring and controlling of all forms of environmental degradation from agricultural, industrial and government operations;
- The monitoring of surface, underground and potable water, air, land and soils within the State to determine the pollution level as well as collect baseline data;

- Co-operating with federal, state and local governments, statutory bodies and research agencies on matter and facilities relating to environmental protection (Section 7 b, g and i).

In order to execute the functions effectively, the Edict empowers the Agency to:

- Apply enforcement measures to combat environmental degradations in manufacturing premises and government operations;
- Enter and search vehicles, tents and structures in any premises engaged in carrying out manufacturing operations;
- Perform tests and take samples of any substance found in any premises searched, (Section 8, d-f).

In addition to these, the Agency is empowered to make regulations on:

- Acceptable standards or criteria to control the pollution level of water, air noise and land in line with the policy and guidelines of Federal Government;
- Standard for effluent discharge;
- Waste management strategy and alternatives etc. (Section 9; a, c and e).

Apart from these, the Edict in Section 2.1 prohibits the manufacturing or storage of chemicals, lubricants, petroleum products, and cement other than that used for building, radioactive materials or gases without a written permission from LASEPA. Similarly, in Section 2.2, the Edict clearly states, "as from the commencement of this Edict, no person shall:

- Carry on or run any manufacturing operation or business in any premises within the State except such waste generated in the process of such manufacturing operation or business is treated or purified to the satisfactory standards approved by the Agency before being discharged into the environment;
- Discharge or cause to be discharged, raw untreated human waste into any public drain water-course, gorge, storm-water or on land within the State;
- Discharge or cause to be discharged any form of oil, grease, spent oil including, trade waste, brought about in the course of any manufacturing operation or business into any, public drain, water-course, water gorge and road verge;
- Discharge into the air any inadequately filtered and purified gaseous waste; etc.

The Edict also makes it mandatory for all persons generating any waste listed in Section 2.2 to ensure adequate treatment according to the Agency Standard before discharge to the environment. Also, all emission from vehicles, plants and equipment within the State shall be within the limit set down by the Agency.

2.2.2 Lagos State Waterfront Infrastructure Development Edict, 2008

The Edict establishing the Lagos State Waterfront Infrastructure Development was signed into law in November 1996. The Edict spells out clearly the functions of the Authority, and acts that are prohibited within the State together with associated penalties for flouting such prohibitions. The functions of the Authority are relevant to this present study include:

- ensure balance between economic development and preservation that will permit the beneficial use of waterfronts while preventing the diminution of open space areas or public access to the waterfront, shoreline erosion, impairment of scenic beauty, or permanent adverse changes to ecological system;
- facilitate public access to waterfronts for recreational purposes;
- develop infrastructure along waterfronts for recreational purposes;
- minimize damage to natural resources and property from flooding and erosion, protection of waterfronts, beaches, dunes, barrier islands, bluffs and other critical coastal and inland waterway features;
- initiate and develop waterfront restoration and revitalization programs;
- enter into contracts with any person, firm, corporation or governmental agency;
- do all such other things as may be expedient for carrying into effect the purpose of this Law.

From the commencement of this Law, every person, corporation, partnership or body involved in sand dealing and or sand dredging operation from within, around or on waterfronts and embankments within Lagos State shall obtain an operation permit from the Governor.

2.2.3 Lagos State Environmental Pollution Control Law 1989, CAP 46 LLS

This law establishes and mandates the Lagos State Ministry of Environment, to provide for the control and protection of Lagos State environmental resources, and also provides for the control and protection of the environment from pollution due to poor waste management. This law also prohibits the following:

- Discharge of any form of oil, grease; spent oil brought about in the course business operations, especially into public drains and watercourse.

- Air pollution by emission of toxic gases and provides for the use of clean up equipment for vehicular emission
- The discharge of raw untreated human waste into any public drain, watercourse, storm water drain or into any land or water.
- The storage of chemicals, lubricants, petroleum products, gases and radioactive materials in a residential and commercial area of the state without a written permission from the Ministry
- Dumping of waste without prior written permission from the Ministry
- The treatment of wastewater generated by industries prior to discharge to a satisfactory level.

2.2.4 Lagos State Environmental Sanitation Law 2000

The environmental sanitation law of Lagos State was enacted to establish the Environmental Sanitation Corps and for connected purposes.

The Lagos State House of Assembly enacts the law as follows:

1. As from the commencement of this Law, every owner, tenant and occupier of any building shall;

- keep clean the sidewalks and gutter area (45cm from the side walk into the street) along the building frontage, sides and back at all time;
- bind all old newspapers, loose papers, rubbish and rags before putting out for collection;
- put refuse into securely tied plastic bags or leak proof dustbins with tightly fitting lids;
- keep refuse dustbins within their premises until the time of collection;
- ensure that refuse dustbins are covered at all times with tight fitting cover;
- not dump yard sweepings, hedge cuttings, grass, leaves, cards, stones, bricks or business waste with household refuse;
- not use dustbins which may be leaking or permitting litter to escape or which might injure people handling them; and
- not litter, sweep out, or throw ashes, refuse, paper, nylon, and rubbish into any street, public place or vacant plot.

2. **As from the commencement of this Law, every owner, tenant and occupier of any building shall ensure the cleanliness of his premises, particularly the backyard and the courtyard.**
3. **As from the commencement of this Law every owner or operator of a restaurant, hotel, nightclub or school.**

2.3 NATIONAL LEGISLATION

At the national level, environmental management is primarily under the jurisdiction of the Federal Ministry of Environment (FMEnv), with several subsidiary agencies such as NOSDRA, NESREA, etc., saddled with other specific responsibilities, under the FMEnv. Below are the relevant regulations that applies to the project.

- **The Environmental Impact Assessment Act No. 86, 1992 (now Environmental Impact Assessment Act Cap E12 LFN 2004)**

The EIA Act makes it mandatory for any person, authority, corporate body private or public, to conduct EIA prior to the commencement of any new major development or expansion that may likely have significant effect on the environment. The Act sets the EIA objectives and the procedures for consideration of EIA of certain public or private projects.

The project is considered to be a major development, which is expected to have some impacts on the environment. Hence, full compliance with the EIA Act is required. The EIA guidelines (procedural and sectoral) issued by the FMEnv derives from this Act and the project proponents shall conduct their activities in conformance with these guidelines. The Nigerian EIA Act also requires public participation in the ESIA process (detailed in Chapter III) at the following stages:

Scoping: Meeting with communities and other stakeholders to document their concerns and obtain their views about the project for consideration for inclusion in the scope of the study.

Impact Assessment: Consultation with key stakeholders to inform them of responsibilities for mitigation.

Review/Approval: Report is displayed at designated public centers for general public to review and submit comments for twenty – one (21) working days. The dates and venue for display is announced in newspapers and on local radio stations. A Review panel also sits in public to present their comments and views about the project. Date and location for meeting is advertised in newspapers and on radio.

- **Land Use Act of 1978 and Resettlement Procedures**

The Land Use Act (Cap 202, 1990), now Cap L5 Laws of the Federation of Nigeria 2004, is the key legislation that has direct relevance to this project. The Land Use Act is the applicable law regarding ownership, transfer, acquisition and all such dealings on Land. The provisions of the Act vest every parcel of land, in every State of the Federation, in the Executive Governor of the State. He holds such parcels of land in trust for the people and government of the State.

Relevant sections of these laws that may relate to this project with respect to land ownership and property rights, resettlement and compensation are as follows:

- **Section 1**: all land comprised in the territory of each state in the Federation is vested in the Governor of the state and such land shall be held in trust and administered for the use and common benefit of all.
- **Section 2 (a)**: all land in urban areas shall be under the control and management of the Governor of each State; and
- **Section 2 (b)**: all other land shall be under the control and management of the local government within the area of jurisdiction in which the land is situated.

State governments have the right to grant statutory rights of occupancy to any person for any purpose; and the Local Government has the right to grant customary rights of occupancy to any person or organization for agricultural, residential and other purposes. The State is required to establish an administrative system for the revocation of the rights of occupancy, and payment of compensation for the affected parties. So, the Land Use Act provides for the establishment of a Land Use and Allocation Committee in each State that determines disputes as to compensation payable for improvements on the land (Section 2 (2) (c)).

Where a right of occupancy is revoked for public purposes within the state of the Federation; or on the ground of requirement of the land for the extraction of building materials, the quantum of compensation shall be as follows:

- In respect of the land, an amount equal to the rent, if any, paid by the occupier during the year in which the right of occupancy was revoked.
- In respect of the building, installation or improvements therein, for the amount of the replacement cost of the building, installation or improvements to be assessed on the basis of prescribed method of assessment as determined by the appropriate officer less any depreciation, together with interest at the bank rate for delayed payment of compensation.

With regards to reclamation works, the quantum of compensation is such cost as may be substantiated by documentary evidence and proof to the satisfaction of the appropriate officer.

- In respect of crops on land, the quantum of compensation is an amount equal to the value as prescribed and determined by the appropriate officer.

- **The Nigerian Urban and Regional Planning Act CAP N138, LFN 2004**

The Urban and Regional Planning Act is aimed at overseeing a realistic, purposeful planning of the country to avoid overcrowding and poor environmental conditions. In this regard, the following sections become instructive:

- Section 30 (3) requires a building plan to be drawn by a registered architect or town planner.
- Section 39 (7) establishes that an application for land development would be rejected if such development would harm the environment or constitute a nuisance to the community.
- Section 59 makes it an offence to disobey a stop-work order. The punishment under this section, is a fine not exceeding N10, 000 (Ten thousand naira) and in the case of a company, a fine not exceeding N50,000.
- Section 72 provides for the preservation and planting of trees for environmental conservation.

- **Harmful Waste (Special Criminal Provisions) ACT CAP H1, LFN 2004**

The Harmful Waste Act prohibits, without lawful authority, the carrying, dumping or depositing of harmful waste in the air, land or waters of Nigeria. The following sections are notable:

- Section 6 provides for a punishment of life imprisonment for offenders as well as the forfeiture of land or anything used to commit the offence.
- Section 7 makes provision for the punishment accordingly, of any conniving, consenting or negligent officer where the offence is committed by a company.
- Section 12 defines the civil liability of any offender. He would be liable to persons who have suffered injury as a result of his offending act.

The project construction activities will generate construction waste and other harmful wastes. These wastes shall be handled, treated and disposed of in accordance with the relevant requirements of this Act.

- **Inland Fisheries Act, Cap I10, LFN 2004**

Focused on the protection of the water habitat and its species, the following sections are instructive:

- Section 1 prohibits unlicensed operations of motor fishing boats within the inland waters of Nigeria.
- Section 6 prohibits the taking or destruction of fish by harmful means. This offence is punishable with a fine of ₦3, 000 or an imprisonment term of 2 years, or both.

- **National Inland Waterways Authority (NIWA) Decree No. 13, 1997**

This decree, which came into force on the 12th of August, 1997, has the main objective of establishing the National Inland Waterways Authority (NIWA) and requires it to, among other things: improve develop and regulate Inland water ways for navigation and specify Navigable water Highlights of the provisions of the Decree, that have environmental bearings include:

- Established NIWA, to inter alia, provide regulation for inland navigation, grant permit and licenses for sand dredging, pipeline construction, dredging of slots and crossing of waterways by utility lines, water intake, rock blasting and removal – (Ss. 8,9)
- The Authority may, subject to the approval of the minister, make regulations generally for the regulation of users of navigable water ways and such other regulations as appear to him to be expedient for giving full effect to the provisions of the Decree – (s.29(10(2)
- The Rivers and their tributaries, distributaries, creeks, lakes, lagoons, and intra-coastal waterways specified in the 2nd schedule are declared Federal Navigable waterways. – (s. 10).

- **National Commission for Museums and Monuments Act, 1990**

The Act provides for the dissolution of both the Antiquities Commission and the Federal Department of Antiquities and to create a National Commission for Museums and Monuments, with the responsibilities to establish and administer national museums, antiquities and monuments; including, antiquities, science and technology, warfare, African, Black and other antiquities, arts and crafts, architecture, natural history and educational services among others. Sections 12 to 18 provide the process/steps for the declaration of antiquities as national monuments, while section 19 deals with restriction of excavations or the purpose finding antiquities as well as issuance of permits and 20 deals

with accidental discoveries. In case of any accidental find, the Commission shall be notified within seven days.

- **National Environmental Standards and Regulations Enforcement Agency (NESREA) Act, 2007**

Administered by the Ministry of Environment, the National Environment Standards and Regulations Enforcement Agency (NESREA) Act of 2007, replaced the Federal Environmental Protection Agency (FEPA) Act. It is the embodiment of laws and regulations focused on the protection and sustainable development of the environment and its natural resources. The following sections are worth noting:

- Section 7 provides authority to ensure compliance with environmental laws, local and international, on environmental sanitation and pollution prevention and control through monitory and regulatory measures.
- Section 8 (1)(K) empowers the Agency to make and review regulations on air and water quality, effluent limitations, control of harmful substances and other forms of environmental pollution and sanitation.
- Section 27 prohibits, without lawful authority, the discharge of hazardous substances into the environment. This offence is punishable under this section, with a fine not exceeding, ₦1,000,000 (One Million Naira) and an imprisonment term of 5 years. In the case of a company, there is an additional fine of ₦50,000, for every day the offence persists.

- **National Environmental Regulations**

Section 34 of the NESREA Act, 2007 empowers the Minister of Environment to make regulations for safe and sustainable environment. In exercise of this power, the minster issued the national environmental regulations covering various environmental components and sectors of development. The regulations relevant to the project are as follows:

- The National Guidelines and Standards for Environment Pollution Control in Nigeria (March 1999), which is the basic instrument for monitoring and controlling industrial and urban pollution.
- National Environmental (Construction Sector) Regulations, 2010. S. I. No. 19. The purpose of these Regulations is to prevent and minimize pollution from Construction, Decommissioning and Demolition Activities to the Nigerian Environment.
- National Environmental (Wetlands, Riverbanks and Lake Shores) Regulations, 2009. S. I. No. 26.

- The National Environmental Protection (Waste Management) Regulations S.I.15 of 1991, which regulates the collection, treatment and disposal of solid and hazardous waste from municipal and industrial source.
- National Environmental (Watershed, Mountainous, Hilly and Catchments Areas) Regulations, 2009. S. I. No. 27.

- **The National Environmental (Sanitation and Wastes Control) Regulation S.I 28 of 2009**

This regulation applies to issues in environmental sanitation and all categories of wastes. It regulates the adoption of sustainable and environment friendly practices in environmental sanitation and waste management to minimize pollution.

- National Environmental (Noise Standard and Control Emission) Regulations, S.I No. 35 of 2009: this Regulation is to ensure maintenance of a healthy environment for all people in Nigeria, the tranquility of their surroundings and their psychology well-being by regulating noise levels and generally, to elevate the standard of living of the people by prescribing maximum permissible noise levels for facilities and activities and providing for the control of noise and for mitigating measures for noise reduction.
- The National Environment (Soil Erosion and Flood Control) regulations S.I.12 of 2011 and its general objectives includes:
- Protect human life and the environment;
- Minimize losses due to flood and erosion and their effects on vulnerable areas by regulating land-disturbing activities; and
- Control accelerated soil erosion, flooding and sediment deposition in water bodies and water courses in order to prevent pollution of these water resources.
- National Environmental (Surface and Ground Water Quality) Regulation, S. I. No. 22 of 2011: this Regulation establish environmental objectives to be achieved in groundwater bodies, groundwater quality standards and threshold values for the classification of groundwater and the protection of groundwater against pollution and deterioration in groundwater quality.

- **National Environmental (Control of Vehicular Emissions from Petrol and Diesel Engines) Regulations, 2010. S. I. No. 20**

  In accordance with the NESRA Act of 2007, the purpose of these regulations is to restore, preserve and improve the quality of air. The standards contained herein provide for the protection of the air from pollutants, as well as, take into account amongst others:

  a) Citizens right to access to clean air:
  b) Reducing and preventing air pollution through the improvement of the quality of automobiles that operate on the roadways; and
  c) Improve the health of Nigerians especially in the urban areas with high incidence of air pollution due to increased number of automobiles that ply the roads

- **National Environmental (Permitting and Licensing System) Regulations, S. I. No. 23 of 2009**

In accordance with the NESRA Act of 2007, the purpose of these regulations is among others, to enable consistent application of Environmental Laws, Regulations, and Standards in all sectors of the economy and geographical regions. They instruct on the:

a) Application procedure
b) Amendment and renewal of permit
c) Suspension and cancellation of permit
d) Re-hearing and Appeals

- **National Environmental (Ozone Layer Protection) Regulations, 2009. S. I. No. 32**

Pursuant with the NESRA Act of 2007, these provisions seek to prohibit the import, manufacture, sale and the use of ozone-depleting substances, unless for the recovery and recycling of substances already in use to align with these regulations, no ozone depleting substances should be imported or used in the framework of the WIDELAG Project. However, this law stipulates Import permit (permit conditions, entitlement for permit holder etc.

- **The National Environment Protection (Management of Solid and Hazardous Wastes) Regulations, S.I.15 of 1991 (No. 102, Vol. 78, August, 1991) defines the requirements for** groundwater protection, surface impoundment, and waste piles. These regulate the collection, treatment and disposal of solid and hazardous waste for municipal and industrial sources and give the comprehensive list of chemicals and chemical waste by toxicity categories.

- **The Factories Act, 1987/Factories Act CAP 126.LFN, 1990**

The Factories Act, as contained in the Laws of the Federation of Nigeria 1990, seeks to legislate and regulate the conduct of health and safety in the Nigerian workplaces. It was enacted in June1987 with the desire to protect the workers and other professionals against exposure to occupational hazards. The Director of Factories at the Federal Ministry of Employment, Labor and productivity is responsible for the administration of the provisions or requirements of this Act. Section 13 allows an inspector to take emergency measures or request that emergency measures be taken by a person qualified to do so, in cases of pollution or nuisances.

This Act deals with working conditions at work sites, including construction sites, such as the type to be undertaken under the proposed LASWA/AFD Priority Ferry Routes (Terminals, Ferries, and Navigation Channels) project. Hence, the occupational requirements applicable to construction sites, as well as other work sites to be used by the project shall be subjected to the provisions of this Act.

- **The Labour Act (CAP L1 LFN, 2004)**

This Act deals with labour issues, including payment of wages, recruitment, discipline, employee welfare, employment of women and child labour. Sections 54 to 58 which deal with employment of women, prescribed period of absence from work for nursing mothers and allows her half an hour twice a day during her working hours to attend to the baby for a period of up to six months after she resumes work. Section 55 also exempted women from night work, except when they are employed as nurses. Sections 59-64 deal with employment of young people.

- **Wages Board and Industrial Court Act, 1974**

The Act provides for the establishment of a National Wages Board and Area Minimum Wages Committee for States and for Joint Industrial Councils for particular industries. It empowers the Minister to order or direct that an industrial wages board be established to perform, in relation to the workers described in the order and their employers, the functions specified in the provisions of this Act, including minimum wage. The minimum wage is currently NGN 30,000.00 per month, and all workers employed for this project shall not earn less than the minimum wage.

- **Worker's Compensation Act, 1987**

The Act make provisions for the payment of compensation to workmen for injuries suffered in the course of their employment. The compulsory insurance covers employees for injury or death resulting in the course of work or in work places. All types of workers are covered including working under a contract of service or apprenticeship with an employer, whether by way of manual labour, clerical work or otherwise, and whether the contract is expressed or implied, is oral or in writing. The project will employ both skilled and non-skilled labour and shall be subject to this law as applicable.

2.4 INSTITUTIONAL FRAMEWORK

This section highlights the relevant institutions through which planning and implementation of the WIDE-LAG Project will be achieved. The following institutions and agencies have been identified and will be involved in the overall implementation of the project.

2.4.1 The Federal Government of Nigeria

Section 20 of the Constitution of Nigeria makes it an objective of the Nigerian State to improve and protect the air, land, water, forest and wildlife of Nigeria. Sections 33 and 34 which guarantee fundamental human rights to life and human dignity, respectively, can also be linked to the need for a healthy and safe environment to give these rights effect. The executive council of the federation approves all national policies including the National Policy on Environment.

2.4.2 Federal Ministry of Environment

The Federal Ministry of Environment is responsible for the overall environmental policy of the Country. It has the responsibility for ESIA implementation and approval. It has developed certain guidelines and regulations to protect the environment and promote sustainable development. It will monitor the implementation of mitigation measures, when the project commences. And they can issue directives to the project on specific actions related to the environment in the project area. The Ministry normally involves the states and sometimes local governments in this responsibility depending on the specific activity.

2.4.3 Federal Ministry of Transportation

Lagos State Ministry of Transportation supervises, monitors and evaluates the implementation of all transportation policies and programmes in Lagos State. Other responsibilities of the Ministry includes amongst others, the formulation of all relevant laws affecting Transportation; provision of road infrastructure and furniture appropriate for Transportation and Traffic Management Control; supervision and control of Motor Parks and

Transportation Unions; oversight functions on all its agencies; MVAA, LAGBUS, LAMATA, LASTMA, LASDRI, LASWA and LAGFERRY; and establishing inter-face with other agencies of State and Federal Government on transportation and other related matters.

2.4.4 Lagos State Ministry of Environment

Lagos State Ministry of Environment is responsible for the overall environmental policy of Lagos State, enforcement of state environment laws, establishing regulations, sanitation and waste management. Since, environment is on the concurrent list in the Nigerian Constitution, the State Ministry of Environment has a role in the EIA process. The state undertakes joint site verifications with the Federal Ministry of Environment, receives a copy of the report, appoints a member on the review panel as well as participates in impact mitigation monitoring. The State can also impose additional requirements based on the nature of the local environment.

1. Lagos State Waterways Authority

Lagos State Waterways is charged with the responsibility for coordinating and managing reforms necessary for the long-term growth and development of water transportation in Lagos State, including the granting of ferry licenses and concessions for the operations of ferry routes and terminals to the private sector. The responsibilities of LASWA are to:

- Establish, maintain and regulate the operation of any type of vessels and like carriers, pilot boats, ferries, lines and regular ferry services within the waterways of Lagos state;

- Regulate the use of internal waterways by all users including private and common carriers;

- Enter into contracts for the maintenance, exploration, superintendence, management and transit of all state and internal waterways and terminals, platforms, piers and jetties with any other person(s), authority, company or such other private operator(s);

- Institute and collect water transportation tolls, rates and charges clear and maintain Lagos state Inland waterways free from all obstructions, derelicts, wrecks and abandoned properties and install route buoys gauges, distance boards and markings along the inland waterways of Lagos State Local Government Authority.

2. Lagos State Ministry of Physical Planning and Urban Development

Lagos State Ministry of Physical Planning and Urban Development has the responsibility for the formulation of policies and implementation pursuant to the provisions of the Land Use Act, 1978 as amended under the 1990 Laws of the Federation of Federal Republic of Nigeria. It also has the primary responsibility for land management in the state. Part of its agencies includes the Land Use Advisory and Allocation Committee. Its functions and powers include advising the Governor on how to grant right of way for the line route to be constructed. The Ministry is also the primary Government agency with respect to payment of compensation.

2.4.5 French Development Agency

The French Development Agency (AFD) looks to support Lagos State and LASWA into the development of public waterways mass-transportation in Lagos. AFD has allocated additional funds for the completion of project preparation studies for the further development and implementation of ferry operations in the Greater Lagos Lagoon area. Part of the proceeds is applied to the Consultancy Services for the preparation of an Environmental & Social Impact Assessment (ESIA). AFD's Environmental and Social Risk Management Policy (ESRMP) requires a systematic environmental and social assessment of operations, to ensure that they are environmentally and socially sustainable, contribute to integrating environmental and social considerations into the decision-making process of all stakeholders, and provide a strong framework to manage financial and reputational risks run by AFD. AFD conducts due diligence to analyse the environmental and social risks and impacts during the ex ante assessment of the operation, in a manner adapted to the nature and scale of the operation and proportional to the levels of these risks and impacts.

2.5 INTERNATIONAL GUIDELINES AND CONVENTIONS

2.5.1 African Convention on the Conservation of Nature and Natural Resources, Algiers, 1968

This convention came into force in Nigeria 7th May, 1974. The objectives of the convention is to encourage individual and joint action for the conservation, utilization and development of soil, water flora and fauna for the present and future welfare of mankind, from an economic, nutritional, scientific, educational, cultural and aesthetic point of view.

2.5.2 Convention on Wetland of International Importance, especially as Water Fowl Habitat, Ramsar, Iran 1971

This provision came into force in Nigeria on 2nd February, 2001 with the objective to stem the progressive encroachment on and loss of wetlands now and in the future, recognizing the fundamental ecological functions of wetlands and their economic, cultural, scientific, and recreational value.

2.5.3 Montreal Protocol on Substances that Deplete the Ozone Layer, Montreal, 1987 (As Amended)

This came into force in Nigeria on 7th January, 1993 with the objective to protect the ozone layer by taking precautionary measure to control global emissions of substances that deplete it.

2.5.4 Convention on Biological Diversity, Rio de Janerio, 1992

This convention came into force in Nigeria on 27th November 1994. The objectives are to conserve biological diversity, promote the sustainable use of its components and encourage equitable sharing of the benefit arising out of the utilization of genetic resources. Such equitable sharing includes appropriate access to genetic resources as well as appropriate transfer of technology, taking into account existing rights over such resources.

2.5.5 Convention on International Trade in Endangered Species (CITES) of Wild Fauna and Flora, 1979 (As Amended)

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) entered into force in 1975 and became the only treaty to ensure that international trade in plants and animals does not threaten their survival in the wild. Currently 180 countries (called Parties), including the United States, implement CITES.

2.5.6 Convention for Cooperation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region (1981)

The objective of the convention is: To protect the marine environment, coastal zones and related internal waters falling within the jurisdiction of the Sates of the West and Central African region.

2.5.7 Basel Convention on the Control of Hazardous Wastes and their Disposal, 1989

The Basel Convention was adopted on 22 March 1989 and its objective is to protect human health and the environment against the adverse effects of hazardous wastes.

2.5.8 Stockholm Convention on Persistent Organic Pollutants, 2001

This is a global environmental treaty, signed on 22 May 2001 in Stockholm and effective from 17 May 2004, that aims to eliminate or restrict the production and use of persistent organic pollutants.

2.5.9 The Convention Concerning the Protection of the World Cultural and Natural Heritage the World Heritage Convention, 1972

The Convention aims to identify, protect and promote the world's natural and cultural heritage considered to be of outstanding universal value.

2.5.10 The Framework Convention on Climate Change, Kyoto Protocol, 1995

The Kyoto Protocol is an agreement under the United Nations Framework Convention on Climate Change (UNFCCC). Its objective is to achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

2.5.11 Conventions of International Labour Organization (ILO) ratified by Nigeria

Nigeria is a member of ILO since 1960 and has ratified 40 conventions. Some of the fundamental ILO conventions ratified by Nigeria are as follows:

- C 029 – Forced Labour Convention, 1930 (No. 29), Ratified in 1960. This aims to suppress the use of forced labour in all its forms irrespective of the nature of the work or the sector of activity in which it may be performed.
- C087 – Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87), Ratified in 1960. The Freedom of Association and Protection of the Right to Organise Convention No 87 is an International Labour Organization Convention, and one of eight conventions that form the core of international labour law, as interpreted by the Declaration on Fundamental Principles and Rights at Work.
- C98 Right to Organize and Collective Bargaining Convention, 1949, Ratified in 1960: An International Labour Organisation Convention that provides adequate protection for workers and employer's organisations against any acts of interference by each other or each other's agents or members in their establishment, functioning, or administration.
- C100 Equal Remuneration Convention, 1951, Ratified in 1960: The Convention provides equal remuneration for work of equal value for men and women workers, and prevention of discrimination, on the ground of sex, against women in the matter of employment and for matters connected therewith or incidental thereto.
- C105 Abolition of Forced Labor Convention, 1957, Ratified in 1960: This is one of the eight ILO conventions on the protection of labour rights. The Convention prohibits the use of forced labour for mobilising labour for economic development or as a measure of labour discipline.
- C111 Discrimination (Employment and Occupation) Convention, 1958, Ratified in 2002: The Discrimination Convention is an anti-discrimination convention that addresses discrimination based on race, sex, religion, political opinion, national or social origin in employment and repeal legislation that is not based on equal opportunities.

- C138 Minimum Age Convention, 1973, Ratified in 2002: The International Labour Organisation adopted the Convention in 1973 to regulate and abolish child labour, and set a minimum age for admission to employment or work.
- C182 Worst Forms of Child Labor Convention, 1999, Ratified in 2002: Convention concerning the prohibition and immediate action for the elimination of the worst forms of child labour.

In addition, Nigeria also has obligations to protect the environment through various commitments to the African Union (AU), the Economic Community of West African States (ECOWAS) and the Commonwealth. It is also committed through relations with the European Community under the Lome IV Convention.

2.6 REQUIREMENTS OF THE FUNDING AGENCY

In addition to the national requirements in terms of environmental and social protection, the project implementation needs to comply with international best practices. Pursuant to its Environmental and Social Risk Management Policy (ESRMP), AFD conducts due diligence to analyse the environmental and social risks and impacts during the ex ante assessment of the operation, in a manner adapted to the nature and scale of the operation and proportional to the levels of these risks and impacts. The objective is to assess whether the project is likely to be developed and implemented in compliance with AFD's environmental and social performance targets and AFD's Environmental and Social Risk Management Policy. Furthermore, AFD has adopted the World Bank's E&S standards for projects with high or substantial E&S risks.

The project must also be implemented in compliance with the World Bank Group's Environmental, Health and Safety Guidelines (EHSG). These are reference technical documents, with general and specific examples of international good practices in the industry.

These standards will:

- Support Borrowers in achieving good international practice relating to environmental and social sustainability;
- Assist Borrowers in fulfilling their national and international environmental and social obligations;
- Enhance nondiscrimination, transparency, participation, accountability and governance; and
- Enhance the sustainable development outcomes of projects through ongoing stakeholder engagement.

The ten Environmental and Social Standards establish the standards that the Borrower and the project will meet through the project life cycle, as follows:

- Environmental and Social Standard 1: Assessment and Management of Environmental and Social Risks and Impacts;
- Environmental and Social Standard 2: Labor and Working Conditions;
- Environmental and Social Standard 3: Resource Efficiency and Pollution Prevention and Management;
- Environmental and Social Standard 4: Community Health and Safety;
- Environmental and Social Standard 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement;
- Environmental and Social Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources;
- Environmental and Social Standard 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities;
- Environmental and Social Standard 8: Cultural Heritage;
- Environmental and Social Standard 9: Financial Intermediaries; and
- Environmental and Social Standard 10: Stakeholder Engagement and Information Disclosure.

2.7 ASSESSMENT AND ADEQUACY OF LEGAL INSTRUMENTS FOR ESS ISSUES

The existing legal framework for environmental assessment in Nigeria is considered adequate. Detailed laws, regulations and guidelines have been developed and serve as the framework for environmental protection. Lagos State has a good governance framework and laws to back up and manage the environmental and social safeguard issues that shall be triggered. Though the implementation has been poor due to poor enforcement.

2.8 GAP ANALYSIS BETWEEN AFD'S/WORLD BANK'S E&S STANDARDS AND APPLICABLE E&S LEGISLATION IN NIGERIA

Comparing the legislative and institutional arrangements for Environmental Impact Assessment (EIA) in Nigeria with the AFD's Standards indicates that there is no significant difference. AFD has adopted or aligned its Environmental and Social Risk Management Policy for AFD-funded operations with the World Bank's Environmental and Social Standards (ESSs) while the Nigeria overarching environmental legislation is the Environmental Impact Assessment (EIA) Act Cap E12 LFN 2004 formerly EIA Act 86 of 1992.

Tableau 1: Gap analysis between AFD's standards and applicable E&S legislation in Nigeria

Key Element/ Item	Nigerian Provision	AFD E&S policy and WB ESS	Comparison/Comment
Screening	EIA Act Cap E12 LFN 2004	ESS 1: Assessment and Management of Environmental and Social Risks and Impacts	There is no difference in general Screening should be conducted by FMEnv after site survey This law sets out the general principles, procedures and methods of environmental impact assessment in various sectors; similarly, to ESS1, it mandates that development sub-projects or activities be screened in order to ascertain their eligibility for environmental and assessment by the proponent prior to their implementation
Scoping	EIA Act Cap E12 LFN 2004	ESS 1: Assessment and Management of Environmental and Social Risks and Impacts	There is no difference in general The Project Proponent should make environmental scoping and TOR for EIA study and submit to FMEnv. Similarly, to ESS1, it mandates that the nature, scope, environment and preliminary impacts of screened development sub-projects or activities be established so that they guide the preparation of the Terms of Reference for the environmental and social assessment.
Environmental and Social Impact Assessment Guideline	EIA Procedural Guidelines; EIA Guidelines for Urban Development	ESS 1: Assessment and Management of Environmental and Social Risks and Impacts	There is no difference in general The sectoral guidelines serve as stringent provisions for considerations in EIAs across various sectors of the economy. These compare to the Banks ESS 1 requirement and the World Bank Group Environmental, Health and Safety Guidelines (EHSGs), which provide provisions to support the ESSs
Environmental Categorization	EIA Procedural Guidelines, 1995 Categories I, II & III	AFD's Environmental and Social Risk Classification	The guidelines propose the categorization for projects eligible for EIA mainly on the extent of the potential impacts, their magnitude, spread, range and irreversibility. This however varies from the Environmental and Social Risk Classification of the Bank, which rather follows a risk-based approach i.e. High Risk projects: Environmental and social assessment of subprojects in accordance with the ESSs and Substantial, moderate and low risk projects: In accordance with national law and any requirement of the ESSs that the Bank deems relevant to such subprojects

Key Element/ Item	Nigerian Provision	AFD E&S policy and WB ESS	Comparison/Comment
			According to the EIA Act and EIA Procedural Guidelines 1992, all the proposed projects are classified into three categories considering extent, nature and location of the projects. - Category I for which EIA is mandatory; the project is likely to significantly affect the environment (almost same as the category A of AFD Guidelines) - Category II for which a partial EIA will be required; the project is likely to not significantly but somewhat affect the environment (almost same as the category B of the AFD Guidelines).and, - Category III for which EIA is not required; the project is unlikely to affect the environment (almost same as the category C of the AFD Guidelines) AFD's E&S risk management policy provides for 4 risks categories: A (high risks), B+ (substantial risks), B (moderate risks) and C (low risks). A, B+ and B categorized projects require E&S risk assessment studies. Moreover, A and B+ categorized projects shall comply with World Bank E&S standards, meaning that they require a full ESIA study as per WB ESS 1.
Environmental and Social Assessment	EIA Act Cap E12 LFN 2004	ESS 1: Assessment and Management of Environmental and Social Risks and Impacts ESS 5 : Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	There is no difference in general Sets out the general principles, procedures and methods of environmental impact assessment in various sectors; it mandates that development sub-projects or activities undertaken by public and private sector establishments with the potential to impact adversely on the environment must undergo Environmental Impact Assessment following their categorization (category I or II)
Environmental and Social Management Plan	EIA Act Cap E12 LFN 2004	ESS 1: Assessment and Management of Environmental and Social Risks and Impacts ESS 5 : Land Acquisition, Restrictions on Land Use and Involuntary Resettlement and also ESS 2, 3, 4, 6, 8 and 10	There is no difference in general Its provisions mandate that an Environmental Management Plan (similar to the Environmental and Social Management Plan – ESMP) for Bank funded projects be part and included in the EIA report

Key Element/ Item	Nigerian Provision	AFD E&S policy and WB ESS	Comparison/Comment
Consultation and Participation	EIA Act Cap E12 LFN 2004	ESS 1: Assessment and Management of Environmental and Social Risks and Impacts ESS 10: Stakeholder Engagement and Information Disclosure	The law mandates that stakeholder consultations be conducted during the EIA process and continuously during project implementation. This is consistent with the requirements of ESS 10 of the WB. ESS 10 recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice, and must be read in conjunction with ESS1.
Pollution Prevention and Control	National Environmental Protection (Pollution Abatement in Industries and Facilities Generating Wastes) Regulations, 1991; and National Environmental (Surface & Groundwater Quality Control) Regulations 2011	ESS 3: Resource Efficiency and Pollution Prevention and Management	Sets out clauses and guidelines to be followed and complied with as regards air, water and land pollution. Additionally, it addresses waste generation and management in a consistent way as to ESS 3 which recognizes that economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people, ecosystem services and the environment at the local, regional and global levels.
Waste and Hazardous Materials	National Environmental Protection (Management of Solid and Hazardous Wastes) Regulations, 1991	ESS 3: Resource Efficiency and Pollution Prevention and Management	Same as above
Labour Conditions	Employee Compensation Act, 2010 Labour Act, 1990	ESS 2: Labour and Working Conditions	Provides comprehensive legislation on conditions of work and employment. Part I sets out general provisions relating to wages, contracts and terms of employment. Part II regulates recruiting, including the licensing of recruiters, and the right to be accompanied by family Part III relates to special classes of workers, including apprentices, women and young persons. This could be consistent with ESS 2 which requires that the Borrower will develop and implement written labour management procedures applicable to the project.
Health and Safety	Factories Act (CAP F1), 2004	ESS 2: Labour and Working Conditions ESS 4: Community Health and Safety	Same as above

Key Element/ Item	Nigerian Provision	AFD E&S policy and WB ESS	Comparison/Comment
Gender	National Gender Policy 2010	World Bank, Good Practice Note, Addressing Gender Based Violence in Investment Project Financing involving Major Civil Works, 28 September 2018,	Brings a gender perspective into all aspects of planning policy, developing legislation and transformation activities in Nigeria. The gender policy addresses the systematic inequalities between women and men in society without ignoring the fundamental differences between them. The WB GPN compliments the Policy in the above, and also in providing actual steps in GBV risk assessment and mapping of GBV services which when applied in projects in-country, help to achieve the same objectives of the National Gender Policy
Environmental Monitoring	EIA Act Cap E12 LFN 2004	ESS 1: Assessment and Management of Environmental and Social Risks and Impacts	Similar to the provisions in the ESF for the Borrower to monitor the environmental and social performance of the project(s) in accordance with the legal agreement, and likewise in the ESMP (as part of the ESIA or as a stand-alone document) which identifies monitoring objectives; this law requires the same for EIAs prepared for sub-projects.
Disclosure and Access to Information	EIA Act Cap E12 LFN 2004	ESS 1: Assessment and Management of Environmental and Social Risks and Impacts ESS 10: Stakeholder Engagement and Information Disclosure	There is no difference in general The law emphasizes that EIAs be publicly disclosed to the public for a period of 21 days for the purpose of access to information. The requirements of ESS 1 and ESS 10 likewise are consistent with information disclosure for environmental and social assessments to stakeholders (Interested parties and Project Affected Persons).

CHAPTER III

3 — PROJECT JUSTIFICATION

3.1 INTRODUCTION

To respond effectively to the structural problems of mobility in Lagos, the government is betting on the development of a mass transport system by waterways in the Lagoon of Lagos. The WIDELAG project would match the Lagos State's Climate Action Plan (CAP) for the 2020 –2025 period that makes waterways transportation a key means to mitigate climate change impacts and ensure climate change adaptation Also, with the present population of over 25 million projected to increase to about 40 million by 2050 in Lagos, the overburdened road network and air pollution resulting from this massive road traffic must be remedied.

The interest of this initiative relies on its potentialities to promote climate adaptation and foster clean technologies in mass transport. In addition, for the State of Lagos, the development of a public inland waterway mass transportation takes relevance for:

- improving air quality levels,
- developing a rather under-utilized mode of transportation particularly suitable for Lagos geography,
- complementing the mass rapid transit system and thus,
- attaining the modal shift goals of 20% for water transport set for 2025.

The Lagos lagoon is one of the four largest lagoon systems in the Gulf of Guinea and one of the ten in Lagos State. It is a fairly shallow expanse of water with an average depth of 2 to 4m isolated from the sea by beach barrier ridges. The lagoon empties inside the Atlantic Ocean via Lagos Harbour where it has depth increase of 10 m, with 0.5 to 1 km width and 10 km long. This aquatic ecosystem is strategically located within the Lagos metropolis, cutting across the southern part of the metropolis, and links the Atlantic Ocean (in the west and south) and Lekki Lagoon (in the east). It is about 6,354.788 km2 in area and 285 km in perimeter.

The lagoon comprises three main segments: the *Lagos Harbour*, *Metropolitan*, and the *Epe Division* segments. The Lagoon provides places of abode, recreation, means of livelihood, and marine transportation. Previous studies indicated over 7000 industries in Lagos State with less than 10 % having installed treatment facilities. Majority of these discharge their partially treated or untreated effluents into the environment and the Lagos Lagoon. More so, industries utilize water for many purposes including; processing, washing, cooling, boiler use, flushing sanitary waste and general cleaning. In addition to wastewater from industries, there are domestic sewage discharges and garbage and wood shavings from sawmill depots along the shores of the lagoon. Lagos lagoon cuts across the following local government area: *Shomolu, Apapa, Lagos Island,Eti-Osa, Ikorodu, Kospofe* and *Lagos mainland*.

Twenty-two per cent (22%) of total surface of Lagos City is occupied by water and more than 60% of the emerged land are located at 5 meters below sea level. In this geographical context exacerbated by rapid urbanization and economic precarity, the question of vulnerability to climate change (sea level rise and risk of flooding) must moreover be seriously considered in this study.

This WIDE-LAG project is an important infrastructure for Lagos inhabitants and shall favour local economies, improve mobility quality and tackle sustainable goals. We understand that several related studies have already been undertaken or are undergoing, such as the World Bank-funded Water Transport Program (2018), the ongoing Feasibility Study funded by Global Future City and AFD-funded LAMATA Master Plan Project (2019).

However, as with any other infrastructure project, there are also environmental and social risks and issues that must be identified, assessed and managed appropriately. Inland waterway transport projects need a considerable attention to water and sediment pollution issues, aquatic ecology, disturbance of biodiversity (aquatic fauna and flora), air quality and noise, access to resources (river uses) for communities and safety issues during all phases of the project. The environmental and social benefits must be further enhanced, and mitigation measures must be taken to reduce and mitigate environmental and social harms.

3.2 PROJECT BENEFITS

To be completed in the Final Report

3.3 ENVISAGED SUSTAINABILITY

3.3.1 Economic sustainability

Package B&C (Information request sent)

3.3.2 Environmental sustainability

The ferry concept is based on the following considerations to reduce the environmental pollution; safe and clean technologies (electric propulsion technology), solar panel installations shall be considered to support energy generation, high levels of operational performance and sustainable Ferry Management.

In addition, this ESIA has been prepared to identify all likely environmental and social impacts associated with the proposed WIDE-LAG Project development and appropriate mitigation measures have been proffer so that all the impacts can be avoided, reduced or compensated. More so, the proper implementation of the Environmental and Social Management Plan (ESMP) throughout the project life cycle will further enhance the environmental sustainability of the proposed WIDE-LAG Project. This project activities shall be carried out in compliance with the environmental and social guidelines and standards of the World Bank, AFD, and the national environmental and social legislation within which the impact assessment is being conducted.

This section will be further elaborated in the Final report (completed with input from other packages; carbon footprint, vessel design, engineering design)

3.3.3 Technical sustainability

Package A (Information request sent)

3.3.4 Social sustainability

Communities' engagement and stakeholders' consultation is a continuous process to ensure social sustainability of the proposed LASWA project development. However, the proposed project has secured its first social license as the host communities and other stakeholders' acceptance of the LASWA proposed project development and their eagerness to see it succeed.

This section will be further elaborated in the Final report (completed with input from other packages; Vessel design, engineering design)

3.4 ANALYSIS OF PROJECT ALTERNATIVES

The initial step in defining a project is to identify, at conceptual level, viable alternatives to the project so that the WIDE-LAG project design may be realised. Consideration of the project alternatives occurs at two levels:

1. The development as a whole, including the "no development" option, and

2. Engineering alternatives within the selected project's concept design definition.

Project alternatives are defined during the early conceptual design of the WIDELAG Project and were compared on financial, technical design, safety, environmental and socio-economic criteria. The alternative that represented the best balance with regard to criteria was taken forward to the subsequent detailed design stage.

However, design development is an iterative process and the design is modified continuously to take account of new information as and when it becomes available, including information from the ESIA process.

As new information becomes available the status of potential impacts is continually reviewed and updated. This iterative stage assists in reducing the overall potential impacts of the Project. To facilitate this, the ESIA consultants (Package D) worked closely with the design engineers (Package A) and the ..... (Package B&C)

A detailed discussion of the alternative options that were assessed during the Project development is provided in the following sections, including the social and environmental implications of a "no project alternative".

3.4.1 Analysis of no project alternative

Under a "No Project" alternative scenario, the adverse environmental and social impacts from the Project will not occur, but at the same time the potential Project's benefits will not accrue to the Lagos State and the nation's economy. The anticipated benefits will enhance the socio-economic development of Nigeria and enable the country to maintain its edge, because of its strategic location, despite aggressive expansion in the West African region. Without the WIDE-LAG Project and the lack of a sustainable Inland Waterway transport system, the Lagos state and consequently, the country cannot handle increasing traffic and is struggling to maintain existing volumes.

3.4.2 Project alternatives

The 2018 completed World Bank funded study "Private Sector Participation in an Integrated Transport System in Lagos, Nigeria – Lagos State Water Transport Program" studied 11 ferry routes (Figure 2) resulting in the selection of 4 priority routes for Private Sector Participation. In the framework of the WIDE-LAG Project, these eleven ferry routes were analysed with The West Hopper Line extending to Badagry Terminal (western section) and the Ajah Island

Line (eastern section) extending to Sangotedo jetty as seen on figure 3.; The analyzed potential priority routes are presented in table 3.

Fields visits were carried out to the proposed Project sites, where the evaluation of the proposed sites focused on the biophysical and socio-economic aspects.

The visits enabled the Consultant to identify the environmental and social issues along the routes and around the existing terminals or jetties. This helped to establish the environmental and social criteria for Multicriteria analyses (MCA) for the prioritization of routes.

Tableau 2: Social and environmental criteria for the selection of priority routes WIDE-LAG Project

Go / No Go	**Social criteria**	Score	**Environmental criteria**
	0. Terminal infrastructure		**IV. Navigational Constraints and Environmental Risks**
	Temporary and Permanent encroachment or displacements and relocations of populations affected by the construction or rehabilitation of infrastructures high-stake sites and cultural/religious/historical heritage interest.		Risk of water pollution by the release of loaded sediments induced by the dredging required for the construction. (NB: The dissemination of the water hyacinth is strongly linked to this criteria), risk of biodiversity loss and disturbance of ecological niches/habitats/wetlands, risk of impact on human activities fishing, aquaculture, sand mining and water transport of wood.

In addition to environmental and social criteria, the MCA included Technical and economic criteria.

Figure 2: Initial priority routes to be analyzed for the WIDE-LAG Project

Tableau 3: Initial potential priority ferry routed to by analyzed

N°	ROUTE NAME	ORIGIN	DESTINATION	NUMBER OF STOPS	STOPS	DISTANCE (in Km)
1	WEST LINE	Ebute Ojo	Ebute Ero	6	Abule Osun, Ijegun Egba, Coconut, Tincan, Liverpool, Lagos Marina	28,3
2	NORTH EKO DIRECT LINE	Ikorodu	Lagos Marina	1	Ebute Ero	22,2
3	NORTH ISLAND LINE	Ikorodu	Falomo	2	Lekki 1, V.I	22,6
4	EAST LINE	Ijede	Falomo	3	Badore, Lekki 1, V.I	31
5	WEST HOPPER LINE	Badagry	Lagos Marina	5	Abule Osun, Ijegun Egba, Coconut, Tincan, Liverpool	65,2
6	WEST BOUNDARY LINE	Agbara	Lagos Marina	7	Etegbin, Ebute Ojo, Abule Osun, Ijegun Egba, Coconut, Tincan, Liverpool	44,5
7	EAST ISLAND LINE	Baiyeku	Falomo	3	Oke Ira Nla, Lekki, V.I	26,1
8	EAST EKO LINE	Baiyeku	Ebute Ero	0		20,5
9	NORTH CENTRAL LINE	Mile 12	Ebute Ero	3	Agboyi Ketu, Oworonshoki, Bariga	15,6
10	AJAH ISLAND LINE	Sangotedo	Falomo	3	Badore, Lekki 1, V.I	32,9
11	MAINLAND CENTRAL LINE	Oke- Afa	Lagos Marina	5	Festac, Mile 2, Tincan Island, Coconut, Liverpool	20,2

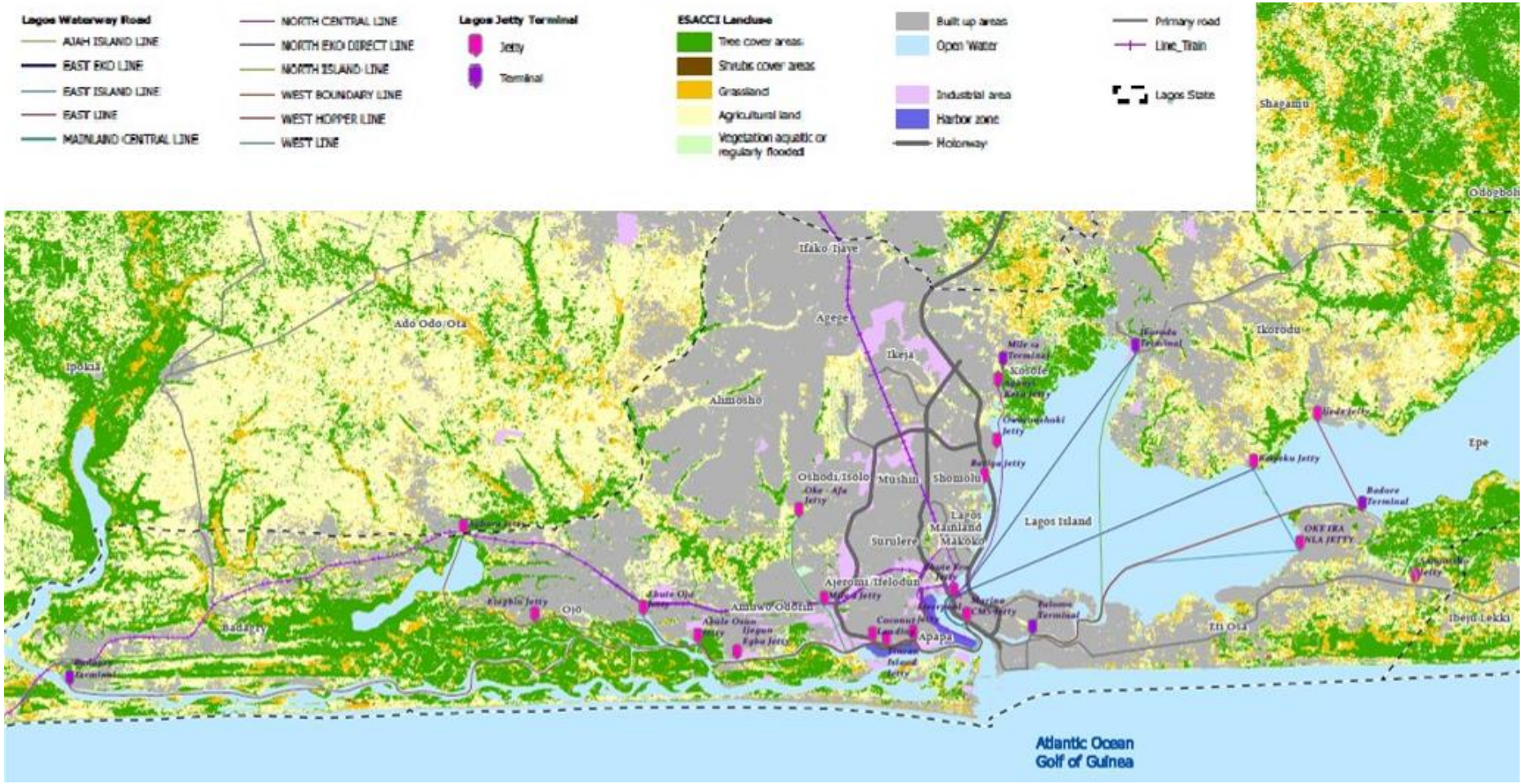

Figure 3: Ferry routes to undergo the MCA in the WIDE-LAG Project

The North Central Line

Initially originating from Mile 12 to Ebute Ero, the North Central Line was modified to originate from Oworonshoki to Falomo following the MCA. This route had the poorest rank based on the E&S criteria. Due to high environmental and social issues in the northern section from Oworonshoki to Mile 2. This includes risk of displacement around the Mile 12 terminal related to the planned multimodal connectivity, navigation constraints, high risk of water pollution and water hyacinth dissemination because of regular dredging requirements (shallow depth) during construction and operation (maintenance). This route is located along areas of very high settlements (around Agboyi Ketu jetty, Oworonshoki jetty, identified as a domestic waste polluted site) which represents a potential source of water/sediment pollution and proliferation of water hyacinth already abundant in this area. In addition, there is high risk of biodiversity loss and disturbance of ecological niches as a result of creation/opening of the water ways towards the Mile 12 terminal. High risk of impact on activities such as aquaculture and fishing.

The West Boundary Line

The West boundary Line from Agbara jetty to Marina now known as the West Line was modified to originate from the Ebute Ojo to Marina as a result of the MCA. This led to the removal of stops namely Etegbin and Abule Osun. This route was the second poorest score based on the E&S criteria. Abgara jetty is close to an industrial estate therefore a risk of resuspension of polluted sediments if dredging is required for construction or maintenance. High risk of impact on fishing at Abule Osun jetty (close to fishing area). This route is characterised by high impact on fishing activities, high risk of impact on biodiversity loss (Vegetation/mangrove) and disturbance of ecological niches/habitats.

The Main Central Line

Initially originationg from Oke-Afa to Marina, this route was modified with the removal of its first origin (Oke-Afa) due high risk of water pollution from the release of polluted sediments due to dredging activities. The Oke- Afa jetty is located at about 4 km downstream an industrial estate at (Osolo) and along areas of very high settlements from Mile 2 to Oke- Afa jetty. There are also waste dumps along the banks. All these represent potential sources of water/sediment pollution and proliferation of water hyacinth already abundant in areas like Mile 2.. High risk of impact on fishing along this route

3.4.3 Chosen alternative

Based on the MCA, 10 priority ferry routes were selected as shown in table 4 and Figure 6. The later represent the best option in terms of relatively lower environmental and social impacts, higher ferry demand (based on existing ferry demand, shift from bus and "danfo", shift from cars) and less navigation constraints etc.

Tableau 4: Selected priority ferry routes for the WIDE-LAG Project

Corridor	Route N°	ROUTE NAME	ORIGIN	DESTINATION	N° of STOPS	STOPS	DISTANCE (Km)
1	1A	WEST LINE	Ebute Ojo	Marina	3	Ijegun Egba, Liverpool, Alex	20,5
2	1B	MAINLAND CENTRAL LINE	Festac	Liverpool	2	Mile 2, Coconut,	9,95
3	2	NORTH EKO DIRECT LINE	Ikorodu	Marina	1	Ebute Ero	23,3
4	3	NORTH ISLAND LINE	Ikorodu	Falomo	2	Lekki 1, Addax	22,91
5	4	EAST LINE	Badore	Falomo	3	Oke Ira Nla, Lekki 1, Addax	28
6	5 (9B)	NORTH CENTRAL LINE	Oworonshoki	Falomo	4	Bariga, Ebute Ero, Flour Mills, Marina	20,5
7	6	IJEDE - BADORE LINE	Ijede	Badora	0		5,6
8	7	BAIYEKU - OKE IRA NLA LINE	Baiyeku	Oke Ira Nla	0		5,85
9	8	EAST ISLAND LINE	Baiyeku	Falomo	2	Lekki 1, Addax	19,8
10	9	NORTH LINE	Ikorodu	Liverpool	1	Flour Mills	29,7

CHAPTER IV

4 — PROJECT DESCRIPTION

4.1 PROJECT OVERVIEW

4.1.1 Project components

Package A

4.2 PROJECT LOCATION AND GEOGRAPHICAL SCALE

The Waterways Investment for the Development of the Environment in Lagos State (WIDE-LAG) Project will be implemented in Lagos State. Lagos state is a state in southwestern Nigeria. Geographically, Lagos State is dominated by bodies of water with nearly a quarter of the state's area being lagoons, creeks, and rivers. The largest of these bodies are the Lagos and Lekki lagoons in the state's interior with the Ogun and Osun rivers flowing into them. Lagos is a very large city with an estimated population of over 23 million people resulting in a high transport need in the Greater Lagos Area. Hence, to improve sustainable mobility in Lagos, the WIDE-LAG Project covers 7 local governments in the state; Ikorodu, Apapa, Kosofe (Oworonshoki), Lagos Island, Amuwo-Odofi (Ijegun Egba), Somolu (Bariga) and Ojo Local Government Areas (LGAs).

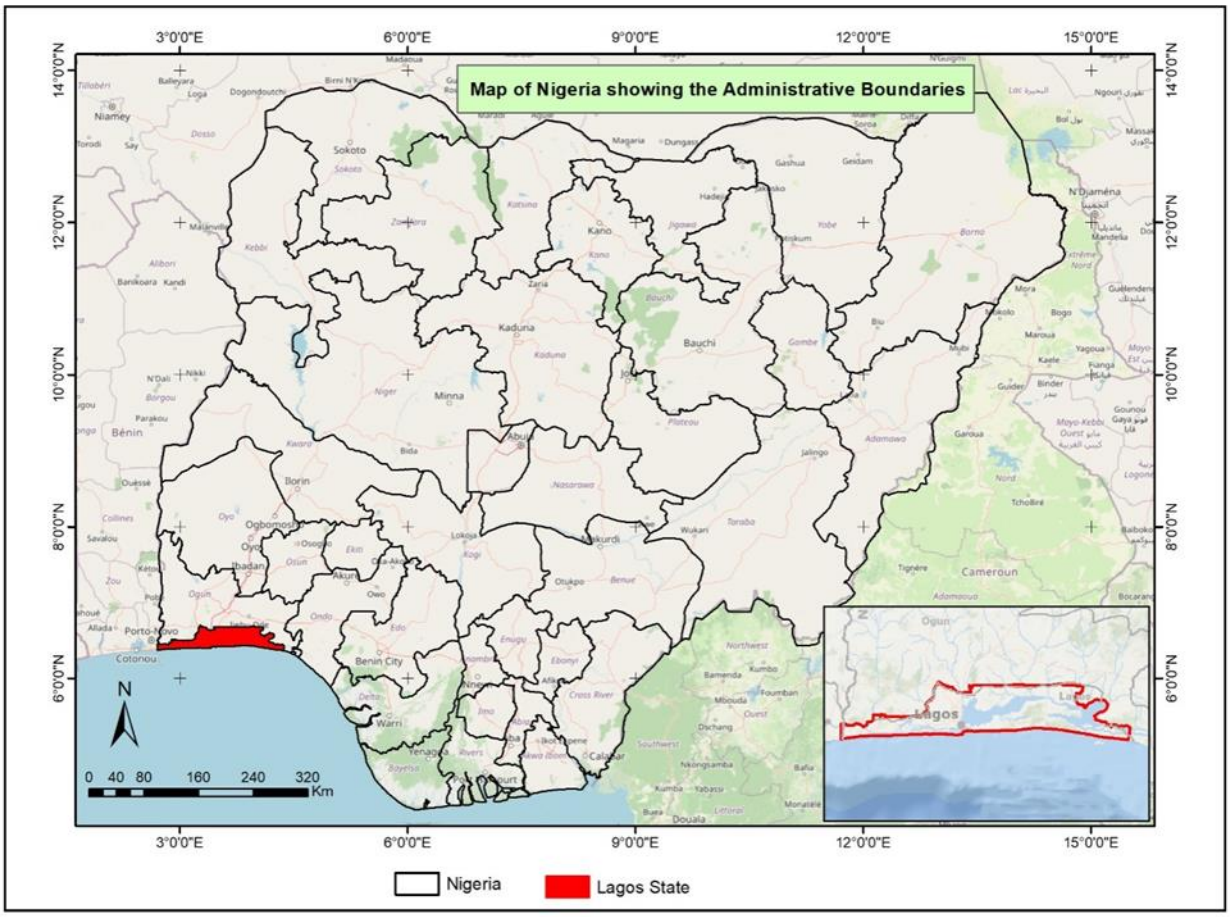

Figure 4: Administrative Map of Nigeria showing Lagos State

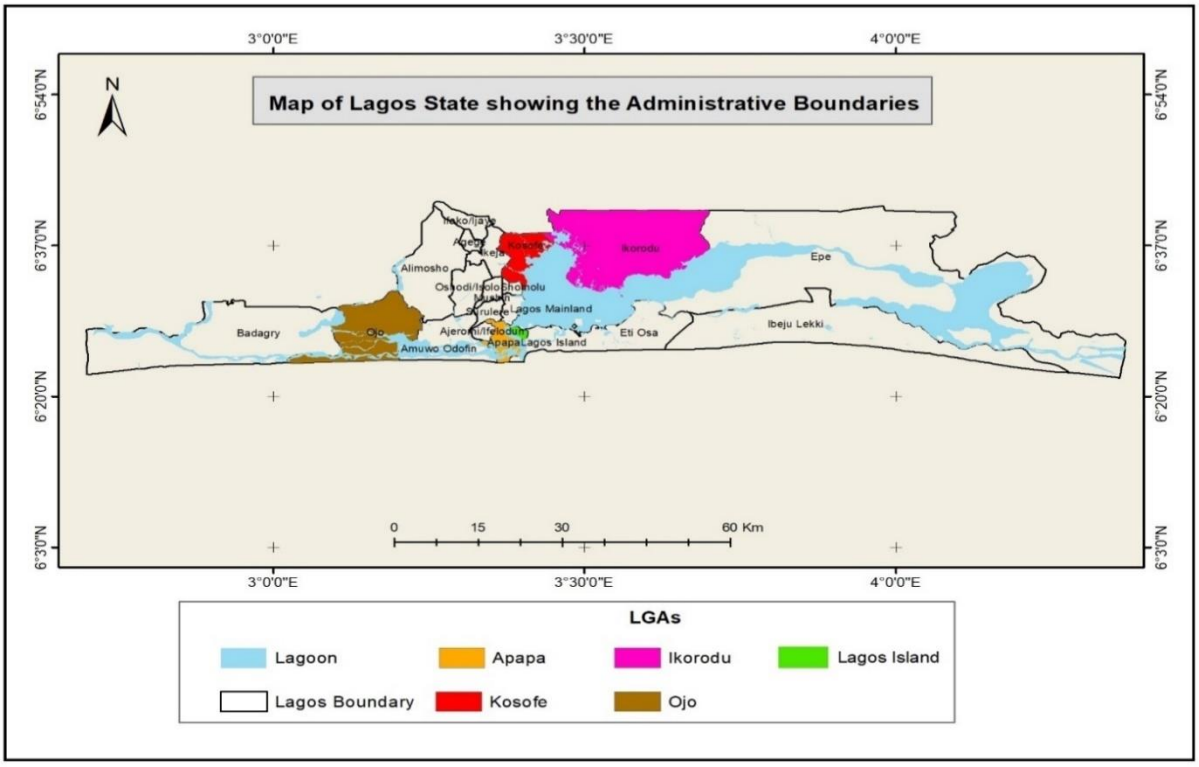

Figure 5: Administrative Map of Lagos showing LGA Boundaries

4.2.1 The wider project area

This section presents the project area covered by the 10 selected priority ferry routes, 6 feeder routes and 3 shipyards (2 existing and 1 proposed) following the Multicriteria Analysis (MCA) as presented in table 5 and shown in the figure 6 below:.

Tableau 5: Selected priority ferry routes for the WIDE-LAG project

Corridor	Route N°	ROUTE NAME	ORIGIN	DESTINATION	N° of STOPS	STOPS	DISTANCE (Km)
1	1A	WEST LINE	Ebute Ojo	Marina	3	Ijegun Egba, Liverpool, Alex	20,5
2	1B	MAINLAND CENTRAL LINE	Festac	Liverpool	2	Mile 2, Coconut,	9,95
3	2	NORTH EKO DIRECT LINE	Ikorodu	Marina	1	Ebute Ero	23,3
4	3	NORTH ISLAND LINE	Ikorodu	Falomo	2	Lekki 1, Addax	22,91
5	4	EAST LINE	Badore	Falomo	3	Oke Ira Nla, Lekki 1, Addax	28
6	5 (9B)	NORTH CENTRAL LINE	Oworonshoki	Falomo	4	Bariga, Ebute Ero, Flour Mills, Marina	20,5

7	6	IJEDE - BADORE LINE	Ijede	Badora	0		5,6
8	7	BAIYEKU - OKE IRA NLA LINE	Baiyeku	Oke Ira Nla	0		5,85
9	8	EAST ISLAND LINE	Baiyeku	Falomo	2	Lekki 1, Addax	19,8
10	9	NORTH LINE	Ikoroduu	Liverpool	1	Flour Mills	29,7
	F1	FEEDER ROUTE	Ijegun Egba	Ibasa	0		0,5
	F2	FEEDER ROUTE	Liverpool	Itu Agon	0		1,5
	F3 & F4	FEEDER ROUTE	Alex	Sagbo Koji	0	Sagbo Koji Manager traffic from Sagbo Koji	1
	F5	FEEDER ROUTE	Coconut	Igbologun	0		5,7
	F6	FEEDER ROUTE	Marina	Flour Mills	0		3,5
	F1	FEEDER ROUTE	Ijegun Egba	Ibasa	0		0,5

- Shipyard Badore (existing)
- Shipyard at Ladol (existing)
- Ojagemo (Proposed)

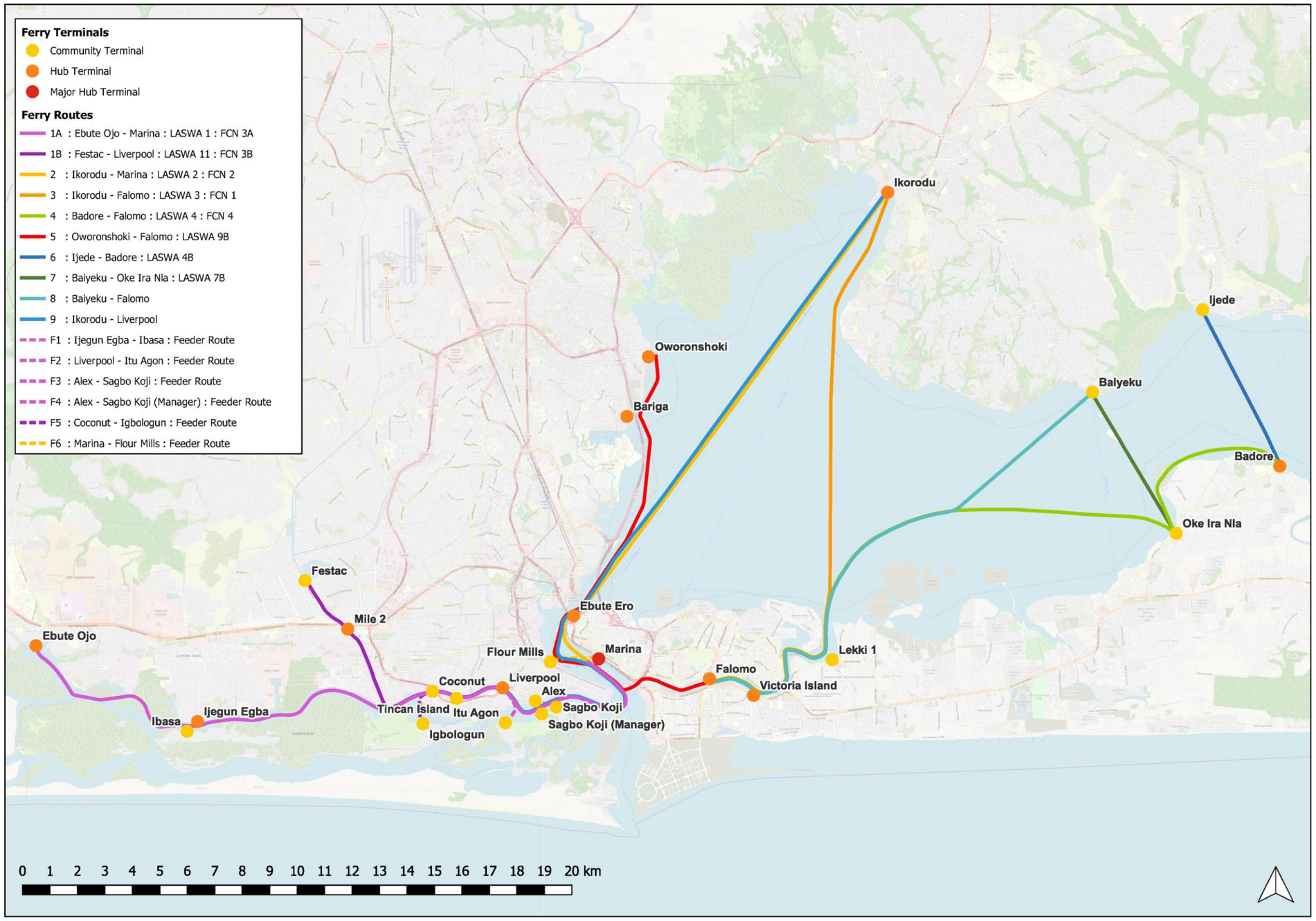

Figure 6: Map of wider project area and selected ferry routes in Lagos State

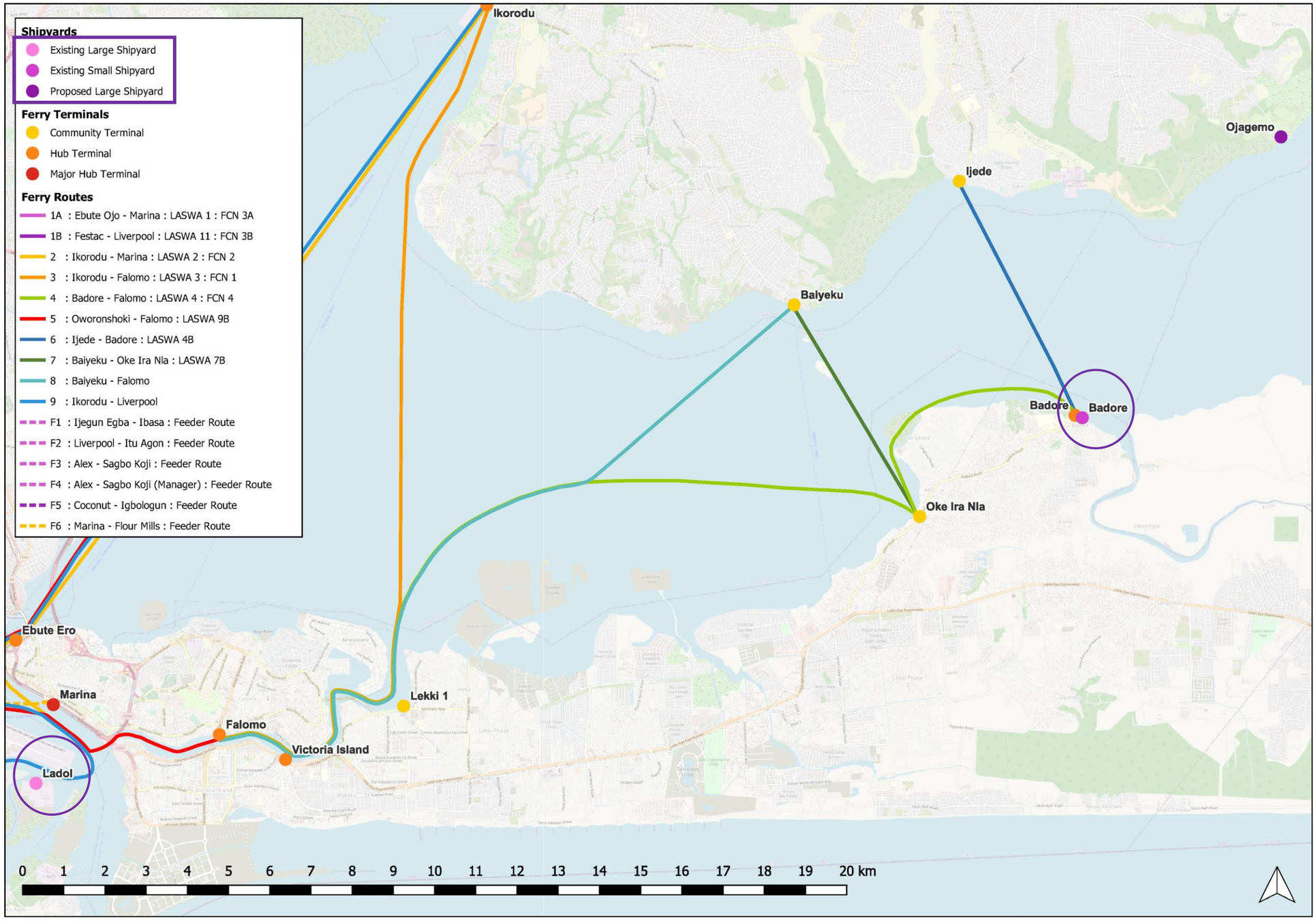

Figure 7: Selected shipyards for the WIDE-LAG

4.3 PROPOSED LAND ACQUISITIONS

Based on the available information, land will be acquired if available at sites where charging is expected to be provides as shown in the table below:

Tableau 6: Land requirement for installation of charging stations

N°	Site	Land requirements
1	Marina	Area available by reducing car parking provision.
2	Ikorodu	Area available by reducing staff parking/ car parking provision.
3	Falomo	Additional land-take likely to be required. This could be an issue due to limited space available
4	Ebute Ojo	Additional land-take likely to be required.
5	Liverpool	Additional land-take likely to be required.
6	Badore	Area available by reducing car parking provision.
7	Owornoshoki	Additional land-take likely to be required.
8	Baiyeku	Additional land-take likely to be required.
9	Bariga	Area available by reducing car parking provision.
10	Festac	Area available by reducing car parking provision.

4.4 RESOURCES REQUIREMENTS

4.4.1 Construction materials

Package A (Information request sent)

4.4.2 Water demand

Package A (Information request sent)

4.4.3 Power demand

Package A (Information request sent)

4.4.4 Manpower requirements

Package A (Information request sent)

4.5 PROJECT PHASES AND ACTIVITIES

4.5.1 Pre-construction phase

Package A (Information request sent)

4.5.2 Construction phase

Package A (Information request sent)

4.5.3 Operation phase

Package A (Information request sent)

4.5.4 Decommissioning phase

Package A (Information request sent)

1. Design standards

Package A (Information request sent)

2. Project implementation schedule

Package E

4.6 COST OF THE PROJECT

To be added when completing the final report

CHAPTER V

5 — DESCRIPTION OF THE EXISTING ENVIRONMENT

5.1 PHYSICAL ENVIRONMENT

5.1.1 Climate

Lagos is located at Latitude 6.4°N and Longitude 3.4°E lying on an average elevation of 15m asl, a tropical climate with distinct dry and wet seasons classified according to Köppen climate classification. Lagos has a short dry season between November and February with a lengthy wet season which runs from March through October. The climate of Lagos is predominantly influenced by its situation adjacent to the Atlantic Ocean with susceptibility to prevailing maritime weather conditions.

The Lagos lagoon which also has huge hydrological effects on the regional climate is the largest of the three Lagoon systems occurring in the Lagos area, receiving over 80% of the land-derived run-offs laden with various types of wastes. It lies within longitudes 6°25” and 6°43” and latitudes 3°22” and 3°40”. During the rainy season, the lagoon is fed by the numerous coastal rivers draining into it while during the dry season, the loss of water due to evaporation and the reduced amount of water from the rivers and creeks is compensated for by the underground seepage under the active sandy barrier formation and inflow of the tidal waters from the sea through the Lagos harbor and other lagoon outlets.

The summary climatology of Lagos from 1987 to 2020 is presented in figure 8.

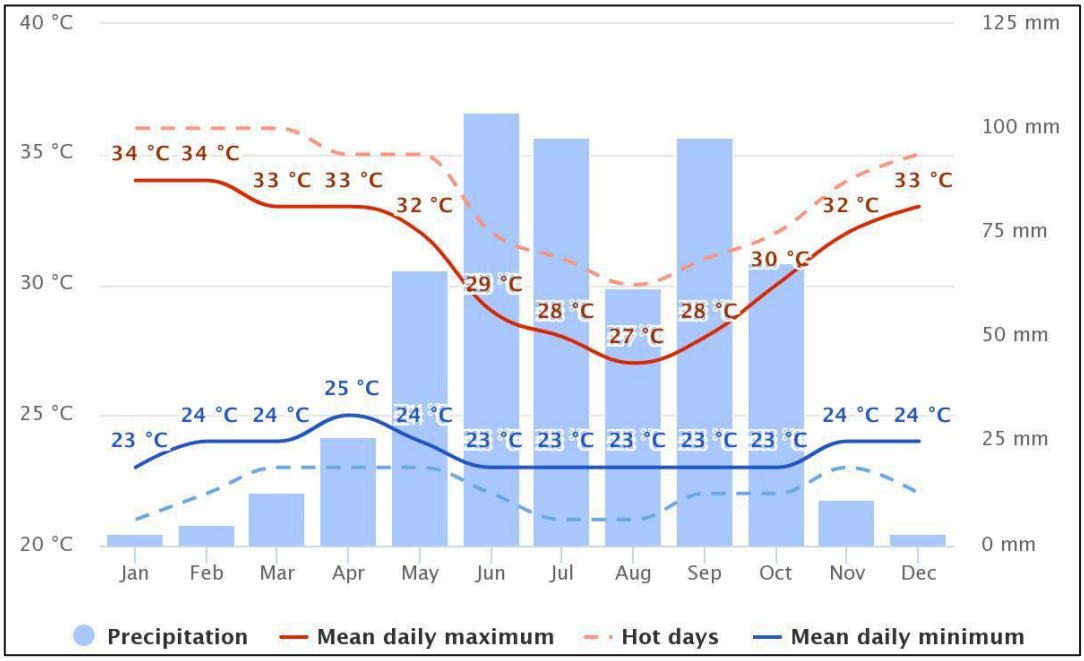

Figure 8: Summary of Rainfall and Temperature over Lagos (1987 – 2020)

More recent climatological conditions in Lagos are presented in table 7 for 2022 the meteorological conditions were as follows:

Rainfall in the project area as shows mean monthly precipitation (rainfall) levels in the rainy season between 80.4 – 292.6 mm in August and September respectively. In the dry season, rainfall levels range from 8.6 – 49.9 mm in December and March respectively. The mean monthly number of rainy days are 9 – 20 days during the raining season and 2 – 5 days per in the dry season.

Temperatures in the project area ranging from 22.7 – 35.3 °C in August and February respectively.

The mean monthly Relative Humidity levels are 71 – 87 % with the minimum in February and the maximum in September.

The mean atmospheric pressure shows small monthly variations ranging from 1010.3 – 1014.5 mbar in March and September respectively.

Cloud cover is generally high throughout the year with slight variations and most monthly values at 70 Oktas. The highest value 71 Oktas was recorded in June while the lowest value 71 Oktas were recorded in January.

Recent wind speed data in the project area is presented in table 8 (NIMET, 2021). Monthly wind speed ranges from 0.1 – 7.7 m/s with average values of 2.7 and 4.5 m/s and prevailing southwest direction.

Tableau 7: summary of climatological conditions (NIMET, 2022 and 2021)

Year	Month	Air Temp (°C)		Rainfall (mm)			Relative Humidity (%)			Number of Rainy Days	ATM Pressure (mbar)	Cloud Cover (Okta)
		Tmin	Tmax	Min	Max	Mean	Min	Max	Mean	Mean	Mean	Mean
2022	Jan	23.7	35,2	0	0	0	34	87	71	0	1012,7	6,6
	Feb	24.7	35,3	0.3	0.3	0	63	92	80	0	1011,9	6,7
	Mar	26.0	34,5	0.3	34.8	49,9	66	85	77	5	1010,3	6,9
	Apr	24.6	33	0.3	35.9	171,8	68	99	81	9	1011,1	7
	May	24.2	32,2	0.3	23.5	88,2	65	98	81	14	1013,3	6,9
	June	23.6	31	0.5	87.2	259,6	74	97	84	17	1013,4	7
	Jul	23.4	29,5	0.3	75.3	248	78	97	87	11	1014,7	7,1
	Aug	22.7	29,4	0.3	20.9	80,4	76	94	84	12	1014,2	7
	Sep	23.3	29,4	0.6	96.2	292,6	73	100	87	20	1014,5	7
	Oct	23.0	31,3	0.3	69.6	146	74	89	85	11	1013,6	7
	Nov	24.5	33,2	1.9	54.3	133,4	77	90	84	9	1012,4	7
	Dec	23.0	33,8	2	0	8,6	52	90	86	2	1012,2	7
2021	Jan	23.1	32.6	0.0	53.4	12.7	41	90	78	2	1015	6.7
	Feb	24.2	33.7	0.0	188.5	38.7	58	86	77	2	1017	6.7
	Mar	24.7	33.2	5.8	308.1	81.5	74	85	79	5	1016	6.7
	Apr	24.4	32.5	26.4	336.3	135.8	76	84	80	9	1016	6.7
	May	23.7	31.2	88.6	353.8	196.3	79	88	83	12	1018	6.8
	June	23.1	29.7	69.5	619.5	288.4	84	90	87	16	1020	6.8

	Jul	22.7	28.5	18.5	567	194.5	77	90	87	13	1018	6.9
	Aug	22.5	28.4	3.9	419.1	104.4	81	89	86	8	1018	6.9
	Sep	22.7	29.3	22.9	436.6	185.2	83	90	87	13	1018	6.9
	Oct	23.0	30.5	37.3	342.7	155.4	81	88	85	11	1019	6.8
	Nov	23.5	31.9	1.2	240.6	78.6	74	86	82	4	1018	6.7
	Dec	23.1	32.5	0.0	87.7	25.4	65	88	81	1	1018	6.7

Tableau 8: Monthly Wind Speed Variation in the project area (NIMET, 2021)

Month	Wind Speed (m/s)		
	Minimum	Maximum	Mean
January	0.1	5.7	3.0
February	0.1	6.2	4.0
March	1.5	7.2	4.5
April	0.5	7.2	4.0
May	0.1	6.7	3.9
June	0.1	6.7	3.4
July	0.1	7.7	3.8
August	0.1	7.7	4.2
September	0.1	7.7	3.8
October	0.1	5.7	3.0
November	0.1	5.7	2.7
December	0.1	6.7	2.9

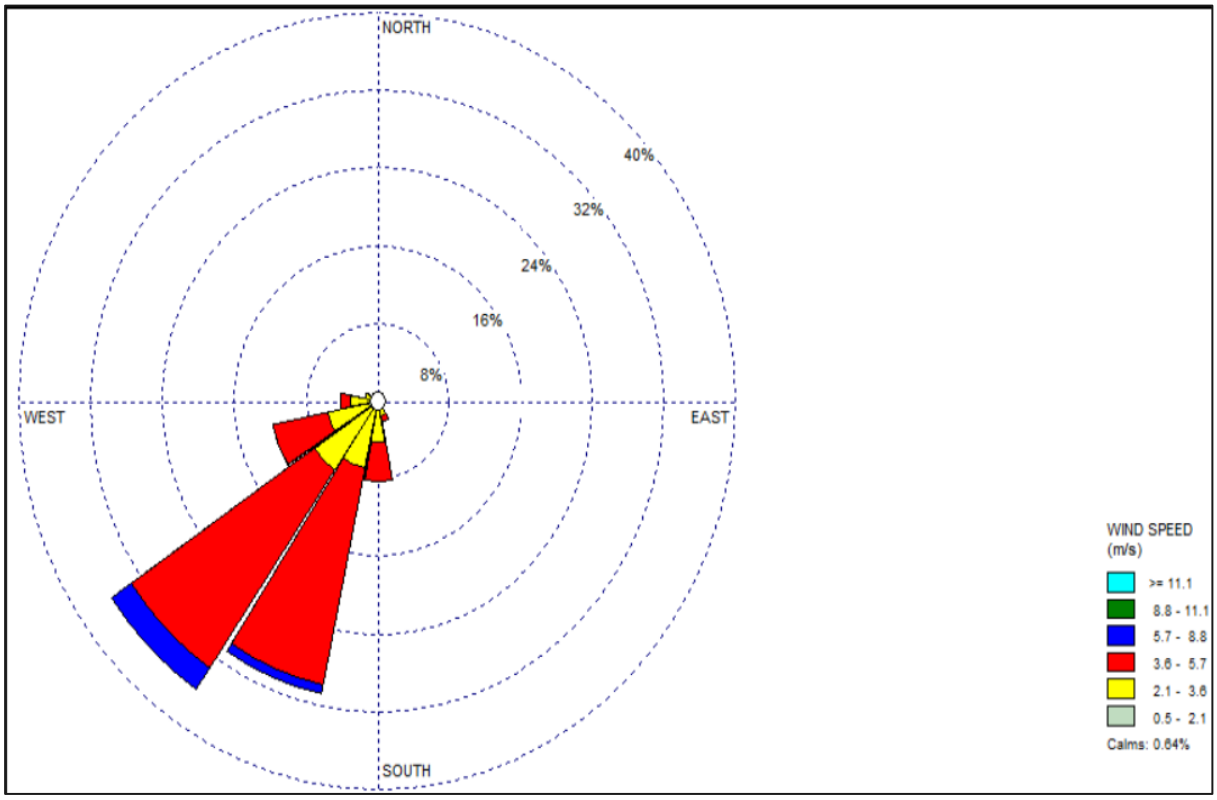

Figure 9: Windrose of the Project Area (NIMET, 2021)

5.1.2 Geology and pedology

The geology of the research location is overlayed by Coastal plain sand and the alluvium formation which belongs to the Quaternary to the Recent formation and has an alternating sequence of sand, clay, clayey sand, sandy clay, silt, and sandstone interwoven mixtures. These locations are underlayed by the Ilaro formation, Ewekoro formation, and Akinbo formation till it gets to the Abeokuta basement. The Geological map of the Lagos Lagoon is presented in the figure below.

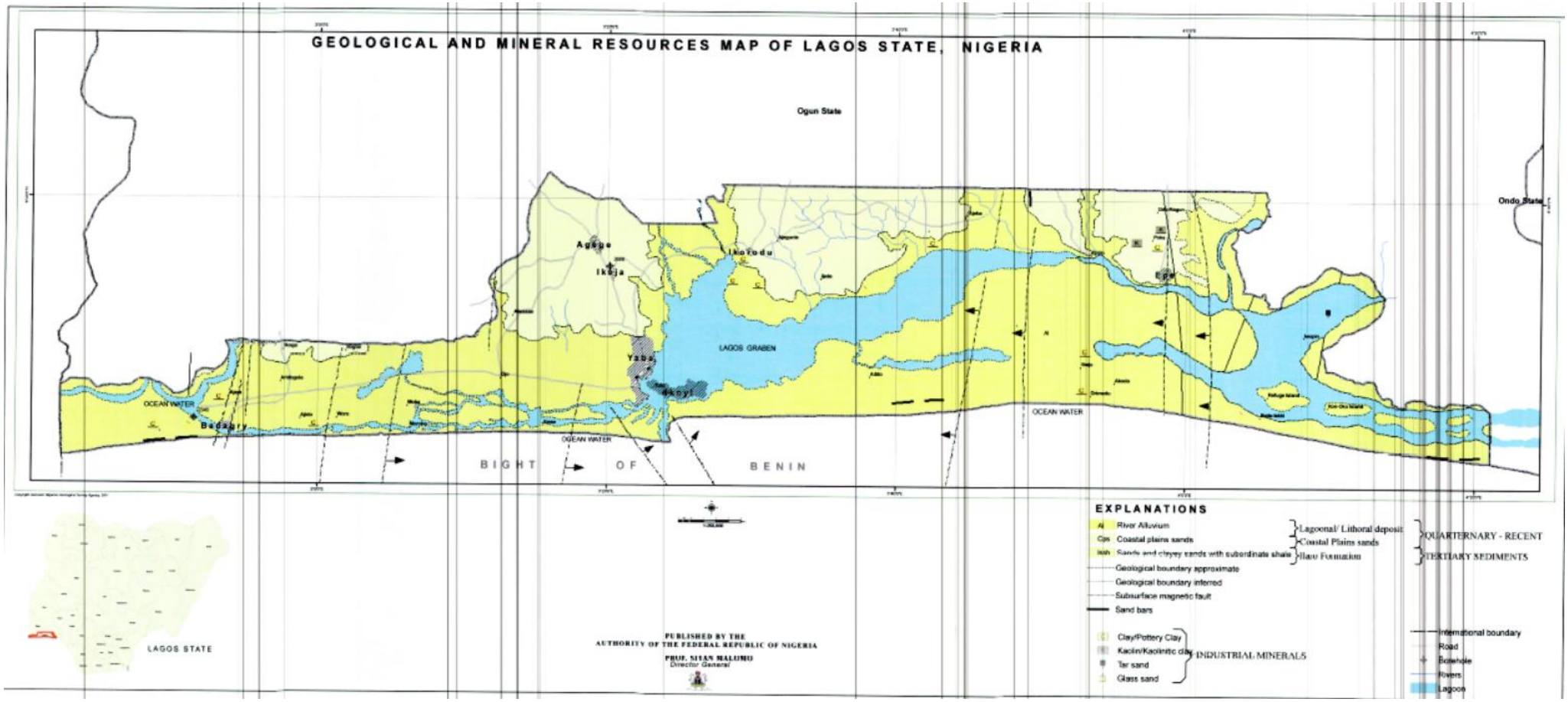

Figure 10: Geological and mineral resources map of Lagos State

5.1.3 Hydrology

The Lagos lagoon cuts across the southern part of the metropolis, linking the Atlantic Ocean in the south. The lagoon is estimated stretch of more than 50km long and 13km wide, separated from the Atlantic Ocean by long sand split 2 to 5 km wide, which has swampy margins on the lagoon side. It is one of the meandering networks of lagoons and creeks found along the coastline of southern Nigeria. The lagoon consists of estuarine water that is fed majorly in the north by Ogun River, with a host of other smaller rivers as well as tidal creeks. It discharges in the south into the South Atlantic Ocean through the Lagos Harbour.

High explorations of groundwater in the alluvia belt are proportional to high rate of upward movement of saline water in this zone. The study area has a multi-aquifer system that consists of three major aquifer horizons differentiated by silty or clay layers. The first aquifer unit is the water table aquifer and is highly prone to pollution due to its closeness to the ground surface. The second aquifer unit is a confined aquifer that consists of discontinuous arrangements of sand and clay. These aquifer units are embedded within the continental Ilaro formation and are harness through the borehole. Although, some of this aquifer is slightly contaminated, it is the most exploited. The third aquifer consists of fine and medium sand which is the most reliable aquifer used by industries and waterworks in Lagos metropolis. The groundwater in this aquifer exists as confined to the semi-confined.

5.1.4 Bathymetry

According to the Oworonsoki Jetty – Bariga Jetty Route has an average depth of 2.21m while the shallowest and deepest points are 0.16m and 12.14m, respectively. Bariga Jetty– CMS Jetty route on the other hand presents the areas of the survey boundary between Carter Bridge and Third Mainland to be the deepest areas. The depth profile of the route shows an average depth of 4.86 and the shallowest and deepest points to be 0.16 and 24.30, respectively.

Table 9 below shows the shallowest, deepest and average depth of the initially selected 7 priority routes for the AFD WIDE-LAG Project.

(Complete list pending from Package A for all 10 main routes, equally waiting for the bathymethry report)

Tableau 9: of the initially selected 7 priority routes for the AFD WIDE-LAG Project

Ferry Routes	Average of Depth	Shallowest	Deepest
East Line	-3.185	-1.642	-8.724
Feeder Line	-4.153	-0.716	-17.796
Mainland Central	-3.646	-0.498	-14.305
North Central Line	-1.552	-0.105	-6.372
North Eko Line	-4.003	-1.059	-17.083
North Island Line	-4.413	-1.388	-10.500
West Line	-11.262	-4.290	-15.570
AFD Average	**-5.400**	**-0.105**	**-17.796**

5.1.5 Salinity

Due to the limited exchange with marine waters, the Lagos Lagoon system experiences restricted marine and mainly low salinity, brackish and freshwater conditions. Currents in Lagos Lagoon are strongly constrained by the tidal regime and freshwater discharge from Ogun River. At high tide, incoming waters flow from the Atlantic Ocean into the harbor and the lagoon through the Commodore Channel and the Five Cowries Creek and are mainly directed towards the east. At low tide, the direction of the currents is reversed. Moreover, salinity varies substantially with the wet and dry seasons and is strongly impacted by the introduction of fresh water from rain, rivers and saline water from the ocean. Rivers Ogun and Osun empty into the lagoon through the northern and eastern corridors, reducing the salinity at these sectors tremendously and create fan-deltas. Minimal salinity values are recorded during the high rainfall months (July, August, September) and higher values are present during the dry season. In general, the western sector of the lagoon experiences higher salinity because of its interactions with the Atlantic Ocean. During the dry season, the. influx of river water is low and salinities rise to about 30‰ around the entrance channel, to ~16‰ in the southwestern area, and to 8–10% in the central part. Towards the east and near the mouth of the Ogun River, salinities decrease further. The river input, however, is so large during the raining season, that the lagoon is fresh to brackish throughout and salinities in the central lagoon area drop to 3‰, to below 1‰ in the eastern sector and to 0‰ at the mouth of the Ogun River[1].

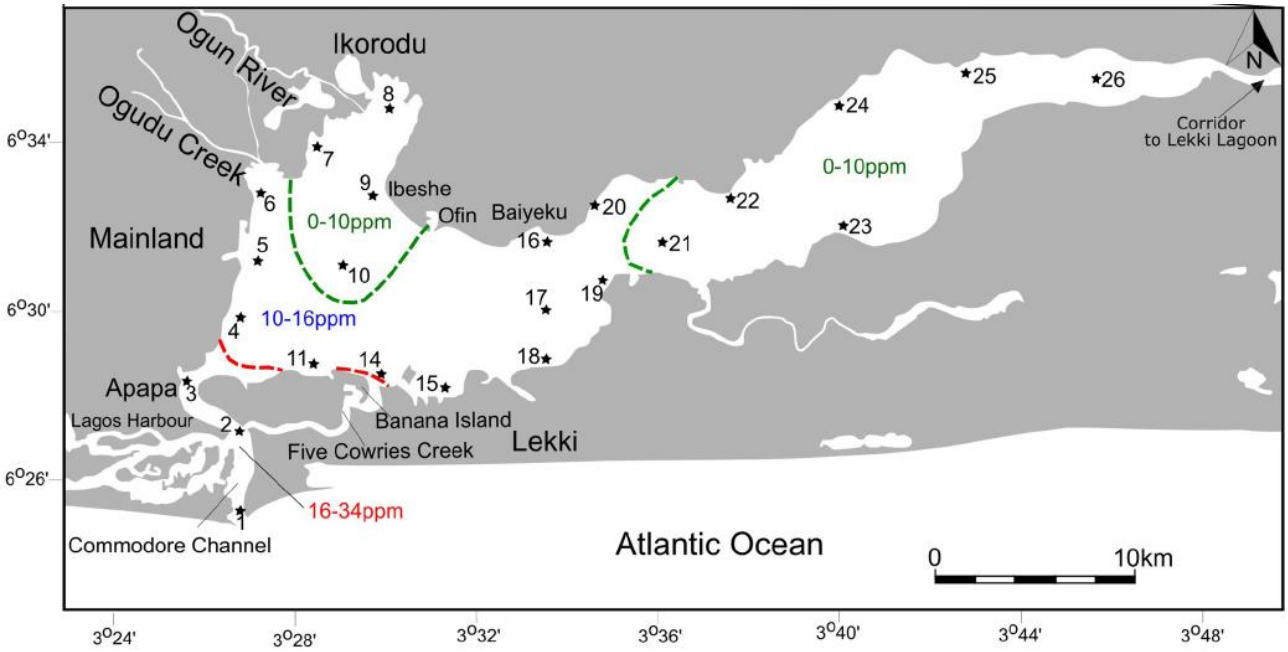

Figure 11: Generalized salinity contours in Lagos Lagoon

[1] *Fajemila et al. 2020. Spatial distribution of benthic foraminifera in the Lagos Lagoon (Nigeria): Tracing environmental pertubations*

5.1.6 Air quality

Air quality data obtained from a previous ESIA study[2] around the project area reveals through the monitoring of 9 gaseous pollutants (CO, NO, NO_2, SO_2, NH_3, H_2S, O_3, CH_4 and VOCs) that CH_4 was not detected in any of the sampling locations in the dry and rainy season as shown in figure 13 In both seasons, O_3 concentrations were 0.01 – 0.04 ppm and 0.02 – 0.10 ppm for the wet and dry season respectively. The concentration of H_2S was 0.20 ppm and 0.01 – 0.08 ppm in the dry and wet season while NH_3 was 0.01 – 0.09 ppm and 0.03 – 1.40 ppm in the wet and dry season respectively. In the dry season, NO and NO_2 levels ranged from 0.02 – 0.25 ppm and 0.01 – 0.06 ppm respectively but 0.01 – 0.08 ppm and 0.02 – 0.15 ppm in the wet season. In the dry season, CO concentrations were 1.0 – 12.30 ppm but 0.60 – 10.20 in the wet season with SO_2 levels of 0.02 – 0.14 ppm and 0.02 – 0.04 ppm in the dry and wet seasons respectively. VOCs were 0.01 – 0.26 ppm in the dry season and 0.02 – 0.12 ppm in the wet season. The 24-hour averaging period equivalents of the measured PM2.5 is 1.8 – 25.4 πg/m³ in the dry season but 25.4 πg/m³ in the wet season (Figure 13), while the 24-hour equivalent of the measured PM10 is 25.1 – 326.6 πg/m³ in the dry season it is 8.7 – 1094.6 πg/m³ in the wet season. In the dry and wet seasons, the TSP equivalents are 28.6 – 448.8 πg/m³ and 10.0 – 1398.5 πg/m³ respectively.

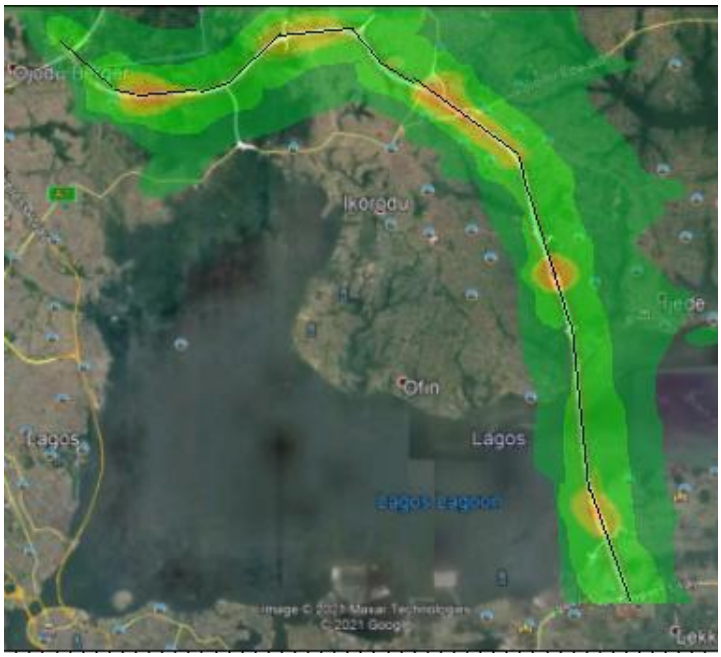

Figure 12: Location of monitoring stations of the previous ESIA around the project area

[2] *Environmental and Social Impact Assessment (ESIA) Report of the Fourth Mainland Bridge*

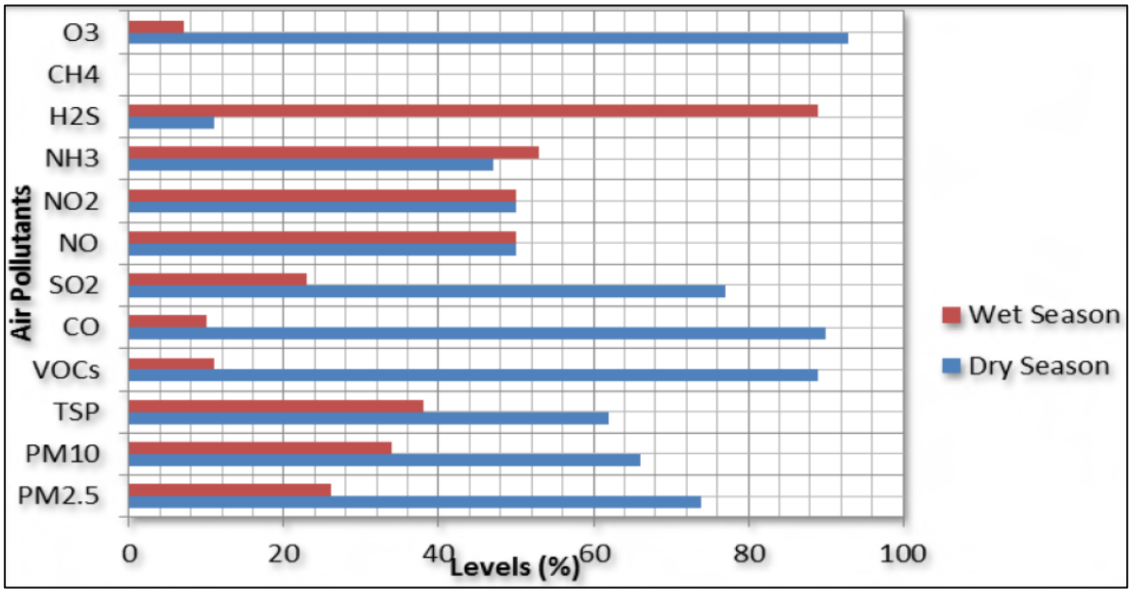

Figure 13: Air Pollutants Detection Levels around the Project Area

5.1.7 Noise levels

Ambient noise level in the project area from the aforementioned ESIA study[3] indicates that major sources of noise during the study were commercial activities, vehicular movement, boat movement on the water, electric power generation and construction activities. the minimum ambient noise levels were 28.6 – 65.2 dB(A) in the dry season but 28.6 – 65.8 dB(A) in the wet season. The measured maximum ambient noise levels in the dry season were 34.9 – 79.4 dB(A) and 34.9 – 85.2 dB(A) in the wet season with background noise levels of 28.8 – 66.2 dB(A) and 28.8 – 67.1 dB(A) in the dry and wet seasons respectively. As presented in Figure 14, the wet seasons ambient noise levels were higher than that of the dry season in about 60% of the sampling locations. The minimum ambient noise levels in the area were within the 70 dB(A) industrial area ambient noise limit in all the sampling locations both seasons, the maximum noise levels breached this limit in 8% and 12% of the sampling locations in the dry and wet seasons respectively.

[3] *Environmental and Social Impact Assessment (ESIA) Report of the Fourth Mainland Bridge*

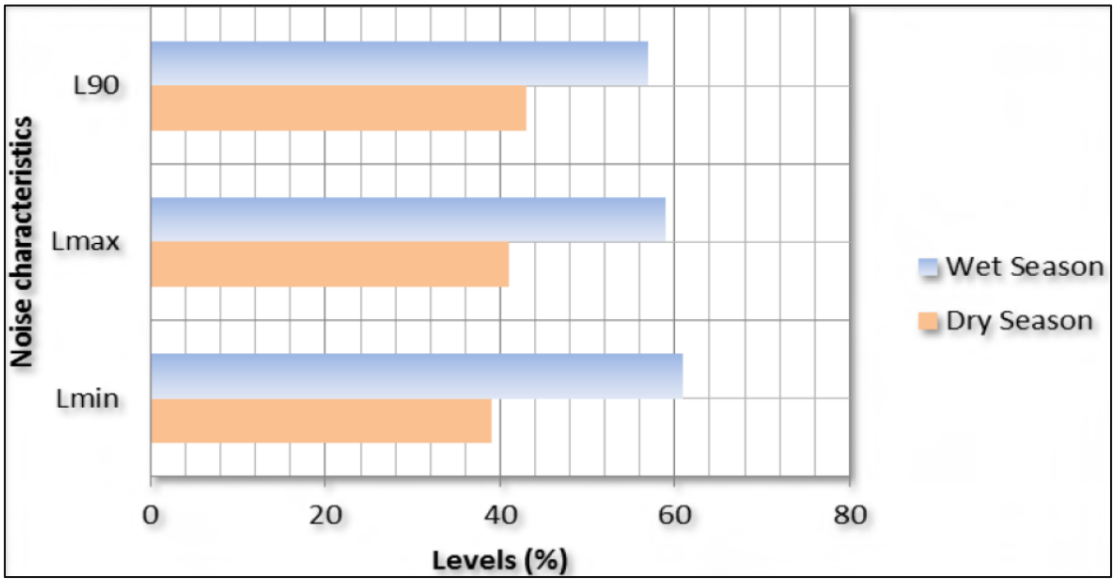

Figure 14: Seasonal Trend of Ambient Noise Levels in the project area during the study[4]

5.1.8 Climate Change Risk Assessment

This Climate Change Risk Assessment CCRA aims to identify the likelihood of future climate hazards and their potential impacts for the WIDE-LAG project and communities in Lagos. The present study has been carried out considering two types of infrastructure: floating jetty (new jetty to be built) and fixed jetty (existed pier to be rehabilitated). This assumption was made to consider the lack of more detailed input data at the time of the present study.

5.1.8.1 Projections of sea level rise in Lagos

The project called Simulation of sea-level rise under future climate scenarios for the Atlantic Barrier lagoon coast of Nigeria using SimCLIM published in 2021 has been carried out by the Department of Chemistry from Covenant University in Nigeria.

This study attempts to evaluate sea-level rise along the coastline of Lagos, Nigeria for various time horizons, i.e., 2025, 2050, 2075, and 2100 for all 4 RCP scenarios, as recommended by the IPCC, and using the SimCLIM model.

SimCLIM Modelling software is an integrated model system that helps to simulate the effects of climate change and variability, both spatially and temporally. The input data was obtained from the Coordinated Regional climate Downscaling Experiment (CORDEX), which is a World Climate Research Program (WCRP) supported structure, and its main aim

[4] *Environmental and Social Impact Assessment (ESIA) Report of the Fourth Mainland Bridge*

is to generate ensembles of regional climate projections for all continents globally. The General Circulation Model (GCM) data in SimCLIM is from Coupled Model Intercomparison Project Phase 5 (CIMP5), which is also the data source for IPCC Fifth Assessment Report (AR5). The projections of median sea level rise based on CMIP5 are presented in the table below:

Tableau 10: Median sea level rise projected values for the Nigerian Coastline (Source: Simulation of sea-level rise under future climate scenarios for the Atlantic Barrier lagoon coast of Nigeria using SimCLIM)

	2025 (median)	2050 (low – median – high when available)	2075 (median)	2100 (median)
RCP2.6	11.86 cm	24.89 cm	38.09 cm	49.22 cm
RCP4.5	11.73 cm	18.98 26.05 cm 33.22	42.62 cm	58.61 cm
RCP6.0	11.28 cm	25.04 cm	42.09 cm	62.28 cm
RCP8.5	11.92 cm	29.07 cm	53.09 cm	84.25 cm

The 2050 horizon is proposed to be used for the analysed, to reflect the possible life span of the jetties. This could be discussed when the project of rehabilitation and infrastructure development will be more advanced to re-assess the best horizon. Adaptation solutions that can accept a more significant increase would however be preferred to adapt to a further horizon.

As RCP 4.5 and RCP8.5 shows a very closed sea-level rise in 2050 (3cm of difference), RCP 8.5 can be chosen.

According to IPCC5, RCP 8.5, sea-level will rise by 30 cm in 2050 based on the study described above.

The following map shows areas that will be affected by an increase of 30cm in sea-level.

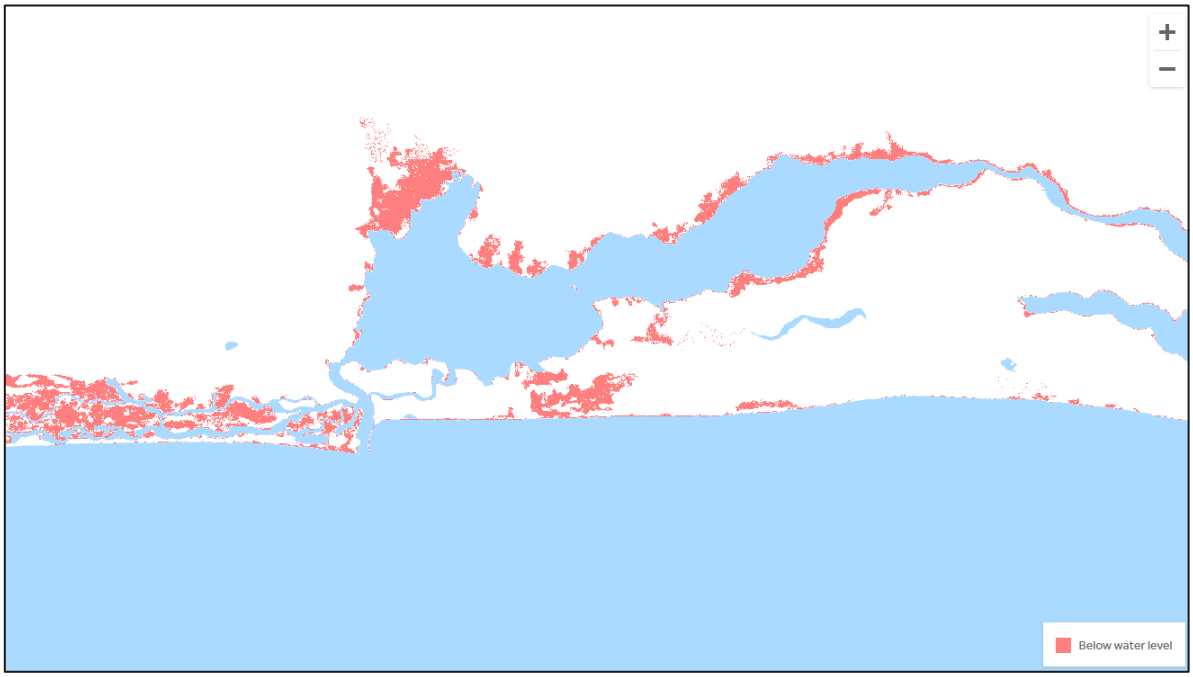

Figure 15: Land affected by a 30 cm of sea level rise (Source: Coastal Risk Screening Tool, Climate Central)

Sensitivity of the WIDE-LAG project to natural hazards

The WIDE-LAG Project risks can be amplified by climate change, and dealing with climate hazards and their evolutions can lead to damages, service interruptions or even human fatalities. As such, adaptation measures can be integrated at the design, construction, maintenance and operation level of the project.

a. Sea-level rise

Sea-level rise is the key climate change hazard identified for the WIDE-LAG project. The potential impacts on the terminals and jetties infrastructure associated with the identified climate change hazard have been developed in this section.

Any additional project infrastructures that could come from further studies during more advanced stages should be assessed regarding the potential impacts to climate change and climate hazards to integrate the relevant adaptation measures.

The following table defines potential impacts associated with sea-level rise on the two types of infrastructure involved with the WIDE-LAG project.

Tableau 11: Potential impacts associated with sea-level rise on the types of infrastructure involved with the WIDE-LAG project

Project Element	Potential impacts to the project

Floating jetty	A floating jetty follows the movement of the water level to a certain extent. Allow. A potential impact is that the jetty movement allowance is not sufficient to support sea-level rise.
Fixed jetty	A fixed jetty accepts movement of the water level to a certain extent, depending on operation constraints (types of boats…). Sea-level rise can lead to inappropriate operation level of the jetty, or even to have a jetty level at/below sea-level, leading to a occasional disruptions of maritime traffic up to a need for reconstruction.

b. Flooding

The Lagos State Government undertook a Climate Risk Assessment (CRA) through the Action Climate Plan which revealed that Lagos's population and economy are mostly at risk from floods. Flooding can occur due to subsidence in coastal areas, extreme precipitation events and/or sea level rise. Other significant climate risks include heatwaves, the urban heat island effect, erosion and thunderstorms. During a storm, if flooding occurs, the exposure to climatic hazards can be worsened by cumulative factors, including climate change sea-level rise, high tide, and storm surge, that can both cause direct additional flooding and indirectly by exacerbate river flooding.

These phenomena shall be taken in account when designing the infrastructures.

In addition, to the Lagos Lagoon coastal zone, areas in Lagos such as the entire Isheri (including the LSDPC/Isheri North GRA), Maidan, Agiliti, Owode Elede, Owode Onirin down to Ajegunle (along Lagos-Ikorodu Road) are severely susceptible to the threats of perennial flooding. Also, Eti-Osa, Ikorodu, Amuwo-Odofin, Ojo and Alimosho LGAs are equally vulnerable to the threats of flooding.

5.1.8.2 Recommendations

The following section outlines recommendations for climate adaptation measures, that could be applied to the design of infrastructure.

Tableau 12: Recommendations for climate adaptation measures

Project Element	Recommendations
Floating jetty	Consider allowance for sea-level rise for the fixing of the jetty. Piles or interlocking chains have to be designed to include the future sea-level rise at least for life duration of the asset.
Fixed jetty	- Consider allowance for sea-level rise in the level setting of the fixed jetty, or a possibility to raise the level of the jetty when required due to sea-level rise. Concrete jetty requires an increase in the level of the platform to consider climate change. If this is not included in the design of the structure, raising the level may not be possible. Additional permanent load may not be supported by the structure, and this should be anticipated at design stage. Fixed wooden jetty can be adapted to climate change. The platform may be dismantled and raised to include sea-level rise if the original structure is in good condition.

In terms of non-structural measures, during operation stages, a specific plan can be defined to avoid any access to the jetty in case of occurrence of a conjunction of storm surge and high tide, and defined mitigation measures in case traffic is interrupted due to the climatic conditions.

5.2 BIOLOGICAL ENVIRONMENT

5.2.1 Flora

Lagos is characterised by a coastal environment with three broad vegetation types: Mangrove, Secondary Rain Forest, and Freshwater Swamp). The consequence of this socio-economic growth and high urbanisation has led to conspicuous spatial and temporal change in land cover and species diversity in this region for example, the conversion of the previously dense forest cover and water bodies in Ikorodu to other land use types caused the loss of vegetation and large expansion of grasslands (grasses, farmland, and sparse vegetation) (Ajikah Linus B., 2022). The vegetation is characterised by the swamp forest of the coastal belt, which is a combination of mangrove forest and coastal vegetation developed under brackish conditions of the coastal areas and the swamp of the freshwater lagoons and estuaries.

However, It is important to note that low species abundance and diversity of flora was observed in the project area. This could be justified by the overall impact of anthropogenic activities in and around the Lagos Laggon.

5.2.2 Fauna

Lagos Lagoon provides necessary ecological habitats such as breeding and nursery grounds for a vast number of both freshwater and marine macro-fauna species especially fin fishes and shell fishes. It thus supports tremendous artisanal fishing activities. According to previous studies crustaceans especially the Copepods constitute the dominant zooplankton taxa in areas of Lagos Lagoon close to the harbor while rotifers only present in the rainy season are highly abundant close to the river mouth[5].

The blue crab, *Callinectes amnicola* occurs commonly in the Lagos Lagoon, an estuarine and it is a very important food organism caught in the coast (inshore fishery) and lagoons in West Africa.

Lagos Lagoon houses a total of 42 species of benthic foraminifera including 10 porcelaneous, 22 hyaline perforate and 10 agglutinated species. Foraminiferal assemblages recorded across the lagoon display a two-part pattern that is separated along the lines of wall structural types[6]. Agglutinated foraminifera strongly dominate in the low saline eastern and north-western portion the lagoon and foraminifera with a hyaline- perforate or porcelaneous taxa are mainly present in the marine influenced areas. The number of foraminifera per gram sediment (FN) covaries neither with pH nor with surface water temperature recordings is illustrated in figure 15.

[5] *Yakuba et al. 2012. Seasonal Variations in the Composition and Distribution of Planktonic Fauna in the Eastern Lagos Lagoon, Nigeria*

[6] *Fajemila et al. 2020. Spatial distribution of benthic foraminifera in the Lagos Lagoon (Nigeria): Tracing environmental pertubations*

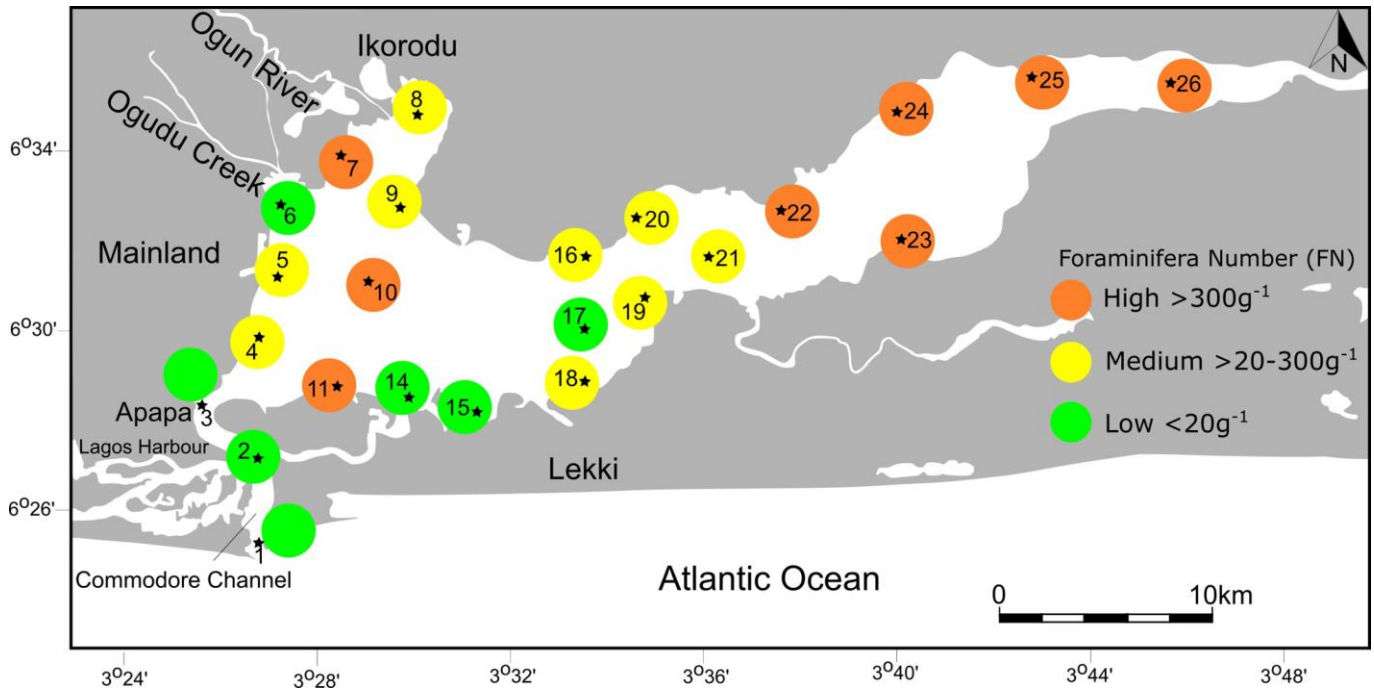

Figure 16: Number of foraminifera per unit gram of sediment (FN) in the Lagos Lagoon

5.3 SOCIO-ECONOMIC ENVIRONMENT

5.3.1 Population characteristics and demographics

Lagos State plays a vital role in the Nigerian economy and as a nation's commercial nerve centre, remains the economic, financial and commercial centre of Nigeria and the ECOWAS. Lagos economy, with an estimated population of over 25 million is larger than any other economy in the ECOWAS sub-region. It is also the hub of Nigeria and West Africa's regional financial system, which is dominated by mega banks, insurance firms, micro-finance/community banks; discount houses; and the capital market.

Tableau 13: Demographic profile of Lagos state from 2018 to 2020 (source Lagos Bureau of Statistics, 2022[7]

DESCRIPTION	2018	2019	2020
The State Size	3,577.28 Sq. Km	3,577.28 Sq. Km	3,577.28 Sq. Km
Land Mass	2,798 Sq. Km	2,798 Sq. Km	2,798 Sq. Km
Water Area	780 Sq. Km	780 Sq. Km	780 Sq. Km
Estimated Population Figure (M)	13,214,661	13,637,530	14,073,931
Estimated Population Figure (F)	12,401,042	12,797,876	13,207,408
Estimated Population Figure (Total)	25,615,703	26,435,406	27,281,339
Population Density	6,723 persons per Sq km	6,723.47 persons per Sq km	7,390 persons per Sq km
Annual Population Growth Rate	3.2%	3.2%	3.2%
Local Government with highest population projection	Alimosho - 2,987,306	Alimosho - 3,082,900	Alimosho - 3,181,553
Local Government with lowest population projection	Ibeju Lekki - 145, 263	Ibeju Lekki - 149,911	Ibeju Lekki 149,911
Average Household Size	5	5	5
GDP (Basic Price)		30.875 trillion	29.72 trillion

A socio-economic baseline survey carried out in the WIDE-LAG project area enabled to collect the following information:

Sex Disaggregation of the Respondents

The predominant respondents interviewed were female which consist 72% (158) out of the total 218 respondents while only 28% (60) are male.

[7] *Spotlight on Lagos Statistics, 2021 Edition Lagos Bureau of Statistics, Ministry of Economic Planning and Budget, The Secretariat, Alausa, Ikeja, Lagos State. February, 2022*

Tableau 14: Distribution of Respondents by Gender

	Total	Proportion
Male	60	28%
Female	158	72%
Total	**218**	100%

Marital Status

Out of the total 218 respondents, 137 (63%) are married, 65 (30%) are single, while only 5 (2%) are separated, and 11 (5%) are widowed.

Tableau 15: Marital Status by Gender

Marital Status	Female	Male	Grand Total	Proportion
Married	33	104	137	63%
Separated	4	1	5	2%
Single	14	51	65	30%
Widowed	9	2	11	5%
Total	**60**	**158**	**218**	**100%**

5.3.2 Education and occupation

Out of the total 218 respondents that were surveyed,19 (9%) disclosed that they have NO formal education, 29 (13%) have Primary education, 46 (101%) have secondary education, 62 (28%) have Tertiary education while the 7 (3%) have Vocational Education. The table below shows the results of the educational status of respondents by gender

Tableau 16: Educational Status of Respondents by Gender

Education level	Female	Male	Grand Total	Proportion
No Formal Education	11	8	19	9%
Primary school	13	16	29	13%
Secondary School	22	79	101	46%
Tertiary school	12	50	62	28%
Vocational/Technical School	2	5	7	3%
Total	**60**	**158**	**218**	**100%**

5.3.3 Economy, livelihoods, and microeconomic conditions

Employment status of the respondents

During the baseline socio-economic survey, 125 (57%) of the respondents revealed that they are self-employed, 85(39%) said they are employed either by private organizations or by government own agencies while only 8 (4%) are unemployed.

Tableau 17: Respondent Employment Status by Gender

Employment Status	Female	Male	Grand Total	Proportion
Employed	6	79	85	39%
Self Employed	50	75	125	57%
Unemployed	4	4	8	4%
Total	**60**	**158**	**218**	100%

Means of Livelihoods (Occupation) of the Respondents

Out of the 218 total respondents 69(31.7%) said they are boat operating personnel (captains, drivers, fare collectors and boat assistants), 42 (19.3%) responded that they are traders, 35 (16.1%) disclosed that they are Business owners or contractors while 32 (14.7%) claimed that they are Technicians or Artisans.

Tableau 18: Occupation of Respondents by Gender

Occupation	Female	Male	Grand Total	Proportion
Business/Contractor	10	25	35	16.1%
Civil Servant	1	14	15	6.9%
Farming		1	1	0.5%
Fishing	1	1	2	0.9%
Others	2	17	19	8.7%
Retired	1	1	2	0.9%
Technician/Artisan	5	27	32	14.7%
Trading	37	5	42	19.3%
(blank)	1		1	0.5%
Boat Operating Personnel	2	67	69	31.7%
Total	60	158	218	100.0%

Income Levels

The income levels captured indicates that 88 (40%) of the respondents earn income within #20,000-#50,000 Naira , this income range has the highest frequency among respondents. The income range with the second highest proportion among respondents is the 50,000 - 100,000 which has 34% (74 respondents). There are fewer respondents in the lowest income brackets. There 6 respondent who do not earn any income.

Tableau 19: Income Distribution among Respondents by Gender

Estimated Income Level(In naira)	Female	Male	Grand Total	Proportion
20,000-50,000	23	65	88	40%
50,000 - 100,000	18	56	74	34%
Above 100, 000	4	30	34	16%
Less than 20,000	13	3	16	7%
(blank)	2	4	6	3%
Total	60	158	218	100%

Public utilities and infrastructure

A significant proportion of the 218 respondents recruited into the socioeconomic survey had access to public electricity. 176 PAPs representing 80.7% of total respondents, 32 (14.7%) of the respondents use generators as power supply source, 4(1.8%) of the respondent use Solar power-generating methods while 5 (2.8%) of the respondents do not have access to power supply.

Tableau 20: Access to Electricity of Respondents by Gender

Power Supply	Female	Male	Grand Total	Proportion
Public Electricity	52	124	176	80.7%
Generator	6	26	32	14.7%
No power supply	2	3	5	2.8%
Solar		4	4	1.8%
Total	60	158	218	100.0%

Portable water

There is a diverse range of source from which respondents who were interviewed obtain water for household use. Most common sources include; Personal or Private Borehole 29%, Community Bore hole 12%, Piped water in residence/compound 24% and Own hand-dug well in residence/compound 19%. And others as shown in the table below

Tableau 21: Respondents Access to Portable Water in Rainy Season by Gender

Source of Water in Rainy Season	Female	Male	Grand Total	Proportion
Community Bore-hole	8	19	27	12%
Others		10	10	5%
Own hand-dug well in residence/compound	9	33	42	19%
Personal borehole/buys from private borehole	25	38	63	29%
Piped water in residence/compound	11	41	52	24%
Public hand-dug well system	3	7	10	5%
Public tap	4	8	12	6%
River/Creek/Stream/pond water		2	2	1%
Grand Total	**60**	**158**	**218**	**100%**

Tableau 22: Respondents Access to Portable Water in Dry Season by Gender

Source of Water in Dry Season	Female	Male	Grand Total	Proportion
Community Bore-hole	8	19	27	12.4%
Others	5	17	22	10.1%
Own hand-dug well in residence/compound	9	34	43	19.7%
Piped water in residence/compound	12	45	57	26.1%
Public hand-dug well system	2	7	9	4.1%
Public tap	4	8	12	5.5%

Source of Water in Dry Season	Female	Male	Grand Total	Proportion
River/Creek/Stream/pond water		1	1	0.5%
Vendor/buys from private borehole	20	27	47	21.6%
Grand Total	**60**	**158**	**218**	**100.0%**

5.3.4 Land access in the project area

Land Ownership and Duration of Stay

Land Ownership

It was gathered from the survey data that majority of the respondents do not own land around the project area 128 (59%) while 41% own land.

Tableau 23: Land held by Respondents in the Project Area by Gender

Length of stay in community	Female	Male	Grand Total	Proportion
11-15 years	6	8	14	6%
1-5 years	10	40	50	23%
16-20 years	3	11	14	6%
6-10 years	6	18	24	11%
Above 20 years	28	57	85	39%
Less than 1 year	4	8	12	6%
Non-Resident	3	16	19	9%
Grand Total	**60**	**158**	**218**	**100%**

5.4 EXISTING CONDITIONS OF ROUTES, TERMINALS AND JETTIES

5.4.1 General aspects

5.4.2 Corridor 1 : West Line

The West Line is a 20.5 Km route originating from Ebute Ojo terminal to Marina terminal. stopping at Ijegun Egba, Liverpool, Alex. Currently, water and sediment at Liverpool are polluted (close to Apapa; one of the largest industrial estates in Lagos). The average water depth of the West Line is -11.2 m with -4.2 m to -15.57 m as shallowest and deepest depth respectively. Dredging along this route with respect to the shallowest depths around Apapa and Ebute Ojo represent potential sources of water and sediment pollution due to resuspension polluted sediments. The current states of the stops along this route is described as follows:

Ebute Ojo Terminal (operational)

This terminal situated in Ebute Ojo under Ojo Local government, owned by state government but operated by Sifax Group in affiliation with any interested boat owners. Ebute Ojo Ferry Terminal is the main water transportation hub of the Ojo axis. It will complement the Blue line Rail currently under construction with the goal of multimodal transportation. It has a floating Jetty, parking lot, water treatment plant, 60Kva generator, 10,000 litres water tank and a waiting area. Water hyacinth around the jetty. The floating Pontoon needs rehabilitation. Activities around the terminal are sand mining and trading. Existing community infrastructures are primary and secondary school, Ojo local Government, Church, Hotel. Waste is managed by informal sector 'Aboki' The landmark around this terminal is the Alaba International Market.

Figure 17: Ebute Ojo Car Park and Mining Activity Around the terminal

Figure 18: Ebute Ojo Terminal

Ijegun Egba jetty (Operational)

This jetty is located at ijegun egba. Ferry This is a newly built and government owned terminal with private operators. This Jetty is crucial to the decongestion of the Lagos Badagry Expressway as it serves as an alternative and quick means of getting to the Island. The jetty landmark is the oil bond company. ·It is a floating jetty, it has a parking lot, a gate house, water treatment plant,·60Kva generator and ·10,000 litres water tank. Within the terminal is Ibile oil and Gas. Activities around the terminal are trading, sand mining, POS stand, Oil selling and offices. Terminal is in both industrial and residential area. Communities close to the ferry terminal are Satellite, Ori-Ade and Abule-Ado. Existing community infrastructures are at Ori-Ade such as schools and primary health centre. There is no school nor PHC at Ijegun Egba community. Community settlement pattern is clustered. Poor waste management practices are seen at the ferry terminal for there are debris at the edge of water.

Figure 19: Ijegun Egba Terminal and Activities around the terminal

Liverpool jetty (Operational)

The Liverpool jetty is situated in an industrial area and it is one of the busiest jetties. It is located in Liverpool under Apapa local government. It is a strategic location and provides a quick and alternative means of avoiding the Apapa gridlock. It has a newly built jetty structure which has not been commissioned. The facility is owned by the state government but has independent operators whose operations are under the umbrella of two different associations which are ABOATI and Maritime. Route serviced by ferry operators are of two groups: Wooden boats plough Tomaro, Ituagan Igolejo, Isoda and the plastic boats plough Badagry, Ojo, Etegbin, Agbara, Ibiye, Morogbo, CMS. The major activity around jetty terminal is trading, in the market named Sunni Market Liverpool Underbridge. Ajegunle is the Community close to the jetty. Not far from the facility is a car park for the market. The Jetty has a waiting area and no toilets.

The environmental Issues here are poor waste management, water pollution (discharge of sewage in water, oil spillage through manual refilling of fuel while on motion and at the jetty.

Figure 20: Liverpool jetty and Market

Alex

Added jetty; Description will be completed in the final report.

Marina

Terminal is owned by the federal government NIWA but has different private ferry that operate in the terminal namely; B Texas connection Ferry, Seacoach, Lag Ferry, Seawater Ferry, Terminal is located in CMS under lagos Island local government. Ferry route are Liverpool. Tapabi, Ikorodu, Port Novo, Badagri Ibeses, Ilase, Basokoji. Kolakoji. Land marks are Federal Mortage Bank Nigeria, CMS BRT bus stop.

There is a medical emergency point near the terminal as shown in the figure below and the main activity is trading.

Figure 21: CMS/Marina Terminal

5.4.3 Corridor 2: Main Centrale Line

The Mainland Central Line is a short route of 9.95 Km route originating from Festac jetty to Liverpool jetty stopping at Mile 2 terminal, Coconut and Tincan Island jetties. Areas very high settlements along Mile 2 terminal to Festac and waste dumps along the banks is a source of water and sediment pollution and water hyacinth proliferation already abundant in areas like Mile 2. Fishing is one of the main activities along this route. The average water depth of the Main Central Line is -3.6 m with -0.5 m to -14.3 m as shallowest and deepest depth respectively. The current states of the stops along this route is described as follows:

Festac jetty

This site was not visited due to accessibility issues) Description will be provided in the final report.

Mile 2 ferry terminal (Not operational)

The jetty station is named Mile 2 Toba junction Jetty station. Facility is newly built owned by NIWA but operations are controlled by Simpton cooperation. Mile 2 jetty has toilet facility which runs through the building, however where the waste was channelled was not declared because the head of operation was not on ground at the time of visit. Jetty operators are under Maritime workers union of Nigeria maza-maza unit. Activities around jetty station are sand mining and trading. There are shops behind jetty station. Poor waste management at the jetty area and waste dump at the bank leads to water charged with wastes.

Figure 22: Mile 2 jetty station and activities around jetty station

Coconut jetty

Coconut jetty is situated in both residential and Industrial area at coconut community in Amuwo-Odofin Local Government Area of Lagos. Jetty space is owned by the sand miners but they do allow ferries to drop and carry passengers. The jetty station is just an exit for ferry but their base is at Igbologun. The available structure in the area is for the sand miner association. The environment is littered with waste indicating poor waste management. The jetty is operated by private Individual registered under ABOATI Igbologun Boat owner Association. The landmark is Integrated Oil & Gas Ltd and Amuwo-odofin bridge. Close Community is Ajeromi-Ifelodun which is across the Amuwo-Odofin bridge. Sand mining is the major activity at the area with trading activities food shops. Existing communities' infrastructure include a market, school, mosques, and church.


Figure 23: Activities around Coconut Jetty

Tincan

Tincan Jetty also known as Temidire Jetty is a NIWA owned jetty, situated in Temidire community. Tincan has two jetty stations opposite each other, one has no good structure while the other has but they operate together. The one with a moveable structure is littered with wastes such as nylon, plastic and emits unpleasant odour while the other with immoveable structures is neat with no odour. The jetty is operated by IKO groups of company which is the combination of three persons which are Ifelodun Ogungbe and Owoseni. The community has no hospital, nor market but has 17 schools. Tolulope is the community around the jetty. Major activities around the jetty include trading and transportation (Tricycle). The landmark to the jetty is INEC office.



Figure 24: Tincan jetty

Liverpool jetty

Liverpool jetty is described in section 5.4.2 above.

5.4.4 Corridor 3: North Eko Direct Line

The North Eko Direct Line is one of the longest routes covering 23.3 Km originating from Ikorodu terminal to Marina terminal with a stop at Ebute Ero jetty. The average water depth of the West Line is -4.0 m with -1.06 m to -17.1 m as shallowest and deepest depth respectively.

Ikorodu

The Ikorodu ferry terminal is located in Ebute-Ipakodo, in the Ikorodu Local government. The terminal is owned by the State Government but ferry owners operate individually and registered under different associations. There are 3 functioning associations in this terminal namely; ABOATI, United Ferry Transportation and Integrated Ferry Transportation. It concessioned to Equus Logistics Limited. The Ikorodu Terminal is the main water transportation hub for the Ikorodu sub-region, and it is crucial to the multimodal transportation plans to drastically reduce travel time and road decongestion. It is a well-structured and maximally used facility. It has a ticketing area, concrete quay, parking lot, waiting area, supermarkets, pharmacy, restaurant, and functional toilets. Major landmarks for commuters from Ikorodu garage, Ketu-Ajejunle is Ebute and Ogolunto bus stops respectively. Nearby communities are Igbogbo, Ijede,and Itamaga. Existing infrastructures in Ebute-Ipakodo include the General Hospital, Nigeria Port Authority Terminal, school, Church and Mosques. LAWMA manages wates in the community.

Activity along the terminal routes from Liverpool is sand mining and, on the water, surface was found hyacinth which was not many.

Environmental Issue: Water flows in during heavy rain and water hyacinth proliferation.

Ikorodu Ferry Terminal

Figure 25: Ikorodu Ferry Terminal, activities around and within the terminal

Ebute Ero

This jetty is owned by Lagos State government, under lagos Island local Government located in Elebute ero elegbata,. Activities around project site include trading, mini market, Gambling, etc. The ferry terminal has a skeleton structure which has not been completed nor covered. It has a ticketing building. The terminal is located between the Kata and Eko bridge whick are are major landmarks. After this jetty is the NIWA terminal which is still under construction. Waste management in the community and around the jetty are being managed by LAWMA. The jetty is located in both residential and industrial area. Nearby communities are Apogbon, Oke-aran, Gorodomu and Idumota. Existing infrastructure include Ebute Ero Market, public toilet, vigilante group of Nigeria, Lagos Island Security post. There is also a mini sea market at the jetty station. Jetty operators operate under maritime workers union Nigeria. There are 40 boats loading at the station daily. The station also has Lag Ferries with the individual owned ferries.

Environmental issues are noise pollution because of vehicles moving on the road side.

Figure 26: Skeleton Structure at Ebute Ero, activities around the Jetty

Marina:

Marina terminal is described in section 5.4.2 above.

5.4.5 Corridor 4 : North Island Line

The North Island Line is one of the longest routes covering 22.91 Km originating from Ikorodu terminal to Five Cowries Terminal with stops at Lekki 1 and Addax. According to the proposed dredging for ferry routes (FCN, 2008 and the Beckett Rankine Chart) significant dredging is required along this route and particularly from Banana Island and to the Ikorodu terminal where water depth is very shallow. The average water depth of the North Island Line is -4.4 m with -1.4 m to -10.5 m as shallowest and deepest depth respectively.

Ikorodu Terminal

Ikorodu terminal is described in section 5.4.4 above.

Lekki 1 Jetty

Lekki jetty is a private owned jetty for exit of commuters from Ikorodu. It is situated in an Industrial area. The terminal is beside DHL office. Activities within and around jetty include trading, food business. There is ongoing construction beside the jetty and no structure or shed for Ferry Operators.

Addax (Operational)

Addax Jetty serves as the main water transportation infrastructure for Victoria Island. This jetty is operational and controlled by the Federal agency (NIWA). Existing waiting area but damaged concrete jetty. There is no building to protect commuters from weather conditions and no parking lot. Commuters that work in Victoria Island usually prefer to disembark here rather than Five Cowries as it enables commuter to get to their respective places of work quicker than going through the Five Cowries Terminal located in Ikoyi.

Figure 27: Addax Jetty

Five Cowries Terminal

Facility is well structured, situated in Falomo under Ikoyi Local Government. It is owned by state government but operated by individual ferry owner registered under an association. Five Cowries Terminal is the prime water transportation hub for Ikoyi and Victoria Island, it also doubles as the operational base and Headquarters of the Authority. • The terminal has a floating jetty, a parking lot, a waiting area, functional toilets, cafeteria, a fuel dump and a 250 KVA Generator. Located beside close to the MTN office. This terminal is in a commercial area and engaged LAWMA for waste management. Presence of solid waste mainly plastics, absence of water hyacinth.

Figure 28: Five Cowries Terminal

5.4.6 Corridor 5: East Line

The East Line is one of the longest routes covering 28 Km originating from Badore terminal to Five cowries terminal with stops at Oke Ira Nla, Lekki 1 and Addax. Dredging is required along this route, particularly in the East between Badore, Oke Ira Nla, Lekki 1 terminal. Route entrance to Falomo crosses a very deep burrow pit >20m. The average water depth of the East Line is -3.2 m with -1.6 m to -8.7 m as shallowest and deepest depth respectively. Danger to small vessels as they are coming from >4m to the abrupt change in depth due to dredging to sandfill Orange Island. The road access and public transport to Ijede are very poor. The road access to Falomo, Badore and Lekke is excellent whereas public transport to Badore is good, to Falomo satisfactory and to Lekke is poor.

Badore Terminal

The terminal is owned by State Government but ferry operators are independent. It is concessioned to Equus Logistics Limited. The station is well structured but operators do not stay on ground because of low commuters. It is a concrete jetty, with a Ticketing area, waiting area, parking lot, toilets and Lettable areas.

Nearby communities are new road, Tanzan, Oke-ira Nla. Ferry terminal has a car park. Activities around the station are transportation (Tricycle) and trading. Badore ferry terminal is situated in a residential area. The existing community infrastructures are School, Primary Health centre, church, mosque, pharmacy, water corporation, NIPOST. Community settlement pattern is clustered. The community also has a Baale (Chief Waliub Omolayo Adeniran).

Drainages in the community are partially covered while some areas are opened. Community engages LAWMA in waste management, though, wastes are gathered on the walkway for easy pick up by LAWMA Agency. Some drainages are blocked with various wastes such as plastics.

Environmental Issue include poor waste management, air pollution in areas where wastes are gathered before pick up, Likely to experience flood during heavy rain because of blocked drainages

Figure 29: Badore Ferry Terminal

Oke Ira Nla

The Oke Ira Nla jetty is owned by Lagos State Government but operated by Ifesowapo Ferry transport association which is a sub section of ABOATIN. It is situated in residential a area.

Different activities around the jetty are filling station, food canten, Gamblin and transportation (tricycle). The settlement pattern in the community is clustered

Oke-Ira Community has a figure leader (Baale). The community does not have market but visit Badore market. The community has hospital, though far from the jetty, a church and mosque.

The environmental Issue include water pollution- dirt was observed on water surface, experience flood during overflow of river, though not intense. Waste generated are managed by the informal sector 'Aboki'

There is an abandoned construction project of jetty station. Jetty users pleaded for it to be completed.

There would be sources of income and livelihood for people selling within the project area if jetty site is to be expanded. Also, livelihood of ferry operators would be affected if new and well-constructed ferry are made available.

Figure 30: Oke Ira Nla Jetty

Lekki 1

Ikorodu terminal is described in section 5.4.5 above.

Addax

To be described in section 5.4.5 above.

5.4.7 Corridor 6 : North Central Line

The North Central Line is a 20.5 Km route originating from Oworonshoki to Five Cowries Terminal with stops at Bariga, Ebute Ero, Flour Mills and Marina. There is a high population density along this route with a total route population of 2,855,298 across a cumulative number of 44 slums/IDPs within 5 km. The average water depth of the North Central Line is -1.5 m with -0.1 m to -6.4 m as shallowest and deepest depth respectively. The Third mainland bridge has an average height of 8-10 meters around the open water segments. The heights are variable and span from around 2m in the very shallow areas (close to Makoko timber shed) to 10m in the open channel areas. Oworonshoki end of the Third Mainland Bridge is quite low because it is a deck-on pile.

Oworonshoki (Operational)

Oworonshoki jetty is privately owned by Omonre Company Services but yet to start operations. It is situated in between the precious seed community and Sand beach mining. The Jetty is currently used by shipping company. Activities around the jetty include sand mining and trading such as sales of provisions, POS shop, etc.

Community around the jetty is the precious seed community, established in 1998. The settlement pattern is clustered and the community has leaders (chairman, secretary, etc.).

The community has no public school, No public hospital but there is a private hospital in the community. The community goes to the Bariga market. Community does not have any structure nor future plan, no Baale nor king. The major issue in the community is unavailability of water.

Community is built closed to the river and uses waste generated to fill the water. Extreme end of the community is littered and wastes are channelled into the water. The River edge contains accumulated wastes such as takeaway packs and various plastics. River plants are found at the edge of the river.

Oworonshoki has a king. and the community is populated by Yorubas, Egun, Tapa, Calabar, Igbo and Nije. The jetty landmark is Majok Filling station.

Figure 31: Oworonshoki Jetty

Figure 32: Precious Seed Community Using Waste to Fill Up the Water and Sand Beach at Oworonshoki Jetty Area

Bariga (Operational)

Bariga Waterfront Jetty is a private owned jetty being operated by Lagos Green Transport situated in Ebute- Ilaje community, Bariga in Bariga Local Government Area of Lagos. It is a well-structured facility which is also used as recreation and entertainment centre often opens from Wednesday till end of the week. However, ferry is not currently in operation for communal use but available for charter and cruise. Current major commuters are DHL and Egbin staff.

Community Settlement pattern are linear and clustered. The community uses Odo- eran market, the accessible primary health centre is situated at PHC at Arobabde, school, church. Ilaje community starts from Pako Bus stop and end at Odunnsi Bus stop. The project area was reported not to be affected by flood but some parts of the area being affected. Community engaged LAWMA for waste management. Drainage system along the route is covered with wood plank;

Major landmarks are the Ilaje Bus stop, Ebute- Ilaje and Majok Filling Station

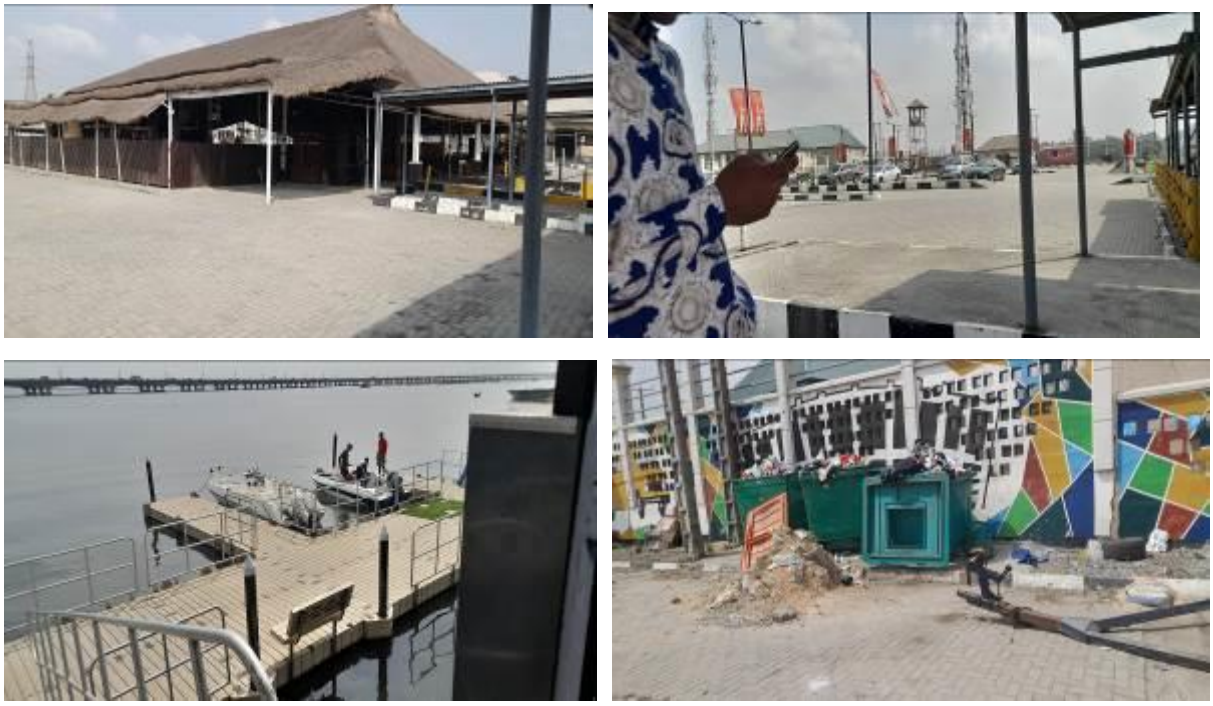

Figure 33: Bariga waterfront Jetty & activities within the jetty

Ebute Ero Jetty

The Ebute Ero jetty has been described in section 5.4.4 above.

Flour Mills

Added jetty; Description will be completed in the final report.

Marina

The Marina terminal has been described in section 5.4.2 above.

Five Cowries Terminal

The Ebute Ero jetty has been described in section 5.4.5 above.

5.4.8 Corridor 7 : Ijede - Badore Line

The Ijede - Badore Line is the shortest route covering 5.6 Km from Ijede to Badore. The water depth is shallow generally mainly towards the Badore terminal.

Ijede

This site was not visited due to accessibility issues) Description will be provided in the final report.

Badore

Badore jetty has been described in section 5.4.5 above.

5.4.9 Corridor 8: Baiyeku – Oke Ira Nla Line

The Baiyeku – Oke Ira Nla Line is among the shortest routes covering 5.6 Km from Baiyeku to Oke Ira Nla. The water depth is generally shallow mainly towards the central section of the route.

Baiyeku

This site was not visited due to accessibility issues. Description will be provided in the final report.

Oke Ira Nla

Oke Ira Nla has been described in section 5.4.6 above.

5.4.10 Corridor 9: East Island Line

The East Island Line is a 19.8 Km route originating from Baiyeku to Five Cowries Terminal with stops at Lekki 1 and Addax. The water depth is shallow from Baiyeku to the centre of the Lagoon and deep from Banana Island at the entry of the Lekki terminal to the Five Cowries Terminal.

Baiyeku

This site was not visited due to accessibility issues. Description will be provided in the final report.

Oke Ira Nla

Oke Ira Nla has been described in section 5.4.5 above.

5.4.11 Corridor 10: North Line

The North Line is a 29.7 Km route originating from Ikorodu to Liverpool with a stops at Flour Mills jetty. The average water depth of the North Central Line is -11.3 m with -4.3 m to -15.6 m as shallowest and deepest depth respectively.

Ikorodu

The Ikorodu terminal has been described in section 5.4.4 above.

Flour Mills

Added jetty; Description will be completed in the final report.

Liverpool

The Liverpool has been described in section 5.4.4 above.

5.5 METHODOLOGY FOR BASELINE DATA COLLECTION

The procedure adopted for completing this ESIA involved site identification and characterization, consultation with stakeholders and experts, literature review, field sampling, laboratory analysis and interpretation, collection of data, impact identification and evaluation, environmental impact analysis, impact mitigation and environmental management planning. The preparation of the report was performed by a multi-disciplinary team. The team selection was based on characteristics of the project environment, experience and subject discipline of each specialist. A team leader coordinated the tasks of team members towards achieving set targets as well as liaison with client.

This EIA study was conducted in compliance with Federal Ministry of Environment requirements. The methods adopted in performing specific tasks of the EIA for the proposed project are indicated the succeeding subsections.

5.5.1 Field visits and desktop studies

The information gathered from desktop research and site identification were used in categorizing the major habitats in the area, and their respective sampling requirements defined to effectively collect qualitative and quantitative data of the project area. The fieldwork covered all relevant elements of the ecological and socio-economic environments.

In order to efficiently deliver improved project sustainability and protect the interest of the affected communities, especially the poor and vulnerable, an elaborate public consultation process was undertaken as part of this ESIA. It involved engaging each identified community in a dialogue characterized by two-way information flow. Consultation allowed obtaining from the affected population, information that might influence the decision-making process in scoping, project design, mitigation, monitoring and management plans, as well as the analysis of alternatives to be implemented.

5.5.2 Sampling design

Site veriifcation and sampling pending from the FMEnv

To be completed in the Final report.

5.5.3 Data analysis methods

Site verification, sampling and analyses pending from the FMEnv

To be completed in the Final report.

5.5.4 LASWA Environmental and Social, Gender capacity assessment

A capacity assessment is usually the first step in a capacity development process. A full understanding of an organization's current capacities, performance and immediate and future capacity needs is a prerequisite before any capacity development support – with the ultimate aim to improve the capacities of the organization to function efficiently and effectively and to attain sustainable results – is provided. By stimulating reflection, learning, and dialogue, an organization's overall strengths and weaknesses are identified, while constraints, challenges, and gaps are also examined.

a. Objectives

The objective of this Environmental, Social and Gender capacity assessment is to;

- Review the organizational strength and capacity of LASWA for integrating environmental, social and gender considerations into policy, program, project decision-making and project implementation on the WIDE-LAG project.
- Support LASWA in identifying and analysing constraints and major capacity gaps that may impede the effective mainstreaming of environmental, social and gender safeguards in the implementation of the WIDE-LAG Project.
- Use the capacity assessment to develop recommendations that will inform targeted capacity building and training for LASWA staff

b. Methodology

The main source of information for this report is through Desk Review, Questionnaire and Key Informant Interview.

Desk Review- The desk review helped to gather qualitative and quantitative background information on the history and creation of LASWA, its legal and administrative framework. This involved review of existing policies and documents on LASWA and the WIDE-LAG project.

Questionnaire- A quasi-structured questionnaire was administered on the staff of LASWA. Questions were drawn from four main areas of evaluation which include, organizational planning, human resources, environmental and social capacity and gender capacity. See Appendix A for questionnaire.

Key Informant Interview- The General Manager of LASWA was also interviewed to provide further insight into the organization's capacity and needs.

c. Ethical Considerations

Data protection and confidentiality of the respondents were ensured by using informed consent practices. All respondents were fully informed on the purpose of the data collection.

d. Findings

This section will focus on the outcomes of the E&S, Gender capacity assessment of LASWA as follows:

Environmental and Social Capacity Assessment

Findings revealed that none of the staff members had received any formal training or orientation on environmental and social issues neither had there been any management, department nor personnel assigned to E&S management role. Also, none of the staff member had taken environmental related training in the last two years nor currently on environmental and social issues courses/training.

This capacity assessment revealed that there is currently no environmental or social safeguards policy document available in the agency to guide its operation, however and Environmental and Social Action Plan is currently being developed. Table 24 below presents the capacity chart for LASWA staff

Tableau 24: Environmental and Social Capacity Chart for LASWA staff

Environmental and Social Capacity	Yes	No	Comments
Prior Formal Training on E&S		✓	
Ability to identify E&S safety issues		✓	
Existing Public Health Plan and workers Safety		✓	
Knowledge on Environmental Pollution Monitoring	✓		Informative knowledge
Capacity to conduct socio-economic assessment	✓		Informative knowledge
Knowledge of climate change and adaptations	✓		Informative knowledge
Environmental Audit	✓		Informative knowledge
Environmental Management Plan	✓		Informative knowledge
Knowledge of Environmental Policies and regulations in Nigeria	✓		Informative knowledge

Every respondent interviewed showed preference for face to face training and courses, face to face workshops, moderated online courses with a tutor and coaching as a means to learn about environmental and social issues.

Gender Capacity Assessment

Findings revealed that there has not been any formal training /orientation on Gender issues nor had there been any gender related training or courses in the last two years, neither is any staff currently taking courses on gender. There is an on-going support from gender unit/ focal point in the agency.

Knowledge on Gender Equality and Women's Empowerment

Gender concerns influence everyday work to a significant extent therefore gender mainstreaming is very relevant to the mandate of LASWA and very relevant to the implementation of the WIDE-LAG project. Every staff member of LASWA has an informal of the provisions of international conventions on gender equality and the empowerment of women, including difference between gender mainstreaming and equal representation of women.

Every member of staff has informative and informal about Gender analysis for strategic planning, collections and analysis of sex-disaggregated data, integration of gender into strategic planning processes including results statements and indicators, gender-responsive monitoring and evaluation gender sensitive communications (images, publications, language), inclusion of gender into policies, administrative instructions and other directives on finance/procurement/IT/Human resources/management services/security, inclusion of gender into administrative/operations documents (ToRs vacancy announcements, action plans, reports, etc.), policies and plans for the equal representation of women and know about gender responsive budgeting and tracking of resources, gender-responsive planning (e.g. development of project or programme documents), gender- specific programming (e.g. inclusion of gender in planning documents such as country programme reports), training/capacity development for gender equality and gender responsive audit.

Finding also revealed that there is not Gender Policy or Gender Action plan guiding the operations of the agency.

Recommendations

Based on the analysis of the findings, the following recommendations are suggested with the objective to enhance and improve the environmental, social and gender capacity of LASWA in order to effectively implement the WIDE-LAG project.

- More should be done to provide support for LASWA to appropriately implement its strategic plans effectively.

- Formal and In-depth Environmental, Social and Gender training should be provided to all LASWA personnel.

- There is need for LASWA appoint or employ Environmental Specialist, Social Specialist and a Gender Specialist for the implementation of the WIDE-LAG project.

CHAPTER VI

6 — STAKE HOLDER CONSULTATION AND DISCLOSURE

6.1 OBJECTIVES OF THE CONSULTATIONS

6.1.1 Stakeholder identification and mapping

Stakeholders to be consulted in the framework of the WIDE-LAG project were identified based on previous ESIA projects in the project area including stakeholder consultations previously carried out by Adam Smith international. These include government institutions, educational institutions, affected communities, trade unions and other associations. The table below presents the main stakeholders identified in the WIDE-LAG project.

Tableau 25: Identified Stakeholders and connection to the WIDE-LAG Project

Stakeholder Group and interest in the Project	Stakeholder Name	Stakeholder Level			Connection to the Project
		National	State	Local	
Government Authorities	Federal Ministry of Environment	*			National government authorities are of primary importance in terms of establishing policy, granting permits or other approvals for the Project, and monitoring and enforcing compliance with Nigerian law throughout all stages of the Project life-cycle.
	Nigerian Ports Authority	*			
	National Inland Waterways Authority (NIWA)	*			
	Nigerian Maritime Administration and Safety Agency (NIMASA)	*			
	Lagos Waterways Authority (LASWA)		*		Lagos State Ministries, Agencies and Local Government Councils will be informed of progress and plans in their areas to consider the Project in their regulatory functions.
	Lagos State Environmental Protection Agency		*		
	Lagos Metropolitan Area Transport Authority (LAMATA)		*		
	Lagos State Ministry of the Environment		*		
	Lagos State Safety Commission		*		
	Lagos state Ministry of Transportation		*		
	Lagos Waste Management Authority		*		
	Lagos Ferry Services (LAGFERRY)		*		
	Local Government Authorities (LGAs) or LCDAs Representatives			*	

Stakeholder Group and interest in the Project	Stakeholder Name	Stakeholder Level			Connection to the Project
		National	State	Local	
Trade Unions and Other Associations	National Association of Tourism Boat Owners and Water Transporters (NATBOWAT)		*		Trade unions, business owners, business associations, tradesmen and artisans will be informed of the project, plan and progress to support the project.
	Association of Tourist Boat Operators and Water Transporters of Nigeria (ATBOWATON),		*		
	Waterfront Boat Owners and Transporters Association of Nigeria (WABOTAN),		*		
	Maritime Workers Union of Nigeria (MWUN),		*		
	Integrated Ferry Operators,		*		
	United Waterways Ferry Operators and Ifesowapo Ferry operators.			*	
	Dredgers			*	
	Private Jetty Owners			*	
	Ferry Operators			*	
Potentially affected communities	Ikorodu, Mile 2, Oke Afa, Isolo, Sangotedo, Ajah etc. Community heads, Community Development Associations etc.			*	Communities that may be directly or indirectly affected by the proposed Project and its activities including physically disabled, mobile vendors, NGOs
Educational Institutions: Schools, Colleges, Universities	To be determined			*	Being potentially impacted by the proposed project
Healthcare Service providers: Primary healthcare, clinics, hospitals, medicinal / pharmacy shops,	To be determined			*	
Non-Governmental Organizations (NGOs)	To be determined			*	Those who are concerned by the proposed project

6.1.2 Consultation approach and methodology

The public consultation and stakeholders' engagement methodology for this ESIA and the proposed LASWA project activities includes the provision of a full opportunity for involvement and engagement of all stakeholders to share their view and take part in decision making throughout the project lifecycle. The concerns raised by the stakeholders are documented and incorporated in this ESIA report to be considered throughout the project lifecycle appropriately. In order to achieve an effective stakeholder consultation and engagement, the following steps were considered while engaging the communities and other stakeholders.

1. Pre-consultation: the pre – consultation includes distribution of letter of introduction to all relevant stakeholders and initial visitation to the host communities and jetties to ensured familiarities with the ESIA team. During the pre-public consultation, we established our community entry and engaged representatives of key community actors including community/opinion leaders, and people living with disability, women groups and youth groups. We also engaged all relevant MDAs and seek for their support and also introduced the project to all relevant associations and other key players in ferry and boat business. The initial meeting was also used to prepare the mind of the communities ahead of the forum meeting.

2. Development of Communication and Consultation Plan: The development of a communication and consultation plan for this ESIA study was achieved as a result of the pre-consultation meetings. This plan is critical because communication strategies and consultation plan must take into consideration the certain peculiarity of different stakeholders. Taking cognizance of the peculiar characteristics of our stakeholders, Yoruba, English and Pigin were the main languages of communication depending on the group of stakeholders been engaged been dominated by Yorubas, hence, the use of Yoruba helped us in building more trust as stakeholders were able to relate with what was presented and made valid contributions.

3. Discussion with Stakeholders: Further to the above, one-on-one, communities' meetings, telephone conversations and group discussions were employed in engaging stakeholders. These different approaches enabled us to get more data useful for the execution of the project. Where group discussion took place, we ensured moderation in order to control for dominance. The ESIA socioeconomic team utilized both qualitative and quantitative methods (In-depth interviews (IDI), Focus Group discussion (FGD), administration of questionnaire as well as key informant interviews).

6.1.3 Stakeholder engagement activities

In order to effectively implement Lagos WIDE-LAG project activities, there is need for open and inclusive engagements and dialogue with stakeholders, Project Affected Persons (PAPs) and other interested parties. Stakeholders' engagement is a very critical process used to by project implementers/executing agency to identify, communicate and engage not only people that are affected by its activities and decisions but also others with an interest in the implementation and outcomes of the project. Stakeholder engagement is

required throughout the lifecycle of the project implementation. Participatory approaches in project planning and implementation enhance project ownership, sustainability and also empower targeted beneficiaries.

The goal of a SEP goal is to promote and support inclusive and transparent participation of all stakeholders in the design and implementation of the WIDE- LAG project. Proper design and implementation of SEP ensure development of strong, constructive and responsive relationships that are important for successful management of the entire project. For a very effective SEP, it must be initiated at an early stage of the project development process and should be an integral part of early project decisions including the assessment, management and monitoring of the project's environmental and social risks and impacts. This Stakeholder Engagement Plan (SEP) describes the methods of engagement with stakeholders throughout the lifecycle of the project. It identifies the information and types of interaction to be conducted at the different phases of the project, considers and addresses stakeholders' communication and physical accessibility challenges, and includes any other stakeholder engagement required.

6.1.4 Feedback/grievance mechanism

Report of relevant issues such as reported grievances, enquires, and related incidents; status of implementation of associated corrective/preventative actions and other relevant information will be collated monthly and referred to the senior management of the project(s). This will be used to develop and design a mechanism for the evaluation of the issues and seek for information along with the project's capability in effectively and timely dealing with the issues.

- Stakeholders will be informed about the project's activities undertaken during the year. Information dissemination is operated in two ways;
- Standalone annual report on the project interaction with stakeholder will be published.
- Monitoring of the multiple Key Performance Indicators on a regular basis. Parameters to monitored include;
- Frequency of public engagement activities;
- Record of numbers of public hearings, consultation meetings and other public discussions/forums conducted within a reporting period (e.g. monthly, quarterly, or annually);
- Record of number of public grievances received within a reporting period (e.g. monthly, quarterly, or annually) and number of those resolved within the prescribed timeline;
- Type of public grievances received;

- Number of press materials published/broadcasted in the local, regional, and national media;
- Record of the amount of Project's investments in the local communities in the Project Area of Influence;
- Geographical coverage of public engagement activities – number of locations and settlements covered by the consultation process, including the settlements in remote areas within the Project Area of Influence (PAI)

CHAPTER VII

7 — ASSESSMENT OF ENIVIRONMENTAL AND SOCIAL IMPACT, AND MITIGATION MEASURES

7.1 EVALUATION OF ASSOCIATED AND POTENTIAL IMPACTS

This ESIA process ranks impacts according to their **"significance"** determined by considering project activity **"event magnitude"** and **"receptor sensitivity" as shown below**.

Event Magnitude	Receptor Sensitivity: Low	Receptor Sensitivity: Medium	Receptor Sensitivity: High
Low	Negligible	Minor	Moderate
Medium	Minor	Moderate	Major
High	Moderate	Major	Major

7.1.1 Generic Impacts and mitigation measures to all corridors

For each environmental and social impact identified in the different phases of the WIDE-LAG project, a table presents an evaluation of the impact significance for each corridor. The mitigation measures have been proposed based on stakeholder consultations, expert analysis and opinion, experience with similar and/or related projects and best engineering practices.

Beneficial Impacts of the WIDE-LAG Project throughout its life cycle include:

1. Stakeholder consultations during the project feasibility phase enables us to design a project in line with the needs expressed and their expectations and concerns. The facilities and services provided will therefore meets the needs of customers, with particular attention to GBV/SH/SEA VAC incidents and gender balance in the workforce/recruitment of LASWA's staff.
2. Traffic decongestion and reduction of pollution in Lagos
3. Sustainable construction materials
4. Cleaner and safe technologies.
   Electric propulsion technology, solar panels on vessels to support Energy generation
5. Safe mode of transport

6. Local and National economic growth
7. Improvement in quality of life through employment.

Semi-skilled and unskilled labour will be sourced locally to provide communities with employment and the opportunity to earn an income during the construction phase of the proposed project. A special clause that requires local residents to be employed as labourers during construction will be included in the contract.

Note: The identification and evaluation of identified impact presented in the sections below is based on the limited available data at this stage. Consequently, this impact evaluation is provisional and will be confirmed, modified or completed based on pending inputs from other Packages mainly:

Preliminary Engineering Design

1. Carbon footprint Analysis

2. Construction materials

3. Manpower requirements

4. Project components

5. Project phases and activities (Preconstruction phase - Construction phase - Operation phase - Decommissioning phase)

6. Land acquisition

7. Terminal layouts

8. Scoping workshop

9. Water and sediment quality

10. Design

a) Pre-construction phase

Summary of impacts to all corridors during the Preconstruction phase

- **Environmental Impacts**

Impact	Land acquisition									
	Land will be acquired for various development activities									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude	Medium	Medium	Low	Medium	Medium	Medium	Low	Medium	Medium	Medium
Receptor sensitivity	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Significance	Moderate	Moderate	Minor	Moderate	Moderate	Moderate	Minor	Moderate	Moderate	Moderate
Mitigation	- Land will be acquired based on the laws that regulate property acquisition in Lagos Stage such as the Land Use Act of 1978 - Financial compensations to the property owners - Compensation with land in other areas									
Residual Impact	Minor	Minor	Negligable	Minor	Minor	Minor	Negligable	Minor	Minor	Minor

Impact	Obstructions during site clearance									
	All the site clearance activities near the jetty for the movement of machineries for the piling and other construction activities									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low

Receptor sensitivity	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Significance	Negligable	Negligable	Negligable	Negligable	Negligable	Negligable	Negligable	Negligable	Negligable	Negligable
Mitigation	- Controlled clearance limited only to the specific space required for construction; restoration during demobilization - All the materials used for the site clearance shall be removed after the completion of the work.									
Residual Impact	None	None	None	None	None	None	None	None	None	None

- **Social Impacts**

Impact	Risks of involuntary resettlement									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude	Low	Low	Low	Medium	Medium	Medium	Low	Medium	Medium	Medium
Receptor sensitivity	Low	Low	Low	Low	Low	Medium	Low	Low	Low	Medium
Significance	Negligable	Negligable	Negligable	Minor	Minor	Moderate	Negligable	Minor	Minor	Moderate
Mitigation										
Residual Impact										

Impact	Risk of Impact on vulnerable groups: Violence Against Children (VAC), GBV/SH/SEA (particularly women and girls), People with disability									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low

Receptor sensitivity	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Significance	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor
Mitigation										
Residual Impact										

Impact	Risk of impact on various activities: Informal boat operators, small fishermen, sand miners, loggers, etc.									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Receptor sensitivity	High	High	High	High	High	High	High	High	High	High
Significance	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor
Mitigation										
Residual Impact										

Impact	Local conflicts of interest regarding employment									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Receptor sensitivity	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Significance	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor
Mitigation										

Residual Impact										

Impact	Risk of impact on cultural heritage and religious sites									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Receptor sensitivity	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Significance	Negligable	Negligable	Negligable	Negligable	Negligable	Negligable	Negligable	Negligable	Negligable	Negligable
Mitigation										
Residual Impact										

b) Construction phase

- **Environmental Impacts**

Impact	Risk of water and sediment pollution from dredging (poor management of polluted dredged sediments, resuspension of polluted sediments) The receptor sensitivity depends on the pollution load of sediments (Pending)									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude	Medium	High	Medium	High	Medium	High	Low	Low	Medium	Medium
Receptor sensitivity										
Significance										

Mitigation	- The Contractor should plan for dredging and disposal activities to take place at practical times (when the fluctuations in the water level are small and gradual), to avoid and reduce any adverse impacts on aquatic flora and fauna. - Physical, chemical and biological analyses of sediments should be carried out prior to sediment disturbance, and a plan developed to minimize sediment resuspension in environmentally sensitive areas. - Physical barriers would be installed such as silt screens to limit the spread of sediments beyond the designated dredging area. - Highly polluted sediments should be treated before disposal in the aquatic environment or reuse - Waste consignment notes to be prepared and documented for the disposal of dredged material. - Disposal of dredged materials shall be carried out the designated site as per the stipulated guidelines: MERCHANT SHIPPING ACT, 2007 MARINE ENVIRONMENT (SEA DUMPING) REGULATIONS, 2012, Arrangement regulations									
Residual Impact										

Impact	Poor management of construction wastes									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude										
Receptor sensitivity										
Significance										
Mitigation	- Minimizing the production of waste that must be treated or eliminated where waste generation cannot be avoided; - identification and classification (hazardous or not, solid, gaseous, or liquid) and estimate the likely type of waste to be generated such as cleared vegetation, packaging, excess aggregate, and disused equipment etc. if hazardous wastes are generated, proper procedures must be taken regarding their storage, collection, transportation, and disposal - reusing the solid waste (such as topsoil wastes) generated from the excavation works as backfill while the rest will be disposed of in designated areas as prescribed in the Environmental Management Protection-Law, 2017 - Identifying and demarcation of approved disposal areas, clearly indicating the specific materials that can be deposited in each; waste must not be discarded within, or close to a waterbody - The Contractor developing a well-organized internal supervision and monitoring system to ensure waste reduction and proper management through full implementation of the waste management plan;									

	- External monitoring to be carried out by the LASEPA to remind the Contractors that they are being watched and also, to ensure discontinuation and mitigation where waste has been dumped illegally. - After completion of construction activities, adequate clean-up of the area should be undertaken and all discharged materials should be removed from the site. - Enforcing the re-use of materials falsely deemed as single-use products, and by recovering recyclables from the construction waste stream for re-processing by local smelters and recycle plants.									
Residual Impact										

Impact	Risk of water hyacinth proliferation (pending water and sediment quality)									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude										
Receptor sensitivity										
Significance										
Mitigation										
Residual Impact										

Impact	Risk on biodiversity (fauna & flora) disturbance and loss									
	- Avifauna are perturbed by noise, and thus noise led to the displacement of such species.									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude	Low	Medium	Low	Medium	Low	Medium	Low	Low	Low	Low

Receptor sensitivity	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Significance	Minor	Moderate	Minor	Moderate	Minor	Medium	Minor	Minor	Minor	Minor
Mitigation	- Strict management of the aquatic environment should be followed during the construction phase through waste control, use of minimum disturbance techniques during construction for ensuring minimal changes to the aquatic environment. - Dredging and construction activities to be scheduled and planned to minimize impacts on aquatic ecology - A construction corridor will be established along each route and the perimeter of each corridor will be defined. - Works should be carried out within this perimeter and the layout of the terminals or jetties									
Residual Impact										

Impact	Accidents and Accidental spills during dredging									
	The dredging equipment will be stationed at the dredging site to avoid blocking part of the sea, which will inconvenience other waterway users, increase probability of accidents and may cause economic loss to the waterway users.									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude										
Receptor sensitivity										
Significance										
Mitigation	- Dredger operators should follow proper safety procedures to avoid accidents and spills. - LASWA will ensure that all the ships moving in proximity to the area to be dredged or disposal sites do not affect such activities or vice-versa.									
Residual Impact										

Impact	Increased noise and vibration (pending development activities at each terminal or jetty)

	- The construction and operation phases are likely to increase the vehicular traffic in the area, which can lead to increase in the ambient noise levels mainly along the road alignment. During construction phase, use of various construction equipment is the major source of noise. - Activities during the construction phase will be the operation of construction equipment used for piling and concreting works - Avifauna are perturbed by noise, and thus noise led to the displacement of such species. After the construction activities all the species will come as the impact is short term. .									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude										
Receptor sensitivity										
Significance										
Mitigation	- Properly functioning equipment to be maintained in compliance with occupational health and safety standards shall be used for the construction activities - To prevent damage to hearing caused by exposure to noise levels exceeding 90 dB(A), the Contractor is advised to observe the exposure period of affected persons as specified in the table 26 below - Mufflers to be affixed to construction equipment in use and workers will be given PPE (ear plugs etc..). - Noise from air compressors could be reduced by fitting exhaust mufflers and intake mufflers. - Noise levels from the drillers can be reduced by fitting of exhaust mufflers and the provision of damping on the steel tool. - Exposure of workers near the high noise levels areas can be minimized. This can be achieved by job rotation/automation, use of ear plugs, etc.									
Residual Impact										

It is known that continuous exposure to noise levels above 90 dB(A) affects the hearing of the workers/operators and hence has to be avoided. Other physiological and psychological effects have also been reported in literature, but the effect on hearing acuity has been specially stressed. To prevent these effects, it has been recommended by international specialist organizations that the exposure period of affected persons be limited as specified in Table ….

Tableau 26: Maximum Exposure Periods specified by OSHA

Maximum equivalent continuous Noise level dB(A)	Unprotected exposure period per day for 8 hrs/day and 5 days/week
90	8
95	4
100	2
105	1
110	½
115	¼
120	No exposure permitted at or above this level

Impact	Increased air emissions (pending development activities at each terminal or jetty)									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude										
Receptor sensitivity										
Significance										
Mitigation	- The project authorities will work closely with representatives from the community living in the vicinity of project area to identify areas of concern and to mitigate dust-related impacts effectively (e.g., through direct meetings, utilization of construction management and inspection program, and/or through the complaint response program). - To minimize issues related to the generation of dust during the construction phase of the project, the following measures have been identified: a) Identification of construction limits (minimal area required for construction activities). b) When practical, excavated spoils will be removed as the contractor proceeds along the length of the activity. c) Excessive soil on paved areas will be sprayed (wet) and/or swept and unpaved areas will be sprayed and/or mulched. d) Contractors will be required to cover stockpiled soils and trucks hauling soil, sand, and other loose materials (or require trucks to maintain at least two feet of freeboard). e) Regular spray of water over unpaved areas. f) Contractor shall ensure that there is effective traffic management at site. The number of trucks/vehicles to move at various construction sites to be fixed. g) The construction area and vicinity (access roads, and working areas) shall be swept with water sweepers on a daily basis or as necessary to ensure there is no visible dust. h) Trucks transporting sand and gravel must be covered to prevent dust and flying debris. i) Reduce speed to 10-20 km/h when crossing settlements or erecting speed bumps near j) Training for drivers to adopt the best practices in driving.									
Residual Impact										

**Various measures listed above shall be made mandatory in the Tender Specifications for construction of the project.*

Impact	Risk of impact on primary suppliers									
	To reduce the demand for regionally strained resources, a number of resource efficiency initiatives should be instituted.									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude										
Receptor sensitivity										
Significance										
Mitigation	- Use of only existing licensed quarries in the locality, that undertake dust minimising procedures during collection of raw materials from quarries (e.g. use of water sprinkling and covering of loose materials when transported) - The following measures can be implemented to minimize power consumption and fuel-based greenhouse emissions during construction works: a) Adoption of a cost effective and technically feasible renewable energy source e.g. solar power for some port operations; b) Limiting the timing of machinery operations in an efficient manner to minimize energy wastage and exhaust outputs; c) Installation of power-saving electrical appliances and; d) Conducting frequent inspection and servicing for construction machinery to prevent the occurrence of fugitive emissions. - Water consumption can be reduced by implementing all practicable means of minimizing wastage and overconsumption of water supplied by the Lagos State Water corporation. These include: a) Avoiding wastage of water by providing water-conservation training to construction labour and monitoring water usage throughout construction operations; and b) Conducting frequent maintenance checks on water supply systems for early detection of wasteful leakages and use of water-saving sprinkler systems (used for dust control).									
Residual Impact										

- **Social Impacts**

Impact	Risk of Impact on vulnerable groups: Violence Against Children (VAC), GBV/SH/SEA (particularly women and girls), People with disability									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude	Medium									
Receptor sensitivity	High									
Significance										
Mitigation	The Codes of Conduct and Action Plan for Preventing Gender Based Violence (GBV) and Violence Against Children (VAC) should be included in contracts including explicit references for monitoring, enforcement and compliance.									
Residual Impact										

Impact	Risk of impact on various activities: Informal boat operators, small fishermen, sand miners, loggers, etc.									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude	Medium									
Receptor sensitivity	High									
Significance										
Mitigation										

Residual Impact										

Impact	Local conflicts of interest regarding employment									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Receptor sensitivity	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Significance	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor
Mitigation	- Plan a careful employment among host communities such as equal number of employees as possible - Compliance with the SEP and GRM									
Residual Impact										

Impact	Health and safety risks for site workers									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude										
Receptor sensitivity										
Significance										
Mitigation	- Provide personal protective equipment to all workers. - Ensure the workers are trained to work on the specific project.									

	- For unskilled labour, training should be provided before permission to work on the site. The contractor shall provide, if required, erect and maintain necessary (temporary) gender sensitive living accommodation and ancillary facilities during the progress of work for labor to standards and scales approved by the Engineer- In charge. - Construction camps shall not be proposed within 1000 m or sufficiently away from nearest habitation to avoid conflicts and stress over the infrastructure facilities, with the local community. The location, layout and basic facility provision of each workers camp shall be submitted to Engineer prior to their construction. - Gender sensitive safety and sanitation facility should be provided in the workers camp. Potable water shall be supplied to the construction workers at camps. - The contractor shall arrange for a readily available first aid unit including an adequate supply of sterilized dressing materials andappliances as per the Factories Rules in every work zone, availability of suitable transport round the clock (always) to take injured or sick person(s) to the nearest hospital. - Always maintain a fully equipped first aid box in the construction camp. - A tailor-made Accident Prevention Plan (APP) must be prepared and implemented by the Contractor. - Implement an Emergency measures plan in case of accidents - To avoid increasing rate of crime, the Contractor in collaboration with the local authority shall be advised to monitor movement of new comers/people in out of the project area. All visitors need to have gate passes/be suspicious for those who will be roving around the project area									
Residual Impact										

At the minimum, the Accident Prevention Plan (APP) must consist of the following elements:

- ✓ Management policy statement;
- ✓ Authority and accountability;
- ✓ Goals and objectives;
- ✓ Employee commitment and responsibilities;
- ✓ Employee involvement;
- ✓ Disciplinary policy;

- ✓ Record keeping;
- ✓ Safety and health surveys and inspection/program;
- ✓ Safety or other related meetings;
- ✓ Safety and health training;
- ✓ Safety audit and inspection;
- ✓ Accident hazard and risk assessment;
- ✓ Accident and hazard investigation;
- ✓ Accident reporting and investigation;
- ✓ Review and revision of components.

The Emergency measures plan will be implemented to address:

- ✓ general measures;
- ✓ internal Operation Plan (POI);
- ✓ circulation and movements on the sites;
- ✓ individual and collective protection equipment;
- ✓ special instructions for the use and movement of vehicles;
- ✓ works inspection and maintenance program;
- ✓ fire protection measures;
- ✓ training and exercise procedures.

Impact	Community health and safety									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude										
Receptor sensitivity										

Significance										
Mitigation	- The Codes of Conduct and Action Plan for implementing ESHS and OHS standards should be included in contracts including explicit references for monitoring, enforcement and compliance. - Warning and safety signs must be used before commencement and during the works to inform and warn the public of risks and means of avoidance; Gravel and sand borrow pits specifically approved for these works must be reclaimed to return the sites to as close as possible to the natural state; - To prevent and protect the communities from harm, the contractor shall mount safety cordons and danger signs at strategic locations. - Recommended that skilled labor be rotated in on and off duty cycles to make them available to meet with their family members (back home) to minimize the chances of their mixing with the village women to minimize the chances of spreading STDs/STIs and HIV/AIDs (and increasing incidents of conflicts with the community, disruption to social cohesion and interpersonal relationships, including intimate partner relationships); - Awareness campaigns/orientations covering but not limited to HIV/AIDS/STDs and COVID-19 transmission risks shall be carried out for workers and host communities									
Residual Impact										

Impact	Risks of Gender Based Violence (GBV) and Violence against Children (VAC)									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude										
Receptor sensitivity										
Significance										
Mitigation	- Children must not be employed by the Project (paid or unpaid), and the Project must comply with all relevant local legislation, including labor laws in relation to child labor and the World Bank‟s safeguard policies (applicable in the WIDE-LAG Project) on child labor and minimum age. - Communities need to be informed about the start of all works, at least 5 days before, and the need for them to keep children away from the sites.									

	Specifically, the project should ensure that the "Codes of Conduct and Action Plan for Implementing ESHS and OHS Standards, and Preventing Gender Based Violence (GBV), Sexual Exploitation and Abuse (SEA) and Violence Against Children (VAC)" are included in the Project"s bidding documents. The Codes of Conduct are meant to: o create awareness of the ESHS and OHS expectations on the Project; o create common awareness about GBV, SEA and VAC; o ensure a shared understanding that GBV, SEA and VAC have no place in the Project; o create a clear system for identifying, responding to, and sanctioning GBV and VAC									
Residual Impact										

Impact	Risks of damages from accidental vessel collision									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude										
Receptor sensitivity										
Significance										
Mitigation	- Sensitization of local fishermen and dredgers on safety in the sea - Compliance with Emergency Preparedness and Response Plan									
Residual Impact										

Impact	Risk of impact on cultural heritage and religious sites									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude										

Receptor sensitivity										
Significance										
Mitigation	- Should an unusual, uncommon or a typical finding be made along any of the project site avoid further disturbance and secure discovery, inform the supervisor for onward conveyance to LASWA and the Lagos State Ministry of Tourism, Arts and Culture (the legal institution responsible to manage cultural heritage) for proper management									
Residual Impact										

e) Operation phase

- **Environmental Impacts**

f) Impact	Risk of water and sediment pollution from dredging activities									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude										
Receptor sensitivity										
Significance										
Mitigation	- The Contractor should plan for dredging and disposal activities to take place at practical times, to avoid and reduce any adverse impacts on aquatic flora and fauna. - During maintenance dredging, suspended particle matter (SPM) will be kept low at 5 %. - Physical barriers would be installed such as silt screens or bubble curtain to limit the spread of sediments beyond the designated dredging area. - Highly polluted sediments should be treated before disposal in the aquatic environment or reuse - Waste consignment notes to be prepared and documented for the disposal of dredged material. - - Disposal of dredged materials shall be carried out the designated site as per the stipulated guidelines: MERCHANT SHIPPING ACT, 2007 MARINE ENVIRONMENT (SEA DUMPING) REGULATIONS, 2012, Arrangement regulations									
Residual Impact										

Impact	Increased noise, vibration and air (pending development activities at each terminal or jetty)									
	- During project operation phase, one the major activity would be the emission from the vehicle movement in the area.									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude										
Receptor sensitivity										
Significance										
Mitigation	- The impacts due to dust emissions could be substantially managed by containment and reduction of emissions. - The reduction in the emissions is achieved by continuous spraying of water so that the surface remains moist and entrainment of fugitive emissions is avoided.									
Residual Impact										

Impact	Poor waste management									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude										
Receptor sensitivity										
Significance										
Mitigation	- Solid waste will be collected at the point of origin and sorted into different containers for appropriate disposal. For example, waste paper and cardboard boxes will be recycled or re-used. - Scrap metals such as iron and steel, copper and aluminium will be availed to smelters. - Other solid waste collection will be assigned to LASWA for disposal.									

	- Incineration of solid waste at the premises will be prohibited.									
Residual Impact										

Impact	Navigational constraints									
	The navigational constraints found along the routes include: Water hyacinth Fish traps and nets Dredgers Fishing community Bamboo sticks									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude			High							
Receptor sensitivity			Medium							
Significance			Major							
Mitigation	- During dredging activities, vessel speed restrictions will be imposed for waters within LASWA's jurisdiction. - A dredging vessel with restricted maneuverability will exhibit three all-round lights and three shapes in a vertical line where they can best be seen in addition to a masthead light, sidelights and a stern light (as per the 1972 Convention on International Regulations for Preventing Collisions at Sea). - Navigational hazards will continue to be managed throughout the dredging process. - Installation of buoy markers to aid safe passage along the waterways. - Where possible draw an alternative alignment for safe navigation - Harvest and recycle water hyacinth into manure and other products									
Residual Impact										

Impact	Poor management of end-of-life batteries									
	As there are no treatment and pre-processing capacities in Nigeria or any neighboring countries, an export of batteries to recycling is an obvious management option, also because shipment of other hazardous wastes for treatment is often seen as the only fully responsible management option for countries and regions with no treatment and disposal capacities.									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude										
Receptor sensitivity										
Significance										
Mitigation	- Appropriate handling and disposal at dedicated site prior to shipment - The manufacturer shall be responsible for the management of end-of-life batteries									
Residual Impact										

Impact	Accidental spills during dredging									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude										
Receptor sensitivity										
Significance										
Mitigation	- To successfully combat an oil spill, the manpower needs to be thoroughly trained since quick and efficient response is the primary factor deciding the efficiency of the operation. - It is also vital that all equipment is routinely inspected and regular mocks are held. - All responses to oil spills will be guided by Contingency Plan for the WIDE-LAG Project implemented by LASWA									

Residual Impact										

Impact	Increased vehicle traffic									
	The connecting roads may be congested during peak hours and traffic accidents may occur when entering or leaving the Terminal or jetty. The truck traffic to and from the terminal may also contribute to the occurrence of traffic accidents due to the high degree of movement									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude										
Receptor sensitivity										
Significance										
Mitigation	Display of road signage and construction of speed bumps where necessary.									
Residual Impact										

Impact	Sea level rise									
	Sea-level rise in the major climate change hazard identified for the WIDE-LAG project based on the available data at this stage. For floating jetties, a potential impact is that the jetty movement to a certain extent is not sufficient to support sea-level rise. For fixed jetties, it could result to inappropriate operation level of the jetty, or even to have a jetty level at/below sea-level, leading to a occasional disruptions of maritime traffic up to a need for reconstruction									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10

Magnitude										
Receptor sensitivity										
Significance										
Mitigation	Floating jetties - Consider allowance for sea-level rise for the fixing of the jetty. Piles or interlocking chains have to be designed to include the future sea-level rise at least for life duration of the asset. Fixed jetties - Consider allowance for sea-level rise in the level setting of the fixed jetty, or a possibility to raise the level of the jetty when required due to sea-level rise. - Concrete jetty requires an increase in the level of the platform to consider climate change. If this is not included in the design of the structure, raising the level may not be possible. Additional permanent load may not be supported by the structure, and this should be anticipated at design stage. - Fixed wooden jetty can be adapted to climate change. The platform may be dismantled and raised to include sea-level rise if the original structure is in good condition.									
Residual Impact										

- Social Impacts

Impact	involuntary resettlement

	The extended terminals or jetties will be closer to informal baot operators, canoe and fish landing sites, fuel vendors, rope makers, and the position of the women fish smokers, among other economic operators. These operators will need to be relocated to make way for the terminals and jetties, which would harm their income generating capacity									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude										
Receptor sensitivity										
Significance										
Mitigation	- - These informal boat operators or economic operators could be relocated - To let these PAPs cohabit with the project - Integrating them into the new ferry system e.g allocation of feeder routes to informal boat operators - They could be compensated for their loss of income									
Residual Impact										

Impact	Health, Safety during Ferry operation									
	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Corridor 5	Corridor 6	Corridor 7	Corridor 8	Corridor 9	Corridor 10
Magnitude										
Receptor sensitivity										
Significance										
Mitigation	- All vessels shall be equipped with life jackets for all passengers, and with safety and rescue basis like e.g. fire extinguishers, water pumps, emergency signalling rockets and automated radio alerts in case of incidents like engine standstill etc. - First Aid Box shall be kept essentially in every ferry with all the emergency first aid equipment and medications to be used in case of emergency.									

	- Sufficient sanitary facilities at terminals, jetties and in vessels separated sections by gender, and for persons who need specific attention, as sewerage and oil water emulsions tanks are to be implemented at each of the ferry accordingly. - Regular cleaning and maintenance of sanitary facilities with non-toxic products - Bunkering and dealing with all substances and waste strictly will follow the “no environmental impact” principle and hence needs to be supported by the designs of vessels accordingly. - To avoid increasing rate of crime, LASWA in collaboration with the local authority shall be advised to monitor movement of new comers/people in out of the project area. All visitors need to have gate passes/be suspicious for those who will be roving around the project area									
Residual Impact										

g) Decommissioning phase

7.2 IMPACTS AND MITIGATION MEASURES SPECIFIC TO CORRIDOR 1

To be completed once the development activities at each site are available (Input request from Package A sent)

7.3 IMPACTS AND MITIGATION MEASURES SPECIFIC TO CORRIDOR 2

To be completed once the development activities at each site are available (Input request from Package A sent)

7.4 IMPACTS AND MITIGATION MEASURES SPECIFIC TO CORRIDOR 3

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7.5 IMPACTS AND MITIGATION MEASURES SPECIFIC TO CORRIDOR 4

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7.6 IMPACTS AND MITIGATION MEASURES SPECIFIC TO CORRIDOR 5

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7.7 IMPACTS AND MITIGATION MEASURES SPECIFIC TO CORRIDOR 6

.....

7.8 IMPACTS AND MITIGATION MEASURES SPECIFIC TO CORRIDOR 7

.....

7.9 IMPACTS AND MITIGATION MEASURES SPECIFIC TO CORRIDOR 8

.....

7.10 IMPACTS AND MITIGATION MEASURES SPECIFIC TO CORRIDOR 9

.....

7.11 IMPACTS AND MITIGATION MEASURES SPECIFIC TO CORRIDOR 10

.....

7.12 CONCLUSION OF THE KEY IMPACTS

To be completed in the Final report

CHAPTER VIII

8 — ENVIRONMENTAL AND SOCIAL MANGEMENT PLAN (ESMP)

8.1 OBJECTIVES OF ESMP

This section provides an overview of the system that will be used to manage the environmental and social issues associated with the WIDE-LAG Project. An environmental and social management plan is an implementation plan that consists of mitigation measures, monitoring program and institutional setup to be adapted during construction and operation of the WIDE-LAG project to avoid, minimize and or compensate adverse environmental and social impacts. This plan also includes actions that can be taken to implement mitigation measures. Budgetary estimates for environmental mitigation measures, monitoring program during construction and operation phases are also given

8.2 ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM

An Environmental and Social Management System (ESMS) provides a methodological approach to managing environmental and social risks and impacts in a structured way on an ongoing basis. The ESMS is designed to ensure that the WIDE-LAG project operates in compliance with its Environmental and Social Policy and Standards as shown in figure 34.

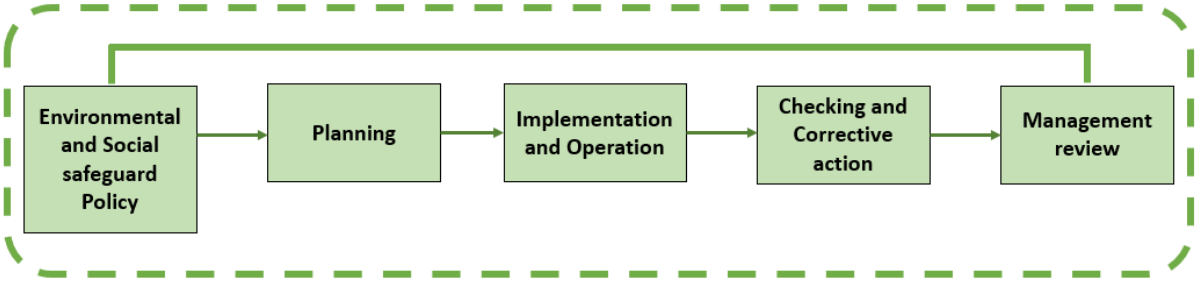

Figure 34: Environmental and Social Management System for the WIDE-LAG Project

8.3 IMPLEMENTATION OF ESMP

8.3.1 Institutional arrangements for implementation of the ESMP

Effective implementation and supervision of the environmental and social mitigation measures and monitoring activities identified in this document can only be achieved through a suitable institutional mechanism involving stakeholders of the project, appropriate staff, financial resources, equipment and support systems. LASWA and the Contractor will be responsible for engaging a suitably skilled and experienced team to implement the ESMP for the Project. It is the responsibility of all Project staff and the Contractor to comply with the requirements set out in the ESMP. The responsibilities and duties of the Project staff, Project Company (PC) and all subcontractors and suppliers will need to be defined through standard terms and conditions of contracts that are consistent

with the commitments of this ESMP. LASWA staff must undertake internal training and education activities to ensure that Project expectations regarding environmental and social performance are achieved and maintain training records. This would include building upon the outcomes of the LASWA E&S Capacity Building Assessment on environmental and social safeguards carried out by setec-Greenstad, which identified several key areas for LASWA training and future needs applicable for the Project.

Prior to construction, the Project Company will be required to prepare several plans/sub-plans to support the implementation of the management and monitoring program, among which:

1. Construction Environmental and Social Management Plan (CESMP);
2. Emergency Preparedness and Response Plan;
3. Transport Management Plans;
4. Air Quality Management Plan;
5. Noise and Vibration Management Plan.

As part of the CESMP to be prepared by the Project Company, detailed plans for implementation of monitoring activities should be developed including specific indicators, targets, criteria, schedules, equipment and parameters.

An Operations Environmental and Social Management Plan (OESMP) will also need to be prepared by the Project Company prior to the Operations Phase.

The implementation of the ESMP, CESMP and OESMP and other management plans for the WIDE-LAG Project will need to be supported by several Standard Operating Procedures (SOPs) which will be important for environmental and social management.

A broad institutional mechanism for environment and social safeguards associated with the project, roles and responsibilities of various agencies and parties for implementing environment safeguards are provided in table and figure below.

Authority/Position	Responsibility
LASWA/PIU	**LASWA** The Project implementing authority will be responsible for overseeing the project implementation. **Project Management Unit (PIU)** The representative of LASWA, will be responsible for monitoring the overall project implementation, including environmental compliance of the project. - PIU will have the final responsibility for environmental performance of the project during both the construction and operational phases.

	Specifically, the PIU will: - closely coordinate with local authorities in the participation of the community during project preparation and implementation. - monitor and supervise that the ESMP, RAP and SEP are implemented including incorporation of ESMP into the detailed technical designs and bidding and contractual documents; - ensure that an environmental and social management system, as indicated in Figure 34 above is set up and it works. Also, PIU will be in charge of reporting on ESMMP implementation to LASWA and AFD; - supervision of the contract and missions of the Project Management Consultant (PMC); - check through the PMC that the ESMMP, CESMP, OESMP and environmental, social and OHS risk assessment are regularly reviewed and updated as required, and compliant with this ESMMP; - in order to get effectiveness in the implementation process, PIU will establish an environmental unit with at least one environmental and social staff to help with the environmental and social aspects of the project.
Environmental and Social Unit (Under the PIU)	the E&S Unit under PIU will : - review the PC's ESMPs to ensure quality of the documents; - assist the PIU incorporate ESMPs into the detailed technical designs and civil works bidding and contractual documents; - assist the PIU incorporate responsibilities for ESMP monitoring and supervision into the TORs, bidding and contractual documents for the PMC; - provide relevant inputs to the PMC selection process; - review reports submitted by the PMC; - conduct periodic site checks; - advise PIU on solutions to E&S issues of the project; - prepare E&S performance section on the progress and review reports to be submitted to LASWA and AFD; - participation to any E&S meetings to represent LASWA;

	- implementation of all actions of the Stakeholder Engagement Plan under LASWA's responsibility;
Project Management Consultant (PMC)	- check that the required management and monitoring measures identified in the ESMP are undertaken; - supervise the Project Company in updating the ESMMP following completion of the Project ESIA; - supervise the preparation and implementation of the CESMP and OESMP; - check that the ESMP, CESMP, OESMP and environmental and social risk assessment are regularly reviewed and updated as required; - check that relevant stakeholders are consulted and provide input into the development of the surveillance plans where appropriate; - enforce compliance with the contractual environmental and social requirements; - approve acceptable sites for project associated facilities prior to their respective ESIAs; - E&S supervision of the project company during construction and operation. This will notably include reviewing all E&S documentation produced by the PC (ESMS, detailed ESIA-ESMP, CESMP, OESMP, specific ESIA-ESMP for each ancillary facility, Operational procedures, etc) - on-site external E&S supervision of all activities of the PC; - report to LASWA/PIU; - organizing E&S meetings if needed with PC, LASWA/PIU; - ensure that all necessary permits for the project are obtained prior to commencement of a respective activity; - approve adequate method statements of the PC prior to commencement of the respective activity, - engage and coordinate external monitors including those for water quality and noise levels among others, - issue any penalties for non-compliances with contractual environmental commitments.
Project Company	Based on the approved ESMP, the PC will:

	- establish a site-specific ESMP for each construction site area, submit the plan to the PIU and PMC for review and approval before commencement of construction. - appoint a competent individual as the PC's on-site Safety and Environment Officer (SEO) who will be responsible for monitoring the PC's compliance with the ESMP requirements and the E&S specifications. - implement E&S commitments under PMC's responsibility during construction and operation. - prepare all E&S documentation as per the contract: ESMS, detailed ESIA-ESMP, CESMP, OESMP, specific ESIA-ESMP for each ancillary facility, Operational procedures, etc. - report incidents and grievances to the PMC, the PIU and LASWA's Project Officer and relevant government lead agencies. Document and follow actions taken to rectify the situation - Participate in resolving issues as a member of the Grievance Redress Committee (GRC). - Respond promptly to grievances raised by the local community or any stakeholder and implement environmental corrective actions or additional environmental mitigation measures as necessary. - report incidents and grievances to the PMC, the PIU and relevant government lead agencies. - document and follow actions taken to rectify the situation - monitor, record, audit and conduct surveillance of the implementation and effectiveness of the CESMP/OESMP and report their effectiveness to the PMC and subsequently to LASWA's PIU E&S manager. - review and update the CESMP/OESMP during construction/operations annually or if any significant changes occur - monitor and report on E&S performance regularly on aspects such as ; water quality, noise HIV/AIDS and COVID-19 among others. - obtain all E&S permits/licences required for the works following current regulations. - develop and implement an appropriate Stakeholder Engagement Plan (SEP) throughout the project cycle

	- Internal E&S supervision of all sites and activities of the project E&S reporting to the PMC and PIU/LASWA

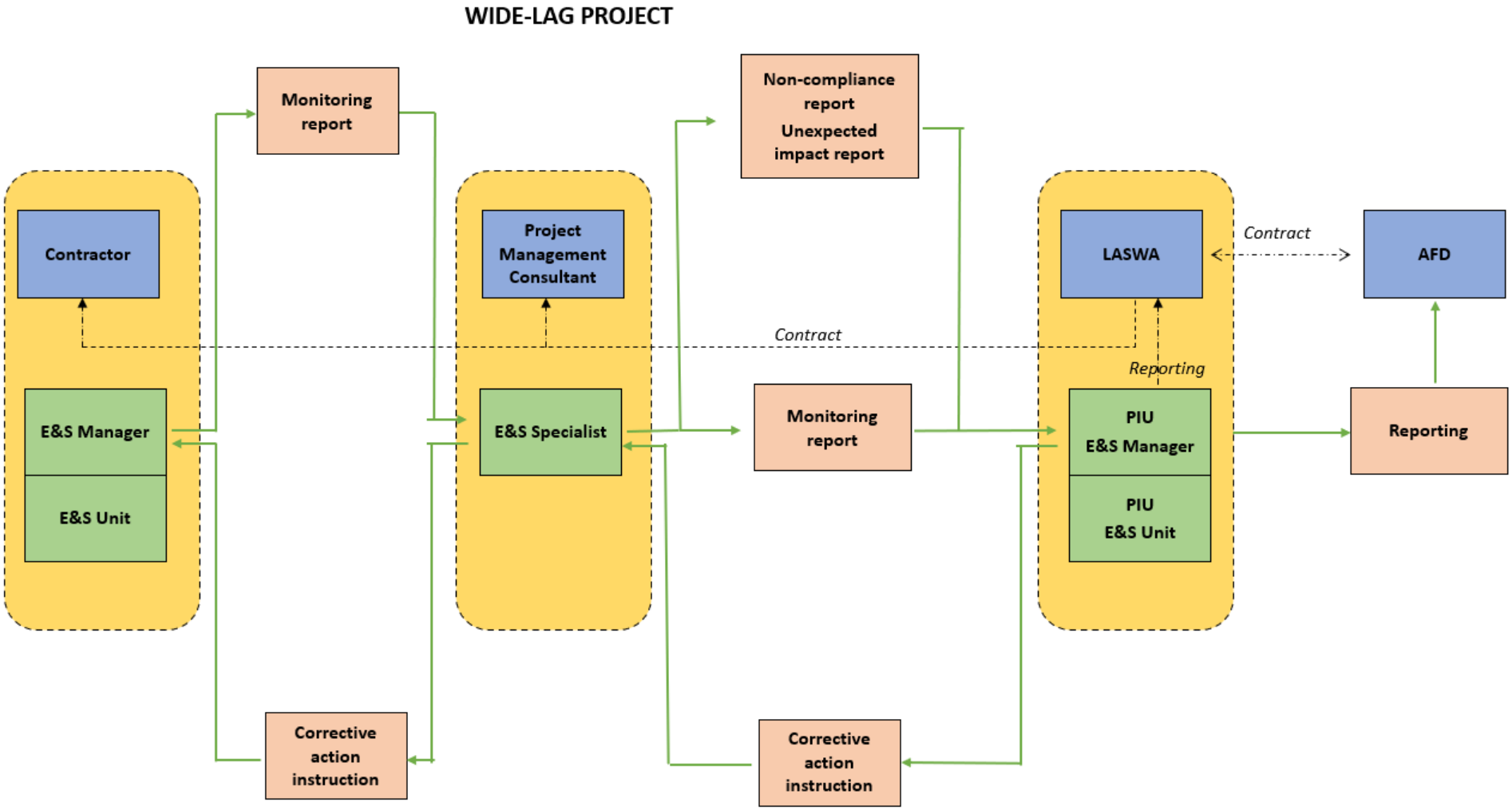

Figure 35: Institutional arrangements for implementation of the ESMP

8.3.2 Generic management measures

Applicable to all Corridors

To be completed in the final report (This Information will be extracted from the ESMP Matrix below)

8.3.3 Specific management measures

Specific to each corridor routes/corridors, terminals and jetties

To be completed in the final report dependent on input data from other packages (Package A)

8.4 ENVIRONMENTAL AND SOCIAL MONITORING

The ESMP for the proposed WIDE-LAG project is summarized in Table 27 below. Many of the costs associated with the identified impacts are one-off, though some include the costs of monitoring in which case these are considered as annual costs.

Tableau 27: Impacts, environmental and social manangament measures with associted costs

Environmental and Social Management Plan							
	Potential Impacts	**Enhancement Measures**	**Location/ Monitoring Indicators (standards)**	**Frequency**	**Responsibility Implem.**	**Monit.**	**Estimated cost (US $)**
Construction Phase							
	Generation of temporary employment opportunities	Engagement with nearby communities; communicating jobs available that do not require specialised skills	-	-	Contractor	-	To be included in Contractors Bid
	Increase in income generating activities	Employment of local residents; permitting small businesses to provide services to construction staff	-	-	Contractor	-	-
Operation and Maintenance Phase							
	Increased revenue	By providing better infrastructure	-	-	LASWA	-	-
	Increased indirect income generation opportunities	Communicating available employment opportunities to local communities; establish capacity building and career progression programmes for local recruits	--	-	LASWA	-	

Environmental and Social Management Plan							
	Potential Impacts	Mitigation Measures	Location/ Monitoring Indicators (Standards)	Frequency	Responsibility Implem.	Responsibility Monit.	Estimated cost (US $)
Pre-Construction Phase							
Environmental	Obstructions during site Clearing	Controlled clearance limited only to the specific space required for construction; restoration during demobilization	Terminal or Jetty area / Disturbance to existing activity (Minimum disturbance)	Monthly	contract or	PMC	To be included in Contractors Bid 5,000
Environmental	Loss of road-side vegetation due to Site preparation activities	Revegetation will be taken in the project site along roadsides to compensate the vegetation loss	Bund, Road Side / Vegetation cover Calculate area in m^2 (Minimum vegetation disturbance)	Monthly	LASWA and Contract or	PMC	To be included in Contractors Bid 5,000
Social	Involuntary resettlement from land acquisition	- Land will be acquired based on the laws that regulate property acquisition in Lagos Stage such as the Land Use Act of 1978 - Financial compensations to the property owners - Compensation with land in other areas	-	-	LASWA	-	-

Environmental and Social Management Plan							
	Potential Impacts	Mitigation Measures	Location/ Monitoring Indicators (Standards)	Frequency	Responsibility		Estimated cost (US $)
					Implem.	Monit.	
Construction Phase							
Environmental	Increased suspended sediment from piling, dredging activities impacting aquatic life	Suspended particle matter to be kept at 5 % and physical barriers to be established (using a silt screen/curtain with appropriate dimensions	Construction areas, Dredging and dumping location / Sediment plume Turbidity in NTU (5% sediments suspension)	Monthly	Contractor	PMC	To be included in Contractors Bid 5,000 Preconstruction and construction phase
	Fishing activities affected by suspended sediment	Physical barriers to be established (e.g. silt screens/curtains)	fish landing site/ Complaints from fishers Written record of complaints from fishers (No complaints)	Monthly	Contractor	PMC	To be included in Contractors Bid 5,000
	Distraction in aquatic biological environment	Strict management of the aquatic environment should be followed during the construction phase through waste control, use of minimum disturbance techniques during	Aquatic environment/ Biological parameters	Monthly	Contractor	PMC	To be included in Contractors Bid 20,000

Environmental and Social Management Plan							
	Potential Impacts	Mitigation Measures	Location/ Monitoring Indicators (Standards)	Frequency	Responsibility		Estimated cost (US $)
					Implem.	Monit.	
		construction for ensuring minimal changes to the aquatic environment.					
	Water/land pollution from the disposal of dredged material	Material will be deposited at the existing disposal site at offshore. Siting disposal at subaquatic depressions where sediment would be more laterally confined; weekly monitoring study to be undertaken during and following termination of dredging activity	Dumpin sites/ (Water and sediment monitoring (pH, conductivity, hydro- carbons, TSS, Cr, Pb, BOD5, TKN, SO4.)) (MARPOL)	Quarterly	Contract or	PMC	
	Increased noise nuisance during construction works	Properly functioning equipment to be maintained in compliance with occupational health and safety standards; mufflers to be affixed to construction equipment in use; workers to be given PPE; notice to be given to neighboring communities Exposure of workers near the high noise levels areas can be minimized. This can be achieved by job	Jetties, Bund road area / Ambient noise levels Digital sound level meter (OSHA Standards)	Weekly	Contract or	PMC	To be included in Contractors Bid 2 000

Environmental and Social Management Plan							
	Potential Impacts	Mitigation Measures	Location/ Monitoring Indicators (Standards)	Frequency	Responsibility		Estimated cost (US $)
					Implem.	Monit.	
		rotation/automation, use of ear plugs, etc.					
	Quarrying impacts on geology, landscape, ground water, etc.	Use of only existing licensed quarries in the locality, that undertake dust minimising procedures during collection of raw materials from quarries (e.g. use of water sprinkling and covering of loose materials when transported)	Quarries and borrow pits used Written record of source (No new quarry/ borrow pit established)	Monthly	Contractor, Licensed quarry owner	PMC	No cost (part of Contractor's work procedures)
	Accidental vessel collisions during dredging	Vessel speed restrictions to be imposed; dredging vessel to display required lights and signs for visibility; Port risks and navigational hazards to be managed	Dredging areas/ Collisions Written record of number and nature of collisions (No vessel- vessel collision recorded)	Monthly	Contractor	LASWA	No cost (part of LASWA's emergency response operation budget)
	Risk of fire	Fire detectors, alarms and extinguishers to be placed in all specified locations and routinely inspected;	Within terminals, jetties/	Monthly	LASWA	LASWA	

Environmental and Social Management Plan							
	Potential Impacts	**Mitigation Measures**	**Location/ Monitoring Indicators (Standards)**	**Frequency**	**Responsibility**		**Estimated cost (US $)**
					Implem.	**Monit.**	
		employees trained for fire response and drills regularly held, LASWA should have has a working contingency plan for Fire explosion and officer in-charge of fire issues trained to respond in case of a fire outbreak or explosion	Fire outbreaks Written record of fire incidents and extent				
Social	Occupational health and safety risks	- Provide personal protective equipment to the labours. - Ensure the labours are trained to work on the specific project. - For untrained labour – training should be provided before permission to work on the site. - The contractor shall provide, if required, erect and maintain necessary (temporary) gender sensitive living accommodation and ancillary facilities during the progress of work for labour to standards	Project site/ Complaints from construction workers (No complaints)	Weekly	Contractor	PMC	To be included in Contractors Bid 10,000

Environmental and Social Management Plan							
	Potential Impacts	**Mitigation Measures**	**Location/ Monitoring Indicators (Standards)**	**Frequency**	**Responsibility**		**Estimated cost (US $)**
					Implem.	**Monit.**	
	Risks of Communicable Diseases	The workforce shall be sourced locally to reduce the need for importation of workers. - Create awareness of the ESHS and OHS expectations on the project. - Awareness campaigns/orientation covering but not limited to HIV/AIDS/STDs transmission risks shall be carried out for workers and host communities	Construction area/ Number of reported cases (No disease)	Monthly	Contractor/LASWA	PMC	20,000
	Risks of Gender Based Violence (GBV) and Violence against Children (VAC)	- Children must not be employed by the Project (paid or unpaid), and the Project must comply with all relevant local legislation, including labor laws in relation to child labor and the Bank‟s safeguard policies on child labor and minimum age. - Communities need to be informed about the start of all works, at least 5 days	Construction site/ No. of reports of child labor / abuse No. of women participating in consultations % of children PAPs addressed No. of Community sensitization meetings where VAC issues are discussed No. of meetings on GRM Reports on progress in	Monthly	Contractor	PMC	20,000

Environmental and Social Management Plan							
	Potential Impacts	Mitigation Measures	Location/ Monitoring Indicators (Standards)	Frequency	Responsibility		Estimated cost (US $)
					Implem.	Monit.	
		before, and the need for them to keep children away from the sites. - create a clear system for identifying, responding to, and sanctioning GBV and VAC incidents	enforcement of Codes of conduct to address VAC. No. of reports of children involved in Project related (No complaint)				
Operation and Maintenance Phase							
Environmntal	Increased suspended sediment from dredging activities impacting marine life	Suspended particle matter to be kept at 5 % and physical barriers to be established (e.g. silt screens/curtains)	Construction areas, Dredging and dumping location / Sediment plume Turbidity in NTU (5% sediments suspension)	Monthly	Contractors	PMC	To be included in LASWA's maintenance operations 20,000
	Congestion, road safety risks and inconvenience due to Increased vehicle traffic	Display of road signage; construction of speed bumps where necessary	At jetties and terminals Complaints on traffic flow/ congestion within Port Record of number of vehicles in and out of	Weekly	LASWA	LASWA	

Environmental and Social Management Plan							
	Potential Impacts	Mitigation Measures	Location/ Monitoring Indicators (Standards)	Frequency	Responsibility		Estimated cost (US $)
					Implem.	Monit.	
			terminals/jetties and complaints (No complaints)				
	Risks to health and the biophysical environment from improper management of the waste generated	Segregation of solid wastes, proper arrangement for management by LAWMA, proper design of sewage network to connect to the existing system.		Monthly	LASWA	PMC	To be included in LASWA's maintenance operations 10 000
	Traffic congestion and accidents due to increase vehicular traffic	Road and safety signs will be positioned along the network running through the jetties/terminals vicinity	Jetties, Terminals/ Complaints on traffic flow/ congestion within Port Record of number of vehicles in and out of port and complaints (no complaints)	Weekly	LASWA	LASWA	
	Soil and water contamination from improper	Solid waste to be collected at point of origin and then taken to storage before disposal;	Transfer stations and disposal areas/ Waste disposal Inspection of amount of waste not		LASWA/ LAWMA		To be included in LASWA's Operating Cost

Environmental and Social Management Plan							
	Potential Impacts	**Mitigation Measures**	**Location/ Monitoring Indicators (Standards)**	**Frequency**	**Responsibility**		**Estimated cost (US $)**
					Implem.	**Monit.**	
	disposal of waste	- Engagement of LAWMA for waste collection and disposal	contained in specified collection containers (All wastes are appropriately disposed)				
Social	Livelihood impacts (Disruption of income flow of ?? PAPs) *not possible to determine the n° of PAPs at this stage*	The prepared RPF will be expanded into a detailed RAP as per the WB ESS 5.			LASWA		In RAP Budget
	Risk of Health and Safety / Occupational risks and accidents related to Ferry operation	- PPE Kit - Proper Sanitation facilities - Strict compliance of LASWA's Occupational Health Administration policy and port users policy - Port workers to be provided with PPE.	Ferry Terminals and jetties/ Complaints from commuters (No complaints)	Weekly	LASWA	LASWA	To be included in LASWA's maintenance operations 10 000

Environmental and Social Management Plan							
	Potential Impacts	Mitigation Measures	Location/ Monitoring Indicators (Standards)	Frequency	Responsibility		Estimated cost (US $)
					Implem.	Monit.	
		- Shall provide appropriate gears and equipment in cargo handling operations					
	Resettlement (Disruption of income flow of ?? operators) *not possible to determine the n° of PAPs at this stage*	The prepared RPF will be expanded into a detailed RAP as per the WB ESS 5.	No. of sensitization sessions considering land use and ownership issue report developed, RAP implemented (No complaint)	Monthly	RAP		In RAP Budget 16 140
Decommissioning Phase							

8.5 ENVIRONMENTAL MANAGEMENT COST

To be completed in the final report when the ESMP table will be finalized and required inputs from other packages.

CHAPTER IX

9 — REMEDIATION PLANS AFTER DECOMMISSIONG/CLOSURE

9.1 INTRODUCTION

To be completed in the Final report depending on inputs from other Packages

9.2 DECOMMISSIONING AND REMEDIATION ACTIVITIES

To be completed in the Final report depending on inputs from other Packages

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