



ECONOMIC COMMUNITY OF WEST AFRICAN STATES (ECOWAS)

DEPARTMENT OF INFRASTRUCTURE, ENERGY AND DIGITALIZATION

DIRECTORATE OF TRANSPORT

TERMS OF REFERENCE (TOR)

FEASIBILITY, PRELIMINARY ENGINEERING DESIGN AND FINANCING STUDY OF THE BANJUL – BARRA BRIDGE ALONG THE DAKAR – ABIDJAN CORRIDOR (TAH-7)





The Praia-Dakar-Abidjan corridor is a subsection of the Dakar- Lagos Coastal Corridor. The Corridor stretches from Dakar in Senegal to Lagos in Nigeria and traverses nine (9) other countries, namely Senegal, The Gambia, Guinea Bissau, Guinea Conakry, Sierra Leone, Liberia, Cote d'Ivoire, Ghana, Togo, Benin and Nigeria. It is considered a key continental route in Africa and is listed amongst the Programme for Infrastructure Development in Africa (PIDA) Priority Action Plan (PAP) 2012-2020 as Trans African Highway number 7 (TAH 7).

The Abidjan-Lagos Corridor and the Praia-Dakar-Abidjan together completes PIDA's first priority Corridor for West Africa. This Corridor extends the coastal highway from Abidjan to Dakar and then by maritime connection to the Port of Praia in Cabo Verde. It is also part of the TAH 7. The corridor covers a total distance of approximately 3,164km and connects some of the largest urban cities in Africa, namely, Praia, Dakar, Banjul, Bissau, Conakry, Freetown, Monrovia and Abidjan.

The desire of the Government of The Gambia is to keep the TAH7 alignment within the country, as per the link through Karang – Karang –Barra –Banjul – Séléti, which include the construction of a new approximately 10km long bridge over The Gambia River between Bara and Banjul.

The study shall take note of the existing studies carried out in the last ten years with a view to refining the alignment, the type of structures recommended, and the estimated cost generated. The study envisages determination of the most feasible link option for the proposed bridge to improve commercial activities, passenger and goods/cargo traffic and open up the influence area for urban development.

It should be noted that the Banjul - Barra Bridge Project is a strategic infrastructure link within the Praia-Dakar-Abidjan Transport Corridor Development Programme, led by the Economic Community of West African States (ECOWAS). The corridor aims to strengthen regional integration, enhance connectivity, and foster increased trade and economic development throughout West Africa. As part of this regional vision, the Barra Bridge will serve both Senegal and The Gambia as a vital link to improve efficient movement of people, goods, and services within and across borders. In this regard ECOWAS intends to commence the Dakar – Abidjan Corridor Highway Alignment Study which aims to identify an optimal alignment for the highway corridor, taking into account technical, economic, environmental, and social aspects to facilitate the assessment of the feasibility of various alternatives.

The Barra Bridge Feasibility Study is a key preparatory stage and it is expected that the study will draw on best practice worldwide and projects within the region, including the Cavalla, Mfum and other River Bridge projects, to ensure that technical design, financial structuring, environmental sustainability, and institutional arrangements considerations are thoroughly integrated.

2 OBJECTIVES OF THE ASSIGNMENT

The goal of the project is to support the economic growth of the countries on the Trans-West African Corridor by fostering integration through reliable, efficient, and seamless transport infrastructure that will increase the competitiveness of the whole region. The project also seeks to facilitate land traffic flow between the northern and southern parts of both The Gambia and the neighbouring country, Senegal in particular, and by extension among the ECOWAS Member States. The expected outcomes include: (I) reduction in travel time to cross from one part of the country to the other; and (ii) enhanced potential





general economic development thereby contributing to poverty reduction and socio-economic empowerment of communities within the two Member States and improve trade within the West African Region as a whole.

The overarching objective of this feasibility study is to determine the technical, financial, environmental, social, and legal viability including the assessment of the required institutional arrangement for the management of a bridge between the North and South banks of the River Gambia to link the important cities in the region. In order to achieve broad objective, the following actions are to be undertaken:

- 1. Assess the technical and engineering feasibility of constructing a bridge and its associated infrastructure.
- 2. Conduct an Environmental and Social Impact Assessment (ESIA) to identify potential risks and recommend mitigation measures, ensuring compliance with national and international safeguards.
- 3. Identify climate change constraints and define and incorporate adaptation measures in the design
- 4. Undertake a comprehensive economic and financial analysis to evaluate project viability and optimal funding mechanisms and define a Highway financing and management model, and develop a monitoring and maintenance program
- 5. Review relevant legal and regulatory frameworks, proposing institutional and governance structures to support the bridge's development and long-term operation.
- 6. Develop the appropriate tender documentation, including engineering design drawings, bill of quantities, cost estimates, technical specifications etc., aligned with ECOWAS and Development partners' standards and best practices.

3 GEOMETRIC FEATURES OF THE PROJECT

3.1. Proposed Bridge Cross-Section

3.1.1. Typical cross section

Element	Approx. Dimension
Median	Strip
Carriageway	2 × (2 lanes × 3.50 m) or 2 × (3 lanes × 3.50 m)
Inner Shoulder (optional)	2 × 1.00 m = 2.00 m
Outer Shoulder	2 × 2.50 m or 2 × 1.00 m
Safety Barrier/Parapet	±0.50 m each side (typical)
Pedestrian	2 x 1.00m
Bike Lane	2 x 1.50m (if Feasible)

3.1.2. Drainage and Services:

Bridge cross-section will accommodate scuppers or drains at intervals to manage stormwater runoff. Consider dedicated conduits for utilities (communication cables, power lines) if required.

3.1.3. Design Speed (90 km/h):

Maintains consistency with approach roads and is a reasonable speed for a mid-length or urban-adjacent bridge. Transition zones (tapers) at the bridge approaches will safely merge traffic from higher-speed or lower-speed sections if needed.





3.2. Approach Roads Geometry

3.2.1. Cross-Section (Typical) for Approach roads

Element	Dimension
Median Width	3.00 m (including barrier/separator)
Carriageway	2 × (3 lanes × 3.50 m) = 2 × 10.50 m (total 21.00 m)
Inner Shoulder	2 × 1.00 m = 2.00 m total
Outer Shoulder	2 × 2.50 m = 5.00 m total
Berm (where applicable)	2 × 0.50 m = 1.00 m total
Bike Lane	2 x 3.00m (if feasible)
Overall Platform Width	Approx. 36.00 m (nominal)

3.2.2. Design Speed (90 km/h):

Reflects a moderate-speed highway alignment suitable for urban or semi-urban conditions.

3.2.3. Alignment and Safety Considerations

• Horizontal and Vertical Alignment:

Curves on approaches and on the bridge itself (if any) should be designed for 90 km/h speed, ensuring adequate stopping sight distance and superelevation as per relevant design codes.

• Transition Areas:

If adjacent sections have higher or lower speeds, incorporate gradual speed-limit changes and geometric transitions to maintain driver comfort and safety.

• Roadside Safety:

Consider the provision of service roads to facilitate movements within the adjoining areas and hardware such as guardrails, crash cushions, and median barriers at both approach roads and bridge transitions shall be. Ensure expansion joints and structural transitions on the bridge slabs are safe and smooth for vehicles.

• Urban/Environmental Constraints:

Noise abatement (barriers screens) will be needed. For environmentally sensitive riverbanks or wetlands, coordinate the embankment slopes, drainage outlets, and pedestrian crossings.





4 SCOPE OF THE CONSULTANT'S SERVICES

The Consultant's services will comprehensively address the technical, socio-economic, environmental, and financial aspects for developing a toll bridge across the mouth of the River Gambia. The proposed bridge site will link Banjul, the capital city in the south, with Barra towards northern Senegal, providing a direct and efficient route to facilitate movement between and within the cities, economic development and regional integration. The consultant should consider the current Banjul. The scope is structured into four distinct phases as detailed below:

Phase 1: Determination of Alignment Options

Phase 1 focuses on determining viable alignment options for the bridge project. The consultant will conduct basic surveys, including topographic, hydrological, geotechnical, traffic, and environmental/social screenings, to gather essential data. The Consultant shall prepare a Multi-criteria Analysis {MCA} framework which will have (to be approved by ECOWAS and The Gambian Authorities), to identify at least three feasible routes. In identifying these options, the consultant shall take note of the following: i) the ferry services shall remain until the bridge is opened to traffic; ii) the alignment should not be too far (at most 15km) from the existing crossing and iii) the appropriateness of the approach roads' incorporation into the future highway. These findings will be synthesized into an Alignment options Report, comparing options based on technical, economic, social, and environmental factors. A Validation Workshop will be held to present these findings to stakeholders, gather feedback, and finalize the alignment options.

Phase 1 Deliverables: Inception Report, Optimal Alignment Report, Validation Workshop Proceedings.

Duration: Four (4) months.

Phase 2: Feasibility Study

Building on the outcomes of Phase 1, the Consultant will undertake a detailed feasibility study for the three shortlisted alignment options. This phase will include additional technical investigations and structured stakeholder engagement to ensure the study reflects both local realities and regional development priorities. Key tasks include:

- I. Advanced Technical Surveys: The Consultant will carry out supplemental traffic counts, origindestination surveys, geotechnical investigations, hydrological assessments, wind speed monitoring, and axle load surveys to refine engineering and economic assumptions.
- II. **Conceptual Engineering Design**: Using data from the technical investigations, the Consultant will develop conceptual designs for the bridge and its approach roads. These designs will integrate climate resilience measures, safety considerations, and provisions for future capacity expansion.
- III. Non-Motorised Transport (NMT) Planning: Given the urban nature of the Banjul–Barra corridor, the Consultant will assess pedestrian and NMT usage patterns and propose an NMT network linking the bridge to surrounding communities as part of a broader mobility plan.
- IV. **Traffic and Revenue Forecasting**: The Consultant will conduct traffic modelling and demand analysis to project future usage, assess willingness to pay, and estimate toll revenue under various scenarios.
- V. **Economic and Financial Analysis**: A comprehensive economic and financial assessment will be carried out, including calculations of Net Present Value (NPV), Internal Rate of Return (IRR), and Economic Rate of Return (ERR). The Consultant will also define tolling strategies and financing options to inform future structuring.





- VI. **Environmental and Social Impact Assessment (ESIA):** The Consultant will prepare a full ESIA, including a Resettlement Action Plan (RAP), to ensure compliance with national and international environmental and social safeguards.
- VII. Market Sounding and Investment Engagement: The Consultant will initiate preliminary engagement with potential investors and development partners to test project bankability and gather feedback on structuring options.

Findings including Consultant's recommendation with justification are to be consolidated into a Draft Feasibility Study Report of the 3 alignments, which will be validated via workshop and finalized afterward. Following the incorporation of Client's comments. The agreed route will be carried forward to phase 3.

Phase 2 Deliverables: (Detailed in the subsequent sections of the Terms of Reference).

Duration: Seven (7) months.

Phase 3: Preliminary Engineering Design, Financing, Management Strategy and Preparation of Tender documents

Building on the outcomes of Phase 2, the Consultant shall develop preliminary engineering designs for the selected, most viable alignment. This includes detailed structural configurations, approach and service roads, all supporting infrastructure, and life-cycle maintenance considerations to ensure operational sustainability.

As part of phase 3, noting that the next step of the assignment will focus on creating a viable financing and management approach covering public funding, donor support, or PPP structure along with clear governance and operational frameworks, the Consultant shall analyse legal and institutional requirements, identify all risks and propose risk sharing arrangements, and assess different PPP models (e.g., BOT with or without State guarantees). Crucially, two types of tender packages may be prepared: one for a traditional procurement route (if state or donor financing is deemed suitable) and another tailored for a PPP or privately financed structure. Each set of documents encompass the necessary contracts, technical details, and supporting reports, ensuring transparency and alignment with regional and international standards.

Deliverables: (Detailed in the subsequent sections of the Terms of Reference)

Duration: Six (7) months

Consultants will also accompany ECOWAS and the beneficiary Member States to present the investment brief (PIM, bankability pack, pitch deck, etc.), to potential investors. This will include two investment forums to be conducted in the Region and will be costed separately.







4.1. Phase 1: Determination of Alignment Options

4.1.1. Project Context

At the outset, the Consultant shall gather and review all available documentation, including previous feasibility studies, traffic and trade data, relevant policies, and technical surveys relating to the proposed bridge corridors. This initial assessment will help identify key data gaps and potential constraints, whether geographical, institutional, or technical that could affect alignment choices. The consultant will look to develop the bridge around the Banjul–Barra existing ferry channel with a view to ensure continuous Ferry services during construction.

In parallel, the Consultant will engage with stakeholders such as government agencies, local authorities, ECOWAS representatives, community leaders, the private sector, and civil society organizations to capture diverse perspectives on the project. These discussions will ensure that alignment options support national development objectives and regional integration goals.

Building on the findings from the documents review and stakeholder consultations, the Consultant shall propose a refined methodology for conducting the study. This methodology will outline site investigations, geotechnical and hydrological surveys, environmental and social considerations, economic and financial modelling, and an approach to risk management, data collection, and resource allocation.

4.1.2. Data Collection, Field Investigations, and Preliminary Analysis

The Consultant will commence detailed data collection and analysis upon approval of the Inception Report. Given that this is a greenfield project with no existing nearby bridges, the following preliminary surveys and investigations, among others, are crucial to inform route option selection and subsequent design phases.

The Consultant shall undertake the following:

4.1.2.1. Reconnaissance & Preliminary Topographic Survey:

The Consultant shall conduct a reconnaissance survey followed by preliminary topographic survey to establish the general terrain characteristics of the project area. These surveys will focus on identifying a maximum of five (5) alignments that may be considered for further analysis and is to establish key features that may influence bridge alignment, including:

- General ground elevations and slopes.
- Location and extent of water bodies (rivers, streams, wetlands).
- Existing infrastructure (roads, utilities) within a broad corridor.

Methodology may include a combination of:

- Review of existing topographic maps and digital elevation models (DEMs).
- Use any appropriate technology i.e., satellite imagery, aerial photography, eco-sounding to determine the river surface and bed levels.
- Limited ground-based surveys using Global Positioning System (GPS) equipment to establish control points and for verification of data.





Deliverables shall include:

- A topographic map of the project area, at a suitable scale, showing the features described above.
- A digital terrain model (DTM) of the project area including the river surface and bed.

4.1.2.2. Preliminary Hydrological Survey:

The Consultant shall conduct a preliminary hydrological survey to understand the watercourse and its characteristics at the proposed bridge location. This survey will be used to:

- Identify the watershed area and drainage patterns.
- Estimate preliminary design discharges based on available rainfall data and hydrological models.
- Assess potential flood risks and identify flood-prone areas.
- Investigate any existing hydrological data, including historical flood records, if available.

The Consultant shall perform the following:

- Review of existing hydrological data, including but not limited to rainfall intensity-duration-frequency (IDF) curves, streamflow data from nearby gauging stations (if available), and flood maps.
- Site reconnaissance to observe the watercourse morphology, including channel width, depth, and bank conditions.
- Interviews with local communities to gather information on historical flood events, flood depths, and flow patterns.

Deliverables shall include:

- A hydrological report summarizing the findings of the survey.
- Preliminary estimates of design discharges for various return periods.
- A map delineating potential flood-prone areas.

4.1.2.3. Preliminary Geotechnical Investigation:

The Consultant shall conduct a preliminary geotechnical investigation to obtain a general understanding of the subsurface soil and rock conditions at the proposed bridge site. This investigation will help in:

- Identifying potential foundation challenges (e.g., soft soils, unstable slopes).
- Assessing the general suitability of the site for bridge construction.
- Planning the scope of more detailed geotechnical investigations to be conducted in subsequent phases.

The Consultant shall perform the following:

- Review of existing geological maps, soil survey reports, and any available geotechnical data from nearby construction projects.
- Site reconnaissance to observe surface soil conditions, rock outcrops, and any signs of instability.
- Bathymetric survey of the water level at the selected alignment





- Eco sounding along the alignment to determine the approximate depth of river bed.
- Drilling at 5-10 points along each proposed alignment depending on the length of the crossing in question to take samples to give indication of the soil profile of riverbed. A rig mounted on a pontoon or any modern approach may be used. The borings shall be advanced using appropriate drilling methods, and soil samples shall be collected for visual classification and basic laboratory testing.

Deliverables shall include:

- A geotechnical report summarizing the findings of the investigation.
- Boring logs showing the soil profiles encountered.
- Results of basic laboratory tests (e.g., soil classification, moisture content).
- Preliminary recommendations regarding foundation types and potential geotechnical issues.

4.1.2.4. Traffic Counts and Origin-Destination (O-D) Survey & Analysis (Preliminary):

The Consultant will conduct preliminary traffic counts and O-D analyses to understand the existing traffic patterns and demand in the project area. Given the greenfield nature of the project, this will involve:

- Review of any regional or local transportation plans, traffic studies, or census data that may provide relevant information.
- Short-duration manual traffic counts at key points on existing roads that may connect to the proposed bridge approaches.
- Collect and review the daily traffic (vehicular and passenger) that use the ferry. The passenger traffic may be converted to equivalent buses during analysis.
- Interviews with local authorities, community leaders, and businesses to obtain qualitative information about travel patterns and transportation needs.

Deliverables shall include:

- A summary report of existing traffic data.
- Estimates of current Average Annual Daily Traffic (AADT) on relevant roads.
- A qualitative description of the origin and destination of trips in the project area.

4.1.2.5. Environmental and Social Screening:

The Consultant shall conduct an initial environmental and social screening to identify potential impacts and constraints associated with the proposed bridge and its approach roads. This will include:

- Review of relevant environmental regulations, policies, and guidelines.
- Mapping of environmentally sensitive areas (e.g., protected areas, critical habitats) using available data.
- Identification of potentially affected communities and social groups.





• Preliminary assessment of potential impacts related to land acquisition, resettlement, and cultural heritage.

Deliverables shall include:

- An environmental and social screening report.
- Maps showing environmentally and socially sensitive areas.

4.1.2.6. Stakeholder Engagement:

The Consultant will deepen stakeholder engagement through interviews, focus group discussions, and site visits, where relevant. Local insights, including community knowledge regarding flood patterns, land use, economic activities, and cultural considerations, will be integrated into the technical findings.

Deliverables shall include:

- A stakeholder engagement plan
- A summary report of stakeholder consultations.

This phase is crucial for identifying issues that may shape alignment decisions, including sensitive habitats, potential resettlement needs, points of congestion, or significant maintenance factors affecting different alignment options. The findings will enable a more robust analysis of alignment alternatives.

4.1.3. Developing and submitting the Alignment Option Report

Building on the insights gathered during data collection and preliminary analysis, the Consultant will synthesize all relevant findings into an Optimal Alignment Report. This report will provide:

- A structured comparison of the alignment options, including technical, environmental, social, and economic considerations. A maximum of five (5) alignments shall be considered initially
- Preliminary cost estimates and an assessment of constructability, considering local conditions such as soil profiles, water depths, possible foundation depth and type and navigational requirements.
- A traffic impact projection, highlighting how each alignment option might influence local travel patterns and regional trade flows
- An overview of significant risks associated with each alignment, such as environmental sensitivities, community acceptance.
- Approach road length for the various alignment options is to be confirmed in this phase.
- From this analysis, the Consultant will through a Multi-criteria Approach (MCA) recommend a maximum of three possible routes ("preferred" alignment options) that best meet the project's objectives of cost-effectiveness, minimal environmental and social impacts, and alignment with national/regional development strategies.





4.1.4. Deliverables for Phase 1

4.1.4.1. Inception Report

The Consultant will prepare an Inception Report that demonstrates a clear understanding of the project background, objectives, and deliverables, while outlining a detailed work plan and schedule of all activities for the entire study. This report will include a refined methodology for assessing potential alignments, encompassing survey protocols and data-gathering strategies, and it will provide an overview of the key experts, their roles, and the resources required for subsequent phases. In addition, the report will present a preliminary stakeholder engagement plan ensuring inclusive participation, with particular attention to gender and socio-economic diversity. By establishing the baseline framework for the entire project and serving as a reference point for all subsequent activities, the Inception Report will be subject to stakeholder review and feedback, thereby ensuring the Consultant's approach is comprehensive and aligned with project objectives.

4.1.4.2. Draft Optimal Alignment Report

This report shall present a detailed evaluation of potential alignment options, along with technical, economic, social, and environmental considerations that inform the recommendation of a preferred options.

4.1.4.3. Validation Workshop

A formal session to review, discuss, and validate the findings and recommendations in the Optimal Alignment Report shall be organized. The proceedings of this workshop (including participant feedback) will shape and refine subsequent project study phases.

Following the submission of the Alignment Option Report, the Consultant will organize a Validation Workshop to present the findings and recommendations to stakeholders, including government representatives, regional bodies (e.g., ECOWAS), and local community stakeholders. During this workshop:

- The Consultant will outline the methodology used, data collected and sources, and rationale behind recommending the three shortlists of alignments.
- Participants will be invited to provide feedback including concerns and questions they may have about the technical aspects (e.g., geotechnical feasibility, hydrological concerns), social/environmental implications (e.g., land acquisition, community livelihood, gender considerations) and ballpark cost estimates.
- The Consultant will document all feedback, revise all related reports accordingly and, where needed, indicate how these insights will be incorporated into the subsequent feasibility tasks in Phase 2.

Upon conclusion of the Validation Workshop, the Consultant will prepare and circulate a summary of workshop proceedings, capturing stakeholder feedback and any recommended refinements to the alignment report. At the end of the workshop the consultant will submit a **final Alignment Option report** with a comments Matrix.

NB: This will be included in the consultant's financial proposal based on a provisional sum from the client.



Final Optimal Alignment Report



Based on the feedback received from the ECOWAS and the member states after the validation workshop at least three (3) of the high-ranking options will be selected for further analysis during the feasibility studies stage.

4.2. Phase 2: Feasibility Study

4.2.1. Traffic and Revenue Forecast

The absence of an existing bridge between Banjul and Barra means current river crossing depends entirely on ferry operations, creating a critical bottleneck in the broader **Dakar–Abidjan corridor**. This feasibility study must therefore capture both current ferry-based travel patterns, regional traffic at the borders and the likely induced demand from regional and local traffic once a more efficient bridge connection becomes available. Accordingly, the Consultant shall undertake the following tasks to produce a robust Feasibility and Preliminary Design Study including traffic and revenue forecast:

4.2.1.1. Traffic Data Collection and Model Calibration

Supplemental Traffic Surveys: Building on Phase 1 data, conduct targeted counts and studies, including:

- Manual Classified Counts (MCC) at a minimum of 15 locations, covering key approaches and intersections for 14 days.
- Automatic Traffic Counts (ATC) at a minimum of 15 locations to gather 24-hour volume data for 14 days.
- **Origin–Destination (OD) Surveys** at a minimum of 10 strategic sites, reflecting both local commutes and long-distance corridor traffic for 5 days.
- **Stated Preference Surveys** to gauge travellers' willingness to switch from ferries to the potential bridge and at what level of toll they willing to pay for this switch.
- **Axle Load Investigations** at selected sites (including near the Trans-Gambian Bridge, if feasible) to refine assumptions on heavy vehicle usage.

Traffic Model Update: Calibrate the traffic model (using CUBE, PTV, EMME, or equivalent) to reflect actual field data, incorporating low-, medium-, and high-growth scenarios over a **30-year** forecast period.

4.2.1.2. Forecasting and Sensitivity Analysis

Demand Analyses: Account for socio-economic factors, any competing ferry or road routes, and induced demand expected from a faster, and more reliable bridge crossing.

Future Mix of Vehicles: Factor in changes in vehicle composition such as heavier trucks, larger buses, or more private cars driven by economic growth and future reforms in public transport systems.

Influence of Ongoing/Proposed Projects: Integrate data from other corridor improvements or expansions that could shift traffic flows toward (or away from) the Banjul–Barra route.

Sensitivity Analysis: Conduct sensitivity analysis to assess how variations in key assumptions such as traffic growth rates, socio-economic projections, vehicle mix distributions, and impact from supporting or competing infrastructure projects could influence projected traffic volumes. Scenarios will encompass





optimistic, baseline, and conservative estimates to ensure robustness of forecasts. Finding from these analyses will be validated through comprehensive discussions with ECOWAS Commission, ensuring alignment with regional development priorities and transport strategies

4.2.1.3. Tolling Strategy and Revenue Projections

Willingness-to-Pay Analysis: Categorize vehicles (e.g., cars, minibuses, trucks) and assess feasible toll rates based on stated preference surveys and regional benchmarks.

Comprehensive Revenue Projections: Develop multiple pricing scenarios considering inflation, economic growth, and cross-border trade dynamics. Document all assumptions on diverted and induced traffic, ensuring clarity on how ferry usage might transition to the new bridge.

Traffic Growth Rates: Provide forecasts for at least three demand-growth trajectories (low, medium, high), reflecting potential variations in regional economic development.

4.2.1.4. Axle Load Investigation

Due to the nature of the proposed bridge site, axle load investigations are required. These will be conducted at the approach roads to the ferry landing sites and, also include data from the existing weighbridges by the Trans-Gambian bridge about 100km upstream due to potential diversions. The upstream survey is optional, contingent on the accuracy of existing data. For both locations (or the bridge site alone), axle load measurements will be taken continuously over one week, using mobile weighbridges

Data Utilization: Gather vehicle axle configurations, average gross weights, and distributions of axle loads and use the results to inform pavement thickness design, maintenance schedules, and conformity with ECOWAS Regional Axle Load regulations.

4.2.1.5. Wind Speed Investigation

Given the proximity of the bridge to the Atlantic Ocean and associated exposure to maritime weather conditions, detailed wind speed investigations must be undertaken to ensure structural safety and stability, if need be. The Consultant shall install wind measurement stations at both ends of the proposed bridge alignment to continuously record wind speed and direction over a minimum period of three months. The survey will capture seasonal variations, peak gust speeds, sustained wind conditions, and directional prevalence to accurately characterize local wind climate.

Data from these investigations will be analysed to determine critical wind parameters required for aerodynamic and structural design considerations, such as wind-induced vibrations, potential resonance effects, and the specification of structural wind loads. The outcome of this survey will directly influence the bridge's design criteria, ensuring resilience to extreme weather events and compliance with international and regional engineering

4.2.1.6. Reporting

Traffic and Revenue Forecast Report: Summarize methodology, data sources, assumptions, and outcomes in a dedicated report. Highlight forecast uncertainties, especially regarding induced traffic from the new bridge, ferry-to-bridge modal shifts, and corridor-wide developments.





Scenario/Sensitivity Analyses: Include detailed scenario and sensitivity testing for key variables (construction phasing and possible cost increase, toll rate fluctuations, macroeconomic changes) and robust explanations for variations in results.

Axle Load Report: This dedicated report will document the methodologies, site-specific data collection processes, axle load distribution analysis, and key findings. Recommendations regarding pavement design, maintenance planning, and regulatory compliance with ECOWAS standards will be clearly articulated, supported by empirical data and analysis.

Wind Speed Report: The wind speed report shall detail the locations and durations of wind data collection, the methodologies and instruments utilized, analysis procedures, and critical findings. Essential design parameters, including recommended structural wind loads and mitigation measures for wind-induced risks, will be explicitly documented to ensure robustness and long-term stability of the bridge structure

4.2.2. Economic and Financial Analysis

Drawing on engineering data, construction cost estimates, and traffic and revenue forecasts, the Consultant shall carry out a comprehensive assessment of the socio-economic and financial viability of the Banjul–Barra Bridge project. This analysis will underpin financing arrangements (public or private) and ensure the project's long-term sustainability. The following shall be considered:

- 1. Life-Cycle Costing
 - **Capital Expenditures (CAPEX):** Establish thorough estimates of all upfront costs, including materials, land acquisition, civil works, and technology implementation (e.g., toll systems).
 - **Operating Expenditures (OPEX):** Determine yearly operating costs for toll collection, security, routine maintenance, and periodic maintenance including rehabilitation over the project's design life (e.g., 30–40 years).
 - **Residual Value:** If applicable, the terminal value of infrastructure components (e.g., substructure, superstructure, approach roads) at the end of the analysis period.
- 2. Socio-Economic Benefits
 - **Travel-Time Savings & Vehicle Operating Costs:** Quantify reductions in vehicle travel time, fuel consumption, and vehicle wear-and-tear due to the improved crossing.
 - **Trade Facilitation Gains:** Estimate benefits from enhanced cross-border trade flows, shorter regional supply chains, and improved market access for local producers.
 - **Employment & Local Economic Development:** Identify direct construction jobs, operational employment (toll staff, maintenance crews), and indirect/spinoff jobs/activities (hospitality, commerce) in surrounding communities.
 - Wider Integration Effects: Account for economic synergy with other regional corridors and infrastructural developments, reinforcing the project's strategic importance in West African transport networks.
- 3. Investment Scenarios





- **Public Financing:** Evaluate the feasibility of direct government funding or national budgetary allocations, considering public debt constraints and sovereign guarantees.
- Public-Private Partnerships (PPPs): Examine concession-based models (e.g., BOT, DBFO), revenue-sharing frameworks, or viability gap funding where traffic volumes alone may not fully support private investment.
- **Concessional Loans & Blended Finance:** Investigate multilateral or bilateral development loans, grants, or partial credit guarantees to enhance the project's creditworthiness.
- **Multiphase Investment:** Explore the feasibility of dividing both the approach roads and the main bridge span into two distinct phases, with the completion of one side (of both the approach and the bridge) prioritized for initial use by bidirectional traffic. This phased approach aims to manage costs and mitigate risks by allowing for early usability and potentially staggered investment.

4. Economic and Financial Metrics and Sensitivity Analyses

- Net Present Value (NPV): Calculate discounted cash flows over the project's lifetime to measure absolute net benefits.
- Internal Rate of Return (IRR) & Economic Rate of Return (ERR): Compare the project's returns to conventional hurdle rates or socio-economic benchmarks.
- **Traffic Growth and Toll Rates:** Conduct scenario testing around high, medium, and low traffic growth assumptions, alongside toll variations (e.g., dynamic pricing, flat rates, multi-tier vehicle classes).
- **Construction Phasing & Cost Escalation:** Model potential impacts of constructing half bridge and road as a first step with the other half subsequently when traffic increases, delayed construction schedules, cost overruns, or foreign exchange fluctuations on the financial viability.

Sensitivity analysis: Conduct economic sensitivity to cover optimistic, baseline, and conservative assumptions, to ensure robustness of the Analysis.

5. Investment Engagements

- Investor Workshops & Roadshows: Organize targeted events to present the project's business case to commercial banks, private equity funds, and multilateral lenders.
- **Stakeholder Feedback:** Incorporate investor perspectives on preferred risk allocation, expected returns, and contract terms (concession duration, minimum revenue guarantees).
- **Marketing Materials:** Prepare concise, data-driven pitch decks or memoranda emphasizing the project's strategic location, traffic demand forecasts, and risk mitigation plans.

6. Financial Model

• **Model Architecture:** Develop an integrated spreadsheet or software-based model that combines capital and operating costs, revenue streams (e.g., tolls, ancillary concessions), debt servicing, and equity returns.





- **Cash Flow Projections:** Provide annual or semi-annual income statements, balance sheets, and cash flow statements over the project horizon, clearly identifying expected net revenues and funding gaps (if any).
- **Financing Assumptions:** Outline interest rates, grace periods, debt-to-equity ratios, and any public subsidies or guarantees. Incorporate sensitivity toggles (traffic fluctuation, inflation, currency exchange rates) to show potential upside and downside risk.
- **Risk Identification, Analysis & Mitigation:** Highlight key project risks (construction delays, cost overruns, lower traffic) and demonstrate how the model accommodates mitigating strategies (e.g., contingency allocations, performance bonds). Risk allocation
- **Investor-Facing Outputs:** Ensure the model generates straightforward outputs (NPV, IRR, DSCR, payback periods) for lenders, sponsors, and government authorities to evaluate feasibility and negotiate funding terms.

4.2.3. Environmental and Social Impact Assessment

The Consultant shall undertake an ESIA that complies with AfDB Integrated Safeguards, IFC Performance Standards, and national Gambian legislation. Key tasks are:

- 1. Scoping & Stakeholder Engagement define spatial/temporal boundaries, identify valued environmental and social components (VECs), and launch an inclusive stakeholder-engagement plan.
- 2. Baseline Studies collect and validate data on physical (air, water, soil, noise), biological (flora, fauna, critical habitats), and socio-economic conditions (land use, livelihoods, cultural heritage) within the area of influence.
- 3. Impact Identification & Evaluation predict construction- and operation-phase impacts; rank significance using a transparent, criteria-based matrix that accounts for magnitude, duration, reversibility, and sensitivity.
- 4. Mitigation & Enhancement Measures develop practicable measures to avoid, minimise, restore, or offset adverse impacts and to maximise positive outcomes.
- 5. Environmental & Social Management Plan (ESMP) prepare a costed plan that assigns responsibilities, performance indicators, monitoring schedules, capacity-building needs, and grievance-redress mechanisms.
- 6. Disclosure & Consultation present findings in non-technical summaries, disclose in accordance with lender policy, and document public consultations.
- 7. Compliance Matrix provide a matrix demonstrating alignment with applicable national laws, AfDB, and IFC requirements.

Methodological details (survey protocols, sampling frequencies, modelling techniques, significance-rating formulas, etc.) shall be elaborated in Annex 1.

4.2.4. Conceptual Engineering Design

The Consultant shall develop Conceptual Engineering Designs to a level of detail that supports robust cost estimation for construction, ensuring a high degree of accuracy in financial planning and investment





decisions. The consultant will prepare **one cost-optimised concept and one landmark ('iconic') concept for each of the three alignments**. At a minimum, this includes:

4.2.4.1. Alignment and Geometry

- Refine proposed horizontal and vertical alignments from Phase 1, integrating geotechnical, hydrological, and environmental constraints.
- Prepare typical cross-sections for the main bridge and approach roads, ensuring safe traffic flow and adequate space for future capacity expansion or non-motorized facilities.

4.2.4.2. Structural Configuration

- Propose suitable bridge designs (e.g., girder, cable-stayed) based on site-specific factors like river width, soil conditions, navigation requirements, and aesthetic considerations.
- Outline major structural elements (piers, deck, abutments) and provide preliminary load calculations (live loads, wind, seismic, vessel impact if navigable).

4.2.4.3. Foundation and Geotechnical Considerations

- Incorporate results from Phase 1 or additional geotechnical investigations to propose foundation types (pile, caisson, shallow footing) that ensure stability.
- Include preliminary designs for embankments, retaining structures, and erosion-protection measures around riverbanks.

4.2.4.4. Approach Roads, Drainage, and Ancillary Works

- Show typical layouts for approach roads, intersections, and connections to existing networks, with preliminary drainage solutions for stormwater management.
- Identify ancillary facilities such as toll plazas, service roads, or maintenance areas, specifying design requirements at a conceptual level.

4.2.4.5. Preliminary Bill of Quantity (BOQ)

- Compile an itemized list of key construction components (earthworks, structural concrete, steel reinforcements, etc.) with estimated quantities.
- Provide unit costs based on recent market data or comparable regional projects, ensuring the accuracy of overall cost estimates.
- Highlight any specialized materials or advanced technologies that could affect cost or local procurement strategies.

4.2.4.6. Risk and Constructability Assessment

- Identify potential construction challenges (e.g., river currents, property impact on approach roads, work in environmentally sensitive zones) and propose mitigation strategies.
- Consider phasing or sequencing to optimize cost, labour, and resource deployment.





- Present conceptual design drawings (plan, elevation, cross-sections) and associated data in a Conceptual Engineering Design Report, ensuring sufficient clarity for subsequent detailed design.
- Integrate cost estimates into the wider financial model (see Section 4.2.2), demonstrating how conceptual design choices influence CAPEX, maintenance, and long-term operating costs.

4.2.5. Consolidation of Findings and Deliverables

After completing the technical, financial, and ESIA work streams and developing the Conceptual Engineering Designs, the Consultant will integrate all findings into a Draft Feasibility Study Report for the three (3) options, to include:

- Conceptual Engineering Designs and Bill of Engineering Measurement & Evaluation (BEME)
- Detailed Traffic and Revenue Forecast Report
- Economic and Financial Analysis (including scenario assessments)
- Comprehensive Environmental and Social Impact Assessment (ESIA) and Resettlement Action Plan (RAP)
- Proposed Legal and Institutional Framework (PPP structures, governance, risk mitigation)
- Selection of Optimal Alignment based on multi-criteria evaluation (engineering, environmental, social, economic)

The Consultant shall present the Draft Feasibility Study at a Validation Workshop involving government stakeholders, potential investors, and relevant regional agencies. Feedback gathered during this workshop will be incorporated into the Final Feasibility Study Report, ensuring alignment with stakeholder expectations and investment community standards

4.2.6. Expected Phase 2 Deliverables

The feasibility study shall evaluate three alignment options, comprehensively addressing technical, economic, environmental, financial, social, and legal considerations, and providing recommendations on financing strategies and alignment choices. Specifically, the Consultant will produce the following distinct reports

4.2.6.1. Traffic and Revenue Forecast Report

This standalone document will detail methodologies, assumptions, and outcomes from traffic data collection, demand modelling, and toll revenue projections, including sensitivity analyses and traffic scenario assessments. The report shall clearly articulate forecast uncertainties, modal shifts from ferry to bridge, and regional traffic growth implications

4.2.6.2. Economic and Financial Report

The report will comprehensively document all financial and economic analyses performed, including capital expenditure (CAPEX), operational expenditure (OPEX), lifecycle costing, and residual values. It will assess socio-economic benefits such as travel-time savings, vehicle operating costs, trade facilitation gains, employment generation, and broader economic integration effects. Additionally, the report will





evaluate multiple investment scenarios, including public financing, PPP models, concessional funding, and phased construction scenarios, supported by sensitivity analyses for key economic and financial metrics (NPV, IRR, ERR).

4.2.6.3. Environmental and Social Impact Assessment Report

his detailed document will present the findings from comprehensive environmental and social studies in line with AfDB Integrated Safeguards, IFC Performance Standards, and national legislation. The report will cover scoping outcomes, baseline studies, impact identification and evaluation methodologies, clearly defined mitigation measures, and an Environmental and Social Management Plan (ESMP). Stakeholder consultation processes, compliance matrices, and public disclosure summaries will also be included.

4.2.6.4. Conceptual Engineering Designs and BOQ

A comprehensive package of conceptual design drawings, technical descriptions, and a preliminary bill of engineering measurement and evaluation, providing cost estimates to a high degree of accuracy.

4.2.6.5. Draft Sensitized Feasibility Study Report

This Synthesized document will summarise technical, economic, financial, environmental, social, and legal findings from the feasibility assessment. It will recommend optimal alignment based on a multicriteria evaluation and propose suitable financing strategies and institutional frameworks, clearly identifying risks and mitigation measures.

4.2.6.6. Market Sounding

Targeted presentations to potential financiers or investors, incorporating feedback to refine the final feasibility outputs. These sessions will aim to capture investor feedback, refine the feasibility outcomes, and enhance the project's marketability and appeal.

4.2.6.7. Validation Workshop

A structured forum for reviewing and refining the Draft Feasibility Study, securing stakeholder consensus, and finalizing strategic directions.

4.2.6.8. Final Feasibility Study Report

A definitive feasibility document reflecting all stakeholder inputs and forming the basis for advanced design, procurement, and funding negotiations.





.3. Phase 3: Preliminary Engineering Design, Financing, Management Strategy and Tender Documents

Based on outcome from phase 2, the Consultant shall initially develop preliminary engineering design for the selected most viable alignment selected, specifically:

- **Bridge Configuration**: Span arrangement, foundation types (e.g., pile, shallow footings), superstructure materials, and recommended construction methodology (e.g., cast-in-situ, precast segmental). Alternative bridge designs shall be comparatively evaluated based on criteria such as cost efficiency, durability, ease of maintenance, and environmental impact.
- Approach Roads: Geometric design based on safety and traffic considerations, pavement structures utilizing local materials identified in geotechnical studies, detailed drainage designs including longitudinal and cross-drainage systems, climate resilience measures, and public lighting in urban sections. The consultant will also determine the length of appropriate approach roads to line the bridge to planned national highway.
- **Supporting Infrastructure:** Design of toll plazas, weigh stations, rest areas, parking, traffic management systems, Intelligent Transportation Systems (ITS), and multimodal integration.
- Life-Cycle Considerations: Preliminary maintenance cost estimates considering local environmental conditions and sustainability.

As part of this phase, the consultant will develop a feasible financing and management framework for the project, which may include public funding, donor participation, or Public-Private Partnerships (PPPs). The framework must ensure cost-effectiveness, balanced risk allocation, compliance with regulations, and alignment with national and regional development goals. Governance arrangements for long-term operation, tolling, revenue management, and asset maintenance should also be explicitly defined.

4.3.1. Topographic Surveys

All topographic work must adhere to international standards and specifications, ensuring precise volume calculations and geometrical alignment. Specific tasks include:

1. Installation of the Polygonal

Durable primary markers (concrete or otherwise) shall be placed at 500 - 1000 m intervals from the alignment axis for direct sighting. Secondary Markers could be 200m intervals. Each marker is connected in XYZ coordinates to the established local or national levelling system. The Consultant shall detail the chosen surveying method, provide planimetric and altimetric calculations, and produce sketches identifying each station.

2. Topographic Survey of the Alignment

A detailed topographic survey (XYZ) shall be performed over a 100 m right-of-way centred on the main axis, free of obstacles. For river crossings, surveys extend 100 m to each side of the road axis. A plan at a 1:2,000 scale shall show all notable features within this strip.

• **Transverse Profiles:** Captured at suitable intervals to accurately represent topography and drainage on both sides of the road. Profiles must be shown at scales of 1:100 (horizontal) and 1:20 (vertical).

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- o Longitudinal Profiles: Presented at scales of 1:1,000 (horizontal) and 1:100 (vertical).
- **3. Bathymetric survey:** A focused bathymetric survey will be conducted along the proposed bridge alignment, extending into adjacent river sections for at least 500–1000 meters on each side. The survey shall capture accurate depth profiles, bed morphology, and sediment characteristics critical to structural foundation design and scour analysis. Data collection will utilize appropriate hydrographic methodologies (e.g., echo sounding) and integrate real-time or post-processed tidal corrections to ensure high accuracy. The survey outputs—contour maps, raw datasets, and a concise technical report—will inform subsequent hydrological and structural modelling tasks in the feasibility study.

4. Survey of Special Alignment Points

All critical points such as trees, buildings, poles, water bodies, outcrops, drainage structures, intersections, and relevant local features shall be recorded.

5. Survey of Existing Roads and Structures

The Consultant shall update existing road and structure data through direct surveys and by consulting local road authorities. This includes tracks, footpaths, and other branch connections that might require overpasses or pedestrian infrastructure.

6. Urban Area Crossings

For urban sections, topographic surveys at 1:1,000 scale must capture buildings, utilities, drainage channels, and areas with significant pedestrian or vehicular traffic. Utilities such as water, sewerage, electricity, fibre optics, and fuel lines must be mapped accurately.

4.3.2. Geotechnical/Pavement Studies

These investigations aim to determine the soil and material properties necessary for designing the proposed Banjul–Barra Bridge and its approach roads. By combining fieldwork (e.g., boreholes, trial pits, in-situ testing) with laboratory analyses, the Consultant will ensure that the final designs account for local geological conditions, material availability, and long-term performance requirements.

1. Soil Investigations

- **Mapping and Characterization**: Perform geological mapping to identify and classify soil types, focusing on foundation suitability and potential challenges (e.g., compressible layers).
- **Construction Material Identification**: Locate borrow pits and rock quarries suitable for road embankments, base courses, and structural concrete aggregates.
- **Pavement Material Classification**: Assess potential pavement materials by testing properties such as grading, bearing capacity, and moisture susceptibility.
- Field and Lab Testing: At bridge foundations and critical structures, conduct boreholes, trial pits, and laboratory tests (CBR, Atterberg limits, Proctor, compression). In-situ methods (e.g., Pressure meter Test (PMT), Dynamic Cone Penetrometer (DCP), Cone Penetration Test (CPT)) will validate bearing capacity assumptions.





Other test may include Proctor Compaction (Modified) and CBR (soaked), Triaxial Compression or Unconfined Compression tests for cohesive soils, Shear Box testing for slope stability calculations and Los Angeles Abrasion / Micro-Deval for aggregate durability

2. Technical Design for Structure Foundations

- **Subsoil Capacity**: Determine the bearing capacity and compressibility of soils beneath proposed abutments and piers, ensuring stability under both static and dynamic loads.
- **Rock Quality**: Where bedrock is present, perform tests (e.g., Rock Quality Designation—RQD) to guide foundation design.
- Load Conditions: Assess vulnerability to seismic forces, horizontal impacts (ship collisions if near navigable channels), or other extreme events, ensuring compliance with relevant design standards.

3. Road Alignment Foundation

- **Trial Pits**: Excavate 1 m x 1 m pits to at least 1 m depth at intervals (approx. 200 m) along the alignment, or as site variability dictates.
- Laboratory Characterization: For each sample, undertake grading analysis, Atterberg limits, Proctor compaction, CBR, and swell testing to define soil classification and pavement design inputs.
- **Deflection Testing**: Where existing roads may be incorporated or upgraded, measure in-situ deflections to evaluate current bearing capacity and plan necessary rehabilitation measures.

4. Sampling at Material Sites

- **Unconsolidated Deposits/Rock Quarries**: Open trial pits and run tests (Los Angeles Abrasion, Micro-Deval, chemical analyses) to ascertain suitability for embankments, aggregates, or fill.
- **Mapping and Volume Estimation**: Precisely locate all borrow sites and quarries on project maps, estimating available volumes and haul distances to optimize cost and logistics.

4.3.2.1. Geotechnical Reporting

All geotechnical findings must be compiled into a Comprehensive Geotechnical Report, serving both feasibility and preliminary design stages:

- Site Investigation Logs: Borehole logs (with SPT, PMT, CPT data), trial pit sketches, photos of core samples, etc.
- **Test Results and Interpretation**: Summaries (tabular + narrative) of lab analyses (grain size, Atterberg limits, compaction, CBR, chemical properties).
- **Geotechnical Profiles**: Cross-sections detailing stratigraphy, water table depth, and recommended bearing layers or geotechnical design notes.





- Foundation Recommendations: Suitable foundation type (piles, shallow footings, etc.) for each structure, addressing bearing capacity, settlement, seismic/horizontal load factors, and scour potential.
- **Pavement Design Proposals**: Specifications for layer composition, thickness, and materials, referencing traffic forecasts and local climatic conditions.
- **Treatment of Compressible Soils**: Proposed measures (e.g., preloading, staged embankment construction, geosynthetics) for soft or weak ground.
- Mass-Haul & Material Logistics: Evaluations of feasible borrow sites, recommended usage, haul distances, and associated cost implications.

4.3.3. Hydrological, Hydraulic and Drainage Studies

The Consultant shall undertake a comprehensive hydrological and hydraulic assessment tailored to the approx. 10 km bridge crossing between Banjul and Barra, including approach roads lengths determined in phase 1. This study must ensure effective drainage and water management by addressing the following:

1. Flow Characterization

- Identify and quantify all relevant water sources (rainwater, groundwater, slope runoff), considering both the riverine and coastal dynamics unique to the Gambia River estuary.
- Map the sub-catchment areas and delineate any surfaces that naturally drain toward the approx. 10 km bridge alignment and the 4 km approach roads.

2. Rainfall and Tide Analysis

- Gather and analyse meteorological data from the nearest stations to establish average rainfall patterns, peak storm events, and seasonal variations.
- Account for tidal influences—especially high and low tide conditions—that can affect water levels and drainage capacity in the estuarine environment.

3. Existing Structures and Capacity

- Evaluate the hydraulic capacity of any existing drainage, sewerage, or culvert systems along the approach roads, determining necessary rehabilitation or replacement.
- Integrate a 100-year return period for major structures, particularly the bridge, and justify any modifications, extensions, or decommissioning of older assets.

4. Drainage System Configuration

- Propose a new or upgraded drainage layout, including gutters, ditches, and culverts, dimensioned according to projected peak flows and local ground conditions.
- Ensure designs facilitate the safe and efficient discharge of runoff into natural water bodies or established drainage networks, with minimal land acquisition impacts.





5. Flood Risk and Mitigation

- Calculate probable flood discharges (e.g., 10-, 20-, 30-, or 50-year events) to design minor or major drainage structures.
- Assess scour vulnerability, sediment transport, and bank stability under varying flow conditions to protect both embankments and bridge foundations.

6. Permanent Watercourse Crossings

- Investigate appropriate crossing solutions (e.g., reinforced concrete bridges, metallic or prestressed structures, large culverts) based on river width, navigation requirements, and anticipated vessel clearance.
- Account for the Gambia River's tidal regime and potential sea-level variation, optimizing the bridge opening and any embankment protection works.

7. Data Integration and Documentation

- Compile geotechnical and topographic data (boreholes, trial pits, cross sections) to ensure coordinated bridge and drainage designs.
- Provide a complete set of engineering drawings (plans, profiles, sections) showing hydraulic structures, design water levels, flow velocities, and relevant design parameters for review and tender preparation.

4.3.4. B5 – Civil Engineering Studies

The Consultant shall propose the most appropriate civil engineering structures (bridges, viaducts, overpasses, underpasses) for the approximately approx. 10 km bridge and its approach roads as determined in phase 1 of the studies, taking into account site constraints, available financing, and anticipated traffic volumes. All designs should prioritize durability, ease of maintenance, minimal disruption to natural water flow, and harmony with the surrounding environment.

Key Deliverables

- 1. Site Plan:
 - Prepared at an appropriate scale, identifying the full project area, including alignment corridors and major geographic or man-made features.

2. Top View Layout:

- Depicting the proposed corridor, watercourse crossings, approach embankments, and critical design elements (e.g., piers, abutments) at a scale of 1:100 or 1:500.
- 3. Elevations:
 - Vertical profiles (1:100 or 1:500 scale) illustrating changes in terrain, significant points (borehole locations, structural constraints), and the relationship of structures to the existing environment.





4. Longitudinal Section (Roadway Axis):

- Showing natural ground levels, planned gradients, and positions of geotechnical investigations (e.g., trial pits, boreholes).
- Highlighting constraints such as navigational clearances, flood levels, and geotechnical recommendations.

5. Transverse Sections and Formwork Plans:

- Detailed drawings (1:20 or 1:50) for the superstructure (deck), substructure (supports, foundations), and typical cross-sections.
- Indicating the materials, reinforcement details, and construction methodology proposed for each component.

6. Landscape and Architectural Considerations:

 Demonstrate how the bridge and ancillary structures integrate into the surrounding aesthetic and environment, including visual impact, noise barriers, and possible pedestrian or cycling pathways.

4.3.5. Slopes and Embankments Stabilization Study

Steep gradients, gullies, slopes susceptible to slippage, and other challenging terrain require special analysis. The Consultant shall:

- Conduct detailed diagnoses of unstable areas and propose stabilization techniques (retaining walls, gabions, reforestation, drainage) to prevent landslides and erosion.
- Model embankment stability using recognized software to determine appropriate protective measures.

4.3.6. Development of Special Points (Slopes, Axle-Load Areas, Toll Plazas)

The Consultant shall investigate and design customized solutions for specific corridor locations, such as:

- **Village Crossings:** Incorporate parking, lay-bys, commercial zones, and pedestrian facilities where warranted by traffic and safety needs.
- **Transport Facilitation Infrastructure:** Identify locations for weigh stations, heavy vehicle parking, toll plazas, and multimodal connections (potential rail corridors).
- Smart Corridor Features (ITS): Ensure the design accommodates real-time traffic monitoring, paperless trade and seamless integration with regional transport facilitation tools.

The Consultant shall therefore ensure that adequate and appropriate traffic monitoring devices, toll plazas and other necessary facilities consistent with best practices, as well as road crossing ducts for future crossings of utilities are included in the design to permit the use of real-time traffic data and statistical information to optimize the use of Corridor resources and infrastructure and to enhance transport and trade facilitation.





4.3.7. Public Lighting Study

The Consultant shall propose appropriate public lighting based on existing power networks and renewable energy opportunities. The study must propose cost-effective lighting solutions.

4.3.8. Road Safety, Signalling and Safety Equipment Study

1. Analysis of Current Road Safety Conditions:

 Identify and analyse high-risk locations, such as areas with inadequate visibility, conflict points, or heavy pedestrian use.

2. Proposed Safety Measures:

- Integrate standard safety principles into the road design (visibility, alignment).
- Propose awareness signage and additional safety tools for sections where geometric or financial constraints exist.

3. Signage Studies:

- Define locations for road markings, signs, and other traffic guidance devices.
- Emphasize durability, theft/vandalism risks, and local maintenance capabilities.

4. Protective Devices:

- Suggest guardrails, crash barriers, pedestrian walkways, and fencing where needed.
- Ensure compliance with the relevant design and safety standards.

4.3.9. Identification and Location of Existing Utilities

The Consultant shall verify the presence of utilities (electricity, water, telephone, fibre optics) along the proposed right-of-way. Where relocation or protection works are necessary, the Consultant shall coordinate with utility providers and prepare relocation plans and cost estimates.

4.3.10. Preparation of Bills of Quantities and Confidential Cost Estimates

Using final design parameters and recent comparable project data, the Consultant shall develop a comprehensive bill of quantities for each component and estimate costs based on unit rates and local market conditions.

4.3.11. Financing and Management Framework

The Consultant will analyse and propose various funding avenues, including public funding, donor contributions, and PPP models, ensuring that risks and responsibilities are appropriately distributed among stakeholders. The goal is to create a robust and transparent financial structure that safeguards public interests and meets regulatory requirements, while also supporting efficient project implementation and sustainable asset management.

4.3.12. Legal, Institutional, and Governance Assessment

Given the potential role of PPP or concession agreements, the Consultant must:





- Examine national legislation, bilateral or regional treaties (possibly with Senegal), and Corridor Treaty, treaty of the PDATCP, and legal framework of the ALCOMA, ECOWAS protocols related to tolling, revenue-sharing, and dispute resolution.
- Define institutional roles for government agencies, regulators, private investors, and regional bodies, and recommend governance structures to oversee construction, toll collection, and long-term maintenance.
- Identify legal and institutional risks (e.g., land acquisition disputes, concession defaults) and propose contract clauses or other strategies to mitigate them.
- Outline a bridge operations management strategy, including organizational responsibilities for day-to-day operations and maintenance

4.3.13. Institutional and Legal Aspects for Highway Implementation and Operation

The Consultant will explore multiple PPP approaches to determine the best fit for project objectives and local context, which may include:

- Build-Operate-Transfer (BOT) without State Guarantees: Private investment with toll revenue serving as the primary economic driver.
- Build-Operate-Transfer (BOT) with State Participation: Shared financial responsibility, enabling more socially inclusive toll rates.
- State-Funded Construction with External Operators: State financing of construction, combined with an external entity responsible for toll collection and maintenance.

For each scenario, the Consultant will calculate payback periods, internal rates of return (IRR), equity IRRs, negative cash flow intervals, and net present value (NPV) to guide decision-making.

4.3.14. Public-Private Partnership (PPP)

Drawing on financial analyses, the Consultant will:

• Develop Terms of Reference (ToR) for a Transaction Advisor, who will lead subsequent PPP arrangements, including tender processes, negotiations, and financial close

4.3.15. Technical Specifications and Bill of Quantities (BOQ)

The Consultant will produce detailed technical specifications for all project components—bridge structures, approach roads, drainage, toll plazas, and related elements—alongside itemized Bills of Quantities (BOQs), cost estimates, and design drawings. These documents will conform to engineering best practices and procurement standards, offering clear guidance to potential bidders on materials, construction requirements, and performance criteria

4.3.16. Tender Document Preparation

The Consultant will prepare tender documents in accordance with ECOWAS and African Development Bank (AfDB) guidelines. These documents must include:

- Instructions to Bidders and Bid Evaluation Criteria
- Draft Contract(s)





- Key Performance Indicators (KPIs) and Quality Control Measures
- Contractor Obligations

Consequently, the tender package should incorporate conditions of tender, technical specifications, technical drawings, and BOQ ensuring a transparent and comprehensive traditional bidding process. In addition, the Consultant shall submit a finalized ToR for the Transaction Advisory Services that covers the preparation of a Business case, RfP, RfQ, bidding process and related support during evaluation through to financial close

4.3.17. Updated Feasibility Study/Business Case Report:

Upon completion of all activities under Phase 3, the Consultant shall prepare an Updated Feasibility Study and Business Case Report. This comprehensive document will consolidate and refine the outputs of all prior phases, incorporating updated data and reflecting stakeholder and investor feedback gathered during validation workshops and investment roadshows.

Specifically, the report shall include:

- Revised technical assumptions based on the finalized alignment option and preliminary engineering designs, including geotechnical, hydrological, and structural findings.
- Updated economic and financial analysis, including revised cost estimates, updated traffic forecasts, and projected toll revenues.
- A refined environmental and social impact assessment summary, incorporating any changes arising from the selected alignment and stakeholder consultations.
- Enhanced risk analysis, including construction, financial, environmental, and institutional risks, with proposed mitigation measures.
- Final implementation strategy and recommended procurement model (PPP or traditional), based on viability, stakeholder preferences, and expected market interest.
- Updated stakeholder engagement log, summarizing key concerns raised by government counterparts, ECOWAS member institutions, development partners, and potential investors, with corresponding responses or modifications.

The Consultant shall ensure that this report is suitable for submission to development partners, lending institutions, and government decision-makers, serving as a key document to guide the next steps toward project financing and procurement.

4.3.18. Consolidated Findings and Deliverables

Upon completion of Phase 3: the Consultant is expected to provide the following outputs for the selected alignment, reflecting all investigations, surveys, financial strategy and preliminary engineering work:

- 1. Preliminary Engineering Design Reports
- 2. Detailed Bridge Design Report (drawings + calculations)





- 3. Updated Cost Estimate (±10 % accuracy)
- 4. Environmental & Social Impact Assessment (final)
- 5. Updated Feasibility Report
- 6. Climate-Resilience Analysis
- 7. Right-of-Way Acquisition Plan (or Resettlement Action Plan if relocation is necessary).
- 8. Stakeholder & Investor Workshop Proceedings Report
- 9. Validation Workshop Final Minutes & Consolidated Comments

The Consultant shall submit the above following outputs during Phase 3. Additional documents requested by the Client will be formalised through finalisation of agreed procurement process. This will follow either Traditional procurement document or Private financed Initiatives or PPP.

10. Traditional Procurement (State or Donor Funds)

If the feasibility assessment concludes that state or donor financing is most appropriate, the Consultant shall prepare and deliver:

- State or Donor funded Detailed Tender Documents
- Construction Phasing Report
- Financing Strategy Report
- 11. PPP or Privately Financed Initiative

Should the feasibility study determine that a Public–Private Partnership (PPP) or privately financed model is viable, the Consultant shall compile the following documents for the Client:

- Updated Business Case Report
- Project Information Memorandum
- Financing Strategy Report
- Construction Phasing Report
- Draft Tender Package Containing preliminary bidding documents (conditions of tender, technical specs, drawings, BOQs, draft contract), tailored to a PPP or private-finance context.
- Final ToR for Transaction Advisory Services

4.3.19. Validation and Review

The Client will have one (1) month to review the Preliminary design and the Updated Feasibility Report and related outputs. A Validation Workshop will then be organized to finalize all deliverables, integrating any stakeholder feedback and ensuring alignment with project goals.





5 REPORTING REQUIREMENTS AND SCHEDULE

All reports must be provided in both English and French, in electronic format (Word/PDF and any relevant engineering software outputs) and in printed copies (as agreed with the Client). Each deliverable must include an executive summary.

Phase and Deliverables	Submission Timeframe	
Phase 1: Alignment determination	Months 1–4	
Inception Report	End of Month 1	
Draft Optimal Alignment Report	End of Month 3	
Validation Workshop Proceedings (Two weeks for comments, One week for Validation Workshop and one week for submission of Final Optimal Alignment Report)	Month 4	
Final Optimal Alignment Option Report	Month 4	
Phase 2: Feasibility Study	Months 5–11	
Conceptual Engineering Designs and Bill of Quantity	Month 9	
Traffic & Revenue Forecast Report	End of Month 9	
ESIA & Resettlement Action Plan (RAP)	End of Month 9	
Draft Feasibility Study Report	End of Month 10	
Validation Workshop Proceedings (Two weeks for comments, One week for Validation Workshop and one week for submission of Final Feasibility Report)	Month 11	
Investment Workshops / Roadshows	Month 11	
Final Feasibility Study Report	End of Month 11	
Phase 3: Preliminary Engineering Design, Financing, Management Strategy & Preparation of Tender Documents	Months 12 - 18	
Engineering Design Reports	Month 16	
Civil Engineering Studies (key drawings and plans)	Month 16	
Bills of Quantities and Confidential Cost Estimates	Month 16	
Financing and Management Strategy Report	Month 16	
Project Information Memorandum (PIM)	Month 16	
Updated Feasibility Report / Updated Business Case Report	Month 17	
Draft Tender Documents & ToR for Transaction Advisor	End of Month 17	
Validation Workshop Proceedings (Two weeks for comments, One week for Validation Workshop and one week for submission of Final Preliminary Report)	Month 18	
Final Tender Documents	Month 18	
Monthly Progress/Status Reports	Every Month (as needed)	





Review Periods: The Client (ECOWAS) and relevant member states typically require up to one (1) month to review major deliverables (e.g., Feasibility Study Report) before providing final comments.

Workshop Schedules: Workshops (Validation, Investment) should be planned at least 2–3 weeks in advance to ensure broad stakeholder participation.

Adjustments: The Consultant may propose refined dates or overlapping tasks to optimize the schedule, subject to Client approval.

Final Handover: All deliverables must be submitted in both digital and printed formats, along with executive summaries in English (and/or French).

6 TEAM COMPOSITION AND KEY EXPERT REQUIREMENTS

The consulting firm must present a well-qualified, multidisciplinary team with demonstrated experience in comparable large-scale bridge and road infrastructure projects, preferably in sub-Saharan Africa or similar contexts. Key experts should include:

KE 1: Senior Highway Engineer / Team Leader

The Team Leader/ Senior Highway Engineer will be responsible for all technical and administrative aspects on site during the study. He shall be the principal contact person with the Client. The Team Leader should:

- I. Hold a Master's Degree/Bac+5 in Bridge/Civil Engineering or B.Sc. with accreditation of an Engineering Institution.
- II. S/he should have at least 15 years post qualification experience in Roads and Bridges.
- III. S/he must have been involved in at least 3 projects of similar nature related to highway/bridge/expressway design or construction supervision in the last 10 years
- IV. Should have been Team Leader on at least two similar projects
- V. Experience in at least 2 PPP project.
- VI. Experience with International donors
- VII. Must have experience on at least two projects in Sub-Saharan Africa.
- VIII. Fluency in English with working knowledge in French.

KE2: Bridge/Structural Engineer

- I. Possess a Master of Science/Bac+5 in Bridge/Civil Engineering or B.Sc. with accreditation of an Engineering Institution,
- II. Must have at least fifteen (15) years of experience especially in design studies or supervision of a bridge and interchange works
- III. Must have worked on three (3) studies on road project of similar nature as a bridge engineer in the last 10 years
- IV. Must have experience on at least two projects in Sub-Saharan Africa
- V. Fluency in English or French with working knowledge in the other





KE3: Transport Economist

- I. Hold a master's degree/Bac+5 in Transport Economics, Civil Engineering and/or Economics or B.Sc. with accreditation of an Engineering Institution
- II. A minimum of 10 years of experience in conducting economic for large-scale infrastructure projects, with a particular emphasis on highways, expressways, or major transport corridors.
- III. Proven involvement in at least three (3) feasibility studies for road infrastructure projects, providing sound economic assessments as a transport economist in the last 10 years.
- IV. Experience working with international donors and familiarity with their standards and reporting requirements in at least 2 projects, Including World Bank, Islamic Development bank, AFBD
- V. Proficiency in standard economic modelling/analysis tools (e.g., HDM-4, cost–benefit spreadsheets).
- VI. Participation in at least two (2) projects in Sub-Saharan Africa.
- VII. Fluency in English.

KE4: Finance Expert

- I. Master's degree or equivalent in Finance, Business Administration, Economics, or a closely related field.
- II. Specialized certifications or coursework in project finance, PPP structuring, or infrastructure finance.
- III. Minimum 10 years in financial analysis, modelling, or structuring for large infrastructure projects
- IV. At least three (3) major transport infrastructure projects (bridges, highways) where the candidate has led or significantly contributed to project financing strategies with at least one of the three projects reaching financial close.
- V. Work experience in at least 2 projects with development banks, private lenders, or institutional investors.
- VI. Expertise in building comprehensive financial models (CAPEX/OPEX, toll revenue projections, NPV/IRR, scenario analyses) in at least 2 projects.
- VII. Demonstrated capacity to conduct sensitivity analyses (changes in traffic volumes, cost overruns, exchange rates).
- VIII. Past experience facilitating investor engagements (roadshows, pitch decks, Q&A with financiers).
- IX. Fluency in English

KE5: PPP Specialist

- I. Master's degree in Finance, Economics, or Business Administration, or any relevant field with certifications in Public–Private Partnerships.
- II. Minimum 10 years of work experience involving PPP transactions including structuring of large infrastructure projects (e.g., transport, energy, utilities).
- III. Proficient understanding of PPP life-cycle (project identification, feasibility, tendering, negotiation, contract management). At least two (2) completed or substantially progressed PPP projects, at least one (1) of which is a major transport corridor/bridge/highway PPP project, will be required.
- IV. Capable of preparing PPP feasibility business case, including commercial structuring, legislative reviews in at least two projects.
- V. Working experience in Sub-Saharan Africa in at least one project
- VI. Language proficiency in English





KE6: Traffic Expert

- I. Possess a Master of Science/Bac+5 in Civil Engineering or Transportation Planning or B.Sc. with accreditation of an Engineering Institution
- II. S/he must have at least 15 years of experiences in traffic studies for roads/highway projects of large scale
- III. S/he must have been an expert in traffic studies for at least four (4) feasibility and/or detailed engineering design studies of road project.
- IV. He must have proven experience in traffic forecast and modelling of transport using software's.
- V. He/she must have carried out at least two (02) projects in Africa, and
- VI. He/she must be fluent in either English or French with a working knowledge of the other language

KE7: Geotechnical Engineer

- I. Must possess at least Master of Science/ Bac+5 in Civil Geotechnical or Geological Engineering, or B.Sc. with accreditation of an Engineering Institution.
- II. Must have at least 15 years of experience in the field of transport infrastructure
- III. Must have served as an expert geotechnical engineer for at least three (03) feasibility/detailed engineering design studies on roads including bridge and interchange foundation design
- IV. Must have experience on at least two projects in Sub-Saharan Africa.
- V. Fluency in English.

KE8: Hydrologist/Hydraulic Engineer

- I. A Master's degree/Bac+5 in Hydrology, Water Resources Engineering, Civil Engineering or a closely related field.
- II. A minimum of 10 years of experience in hydrological assessments, hydraulic modelling, and water resource management for large-scale infrastructure projects, preferably involving highways, expressways, or major river crossings.
- III. Proven involvement in at least three (3) feasibility and/or detailed engineering studies where hydrological and hydraulic analyses were central to project design and decision-making.
- IV. Demonstrated ability to integrate hydrological findings into environmental, social, and economic impact analyses.
- V. Participation in at least two (2) projects in Sub-Saharan Africa, demonstrating an understanding of regional climatic, environmental, and cultural contexts.
- VI. Fluency in English

KE 9: Environmental Specialist

- I. A Master's degree in Environmental Science, Sociology, or a closely related field.
- II. Additional relevant postgraduate training will be considered an added advantage.
- III. At least 15 years of comprehensive experience in assessing and managing environmental and socioeconomic impacts of large-scale infrastructure projects, including the development of mitigation measures.
- IV. Proven involvement in a minimum of three (3) feasibility and/or detailed engineering studies related to highway or expressway projects, demonstrating strong capabilities in both environmental and socioeconomic analysis.
- V. Prior working experience with international donors and familiarity with their standards and requirements in at least two projects.





- VI. Track record of at least two (2) successfully completed assignments in Sub-Saharan Africa.
- VII. Fluency in either English with a working knowledge in French.

KE 10: Social Development specialist

- I. Must possess a Master of Science in sociology.
- II. He/she must have at least 15 years of experience in assessment of socio-economic impact, including development of mitigations measures for the development of large-scale infrastructure projects.
- III. He/she must have participated as a socio economist in at least two (02) feasibility/ detailed engineering studies of road projects of at least 20km during the last 10 years (2024 - 2017).
- IV. He/she must have been involved in at least two (02) projects in Africa
- V. S/he must be fluent in English.

KE 11: Legal Expert

- I. LLB (Jurist) in Law, preferably with a specialization in international law, infrastructure law, or a closely related field. Additional certifications or training in public-private partnerships (PPPs), regulatory frameworks, or cross-border agreements will be considered an added advantage.
- II. A minimum of 10 years of experience in providing legal advisory services for large-scale infrastructure projects, with demonstrable expertise in regulatory compliance, and institutional frameworks
- III. Proven involvement in at least two (2) feasibility and/or detailed engineering studies for infrastructure projects, contributing to the legal and institutional components of project preparation.
- IV. Experience working with international donors and familiarity with their legal and governance standards, as well as procurement and contractual requirements.
- V. Strong track record of identifying legal risks, proposing mitigation strategies, and advising on institutional arrangements for project implementation and operation
- VI. Participation in at least two (2) projects in Sub-Saharan Africa, indicating a solid understanding of regional legal contexts, national regulations, and bi- or multi-lateral agreements.
- VII. Fluency in either English.

KE12: Procurement Expert

- I. Bachelor's degree in Engineering, Business Administration, Law, Procurement, or related, Additional procurement certifications (e.g., CIPS) or advanced degree
- II. Minimum 10 years in procurement for large infrastructure projects
- III. Experience in preparing procurement documents and managing end-to-end tender processes (from prequalification to award). Experience in at least two major road or bridge projects under PPP contracting arrangement is required.
- IV. Thorough knowledge of international procurement standards (AfDB, World Bank guidelines, FIDIC)
- V. Familiarity with e-procurement platforms or other modern procurement technologies
- VI. Fluency in English.

The Consultant must include at least four (4) Key Experts from the West African Region for the study. Furthermore, ECOWAS shall assign Two Trainee Engineers to work with the selected consultant.





7 REPORTING AND REVIEW MECHANISM

Reports shall be submitted in English and French, with soft and hard copies delivered to the ECOWAS Commission in the following quantities

Report/Deliverable	Hard	Electronic
Inception	English – 4 copies	French and English
	French – 2 copies	
Final Optimal Alignment Option	English – 4 copies	French and English
Report	French – 2 copies	
Technical and Engineering report	English – 4 copies	French and English
	French – 2 copies	
Traffic & Revenue Forecast Report	English – 4 copies	French and English
	French – 2 copies	
ESIA & Resettlement Action Plan	English – 4 copies	French and English
(RAP)	French – 2 copies	
Conceptual Engineering Designs	English – 4 copies	French and English
and Bill of Quantity	French – 2 copies	
Final Feasibility Study Report	English – 4 copies	French and English
	French – 2 copies	
Engineering Design Reports	English – 4 copies	French and English
	French – 2 copies	
Engineering design and BOQ	English – 4 copies	French and English
	French – 2 copies	
Financing and Management	English – 4 copies	French and English
Strategy Report	French – 2 copies	
Updated Feasibility Report	English – 4 copies	French and English
	French – 2 copies	
Final Tender Documents	English – 4 copies	French and English
	French – 2 copies	

NB:

- I. Quantities refer to the final revised versions of each deliverable.
- II. Initial draft of all deliverables will however be submitted in three copies (two English, one French).

ECOWAS, The Gambia and other project related Member States will review and approve all reports before moving to subsequent project stages.

8 OBLIGATIONS OF THE ECOWAS COMMISSION AND THE CONSULTANT

- I. Obligations of the ECOWAS Commission: ECOWAS shall assist, in each case:
 - a. provide the Consultant with copies of all reports, data, and information that is available and considered relevant to the execution of the assignment;
 - b. facilitate the consultant's access to relevant agencies or organizations for the purpose of carrying out the assignment; and
 - c. Where applicable, facilitate access to the project site for the Consultant's foreign personnel in accordance with the Commission's rules and regulations.
- II. Obligations of the Consultant:
 - a. The Consultant shall ensure the quality of the reports through adequate quality assurance and quality control provisions and headquarters backstopping as necessary.





- b. If the Consultant has to obtain data and information from government agencies or organizations not directly involved in this project, the Consultant shall do so on its own, paying any charges required.
- c. It is the responsibility of the Consultant to make the necessary arrangements for his personnel to facilitate their movement in the region-ECOWAS Commission shall assist where necessary.
- d. The Consultant shall be responsible for composing its team of experts. Nonetheless, it shall submit to the Client the list of names of the expert(s) participating in the study, as well as their respective curriculum vitae. It shall not subsequently modify the composition of this team without prior approval by the Client.
- e. The Consultant shall be responsible for arranging necessary office and living accommodations, transportation, equipment, supplies, surveys, investigations, testing, secretarial services and all other input required for the purpose of the works. The Client shall not cover any of the Consultant's mobilization costs (office, furniture and other logistics) for the assignment.
- f. The Consultant shall make his own arrangements for document reproduction, printing and reproduction of all study reports during the course of the assignment.





9 PAYMENT TERMS

Payment terms will be established in the Contract, subject to satisfactory completion of deliverables and acceptance by the Client (ECOWAS Commission). Payment tranches shall be linked to the delivery of specific milestones, as outlined in the contractual agreement.

The payment schedule is set out hereunder:

Milestone/Deliverable	Payment % of Contract Price	
Contract Signing and Mobilization Advance	20% (with advance payment guarantee)	
Phase 1 Completion (Optimal Alignment Report Acceptance)	10%	
Draft Feasibility Study Report (Phase 2)	20%	
Final Feasibility Study Report (Phase 2)	20%	
Final Preliminary designs and accompanying documents (Phase 3)	20%	
Financing and Management Strategy Report & Draft Tender Documents (Phase3)	5%	
Final Tender Documents (Phase 3)	5%	

NB: The payment terms are negotiable.





ANNEX 1 – TERMS OF REFERENCE FOR ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT (ESIA)

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FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

OF THE BANJUL-BARRA BRIDGE WITH APPROACH ROADS

1. BACKGROUND AND RATIONALE

The Government of The Gambia, in collaboration with the Economic Community of West African States (ECOWAS) is undertaking a feasibility and viability study for the construction of a bridge and approach roads linking Banjul to Barra. The proposed Banjul–Barra bridge constitutes a critical segment of the Trans-West African Highway, specifically along the Dakar–Abidjan corridor, which is of strategic importance to intra-regional connectivity and economic integration in West Africa.

Presently, the crossing between Banjul and Barra relies on limited ferry services across the River Gambia. This situation often leads to delays, reduced trade efficiency, and limited opportunities for regional growth. The proposed project aims to construct a modern and resilient bridge, accompanied by the necessary approach roads and ancillary infrastructure, to facilitate safe, efficient, and sustainable transport. By closing the only missing link on this corridor, the project will directly strengthen the economic and social development of The Gambia and the broader ECOWAS region.

Given the scale and significance of the project, there is a need to comprehensively assess its environmental and social impacts. This Terms of Reference (ToR) therefore sets out the objectives, scope, methodology, deliverables, and reporting requirements for the Environmental and Social Impact Assessment (ESIA), including an Environmental and Social Management Plan (ESMP) and, if necessary, a Resettlement Action Plan (RAP).

2. OBJECTIVES OF THE STUDY

The overall objective of the ESIA is to identify, predict, and evaluate potential environmental and social impacts (positive and adverse) associated with the planning, construction, and operation of the Banjul– Barra Bridge and its approach roads. The ESIA will propose measures to avoid, minimize, remediate, or compensate for any adverse impacts and enhance the project's environmental and social benefits.

Specific objectives include:

- 1. **Regulatory Compliance**: Ensure that the project complies with The Gambia's legal requirements for environmental and social assessment, as well as the environmental and social standards of the AfDB and relevant ECOWAS protocols.
- 2. **Baseline Assessment**: Establish a robust environmental and social baseline for the project area, including physical, biological, and socio-economic conditions.
- 3. **Impact Analysis**: Identify and evaluate the significance of direct, indirect, cumulative, and induced environmental and social impacts during the pre-construction, construction, operation, and decommissioning phases.
- 4. **Mitigation Measures**: Propose technically and financially feasible mitigation measures to avoid, reduce, or otherwise manage negative impacts and optimize positive impacts.





- 5. **Management Plans**: Develop an Environmental and Social Management Plan (ESMP) detailing responsibilities, timelines, costs, institutional arrangements, monitoring indicators, and capacity-building measures required for effective implementation.
- 6. **Public Consultation and Disclosure**: Engage project-affected persons (PAPs), community members, and other stakeholders in a transparent manner to incorporate their views and ensure social acceptability of the project.
- 7. **Resettlement Action Plan**: If land acquisition and/or population displacement are involved, develop a RAP consistent with national regulations and AfDB/ECOWAS guidelines to equitably address impacts on livelihoods and properties.

3. SCOPE OF SERVICES

The Consultant shall carry out the ESIA in three main phases—(i) Inception, (ii) Scoping and Baseline Studies, and (iii) Detailed Impact Assessment and ESMP—in line with national legislation (e.g., National Environment Management Act) and international best practices (e.g., African Development Bank Integrated Safeguards System, relevant ECOWAS policies, and IFC Performance Standards as reference).

3.1 Task 1: Inception Phase

1. Review of Existing Information

- Collect and review existing studies, designs, site plans, feasibility reports, and any prior scoping documents related to the proposed bridge and approach roads.
- Compile available secondary data on the project area, including geotechnical and hydrological surveys, socio-economic baseline information, land-use patterns, biodiversity records, and any prior environmental assessments.

2. Stakeholder Engagement Plan

- Identify key stakeholders—government agencies, local communities, civil society organizations, private sector, ferry service operators, women's groups, youth representatives, etc.
- Develop a plan to guide stakeholder engagement throughout the ESIA, ensuring culturally appropriate methods and inclusive participation (particularly for women and vulnerable groups).

3. Inception Report

- Provide a detailed methodology and work plan for carrying out the ESIA.
- Present the proposed approach to data collection and analysis, impact identification and evaluation, consideration of alternatives, and consultation activities.
- Outline roles and responsibilities of the Consultant's team, a detailed schedule, and a clear budget breakdown for the ESIA.





3.2 Task 2: Scoping and Baseline Studies

3.2.1 Scoping

1. Project Description and Area of Influence

- Define the project components (bridge structure, approach roads, intersections, auxiliary facilities, etc.) and their respective locations.
- Determine the spatial boundaries for the ESIA (project footprint, transport corridors, ancillary facilities such as construction camps, borrow pits, laydown areas, etc.).
- Consider direct, indirect, and cumulative areas of impact.

2. Preliminary Environmental and Social Screening

- Identify key environmental and social receptors and resources that may be significantly affected, including sensitive habitats, cultural heritage sites, community facilities, and existing land uses.
- Highlight potentially significant issues (e.g., changes in hydrology and sediment transport in the River Gambia, wetland disturbance, noise and dust, traffic management, impacts on ferry operations, socio-economic displacement).

3. Analysis of Project Alternatives

- Present alternative alignments, bridge designs, construction methods, and phasing.
- Include a "no-project" scenario for comparative assessment.
- Justify the selection of the preferred option by minimizing adverse impacts on communities, biodiversity, and critical ecosystems.

4. Draft Scoping Report

- Summarize the scoping findings, including the likely significant impacts and proposed approach for detailed assessments.
- Present the stakeholder feedback from scoping consultations and how concerns have been integrated into the ESIA plan.
- Submit the Draft Scoping Report to the Client and relevant authorities (e.g., National Environment Agency—NEA) and incorporate feedback into the Final Scoping Report.

3.2.2 Baseline Studies

After approval of the Scoping Report, the Consultant shall undertake detailed baseline assessments in the following domains:

- 1. Physical Environment
- **Climate and Air Quality**: Regional climate trends, microclimate conditions, baseline air quality, greenhouse gas considerations.





- Geology and Soils: Geological stability, topography, soil fertility, erosion susceptibility.
- **Hydrology and Water Resources**: River Gambia flow regime, sediment transport, ground water levels, flood risk zones, existing water use patterns.
- 2. Biological Environment
- **Terrestrial Ecology**: Vegetation types, wildlife distribution, endangered or endemic species, forest reserves, protected areas, ecological sensitivities in the approach road corridors.
- Aquatic Ecology: Fish populations, aquatic fauna, wetlands, riverbank habitats, potential crossing near critical habitats or migratory routes.
- **Biodiversity Hotspots**: Identification of any globally significant habitats, threatened species (IUCN Red List), or ecologically critical areas that may require specific mitigation or offset measures.
- 3. Socio-Economic Environment
- **Demographics and Livelihoods**: Population profiles, land ownership/use patterns, major economic activities (trade, fisheries, tourism, commerce, etc.), women's economic roles, youth employment.
- Infrastructure and Services: Existing transport network, ferry services, road conditions, public services (health, education, water supply), markets, and social amenities.
- **Community Health and Safety**: Epidemiological profile, prevalent diseases, community risk factors, traffic safety.
- **Cultural Heritage and Archaeology**: Sacred sites, traditional landmarks, graves, or historically significant locations.
- **Vulnerable Groups**: Identification of women-headed households, persons with disabilities, youth, or historically marginalized communities who may be differentially impacted.
- Transport and Mobility Patterns (Pedestrian and Non-Motorised Transport NMT): Assess existing pedestrian and NMT usage between Banjul, Barra, and adjacent communities. Identify how these patterns may evolve with the introduction of the bridge and determine potential areas for designing a functional NMT network. This assessment will culminate in a comprehensive NMT masterplan integrated into the broader mobility framework of the region

4. Public Consultations (Baseline Phase)

- Conduct focus group discussions, key informant interviews, and public meetings in communities likely to be affected by or interested in the project.
- Document community perspectives and integrate them into baseline characterization. Ensure that consultation with women and other vulnerable groups is done in a safe, culturally appropriate, and confidential manner.





3.3 Task 3: Detailed Impact Assessment and ESMP

3.3.1 Impact Identification and Assessment

1. Methodological Approach

- Clearly define the criteria used to determine impact significance (magnitude, duration, reversibility, geographic extent, frequency, probability).
- Distinguish between direct, indirect, and cumulative impacts, as well as short-term (construction) and long-term (operation) impacts.

2. Impact Analysis

- Construction Phase:
 - Site preparation, dredging (if necessary), bridge foundation works, equipment mobilization, noise, vibration, dust, waste generation, community interactions, influx of workers, labour conditions, etc.
- Operation Phase:
 - Traffic increase and road safety; changes in local economy and trade flows; modifications to river flow or sediment deposition; potential impacts on ferry operations; structural integrity and maintenance demands.
- Decommissioning or Dismantling (if relevant in the future):
 - \circ $\;$ Impacts associated with dismantling or major renovation of the infrastructure.

3. Specific Thematic Concerns

- **Hydrology and Sedimentation**: Evaluate if the bridge piers and approaches alter the River Gambia's flow patterns, sediment transport, or lead to erosion/accretion in sensitive areas.
- **Biodiversity**: Assess potential habitat fragmentation, disturbance to breeding/spawning grounds, migratory corridors, or wetlands.
- **Community Impacts**: Land acquisition, property or crop losses, economic displacement, potential resettlement; increased risk of Gender-Based Violence (GBV) due to labour influx; opportunities for local employment.
- Health and Safety: Risks of accidents during construction, occupational health and safety for workers, traffic management challenges on approach roads, spread of communicable diseases (including HIV/AIDS), etc.
- **Cumulative Impacts**: Considering existing or planned projects in the same corridor (e.g., expansions to the Trans-Gambia Highway, river dredging activities) that could combine with the new bridge to create cumulative effects.

3.3.2 Mitigation and Enhancement Measures

- Propose technically and economically feasible measures to avoid, minimize, or compensate for negative impacts.
- Suggest enhancement measures to strengthen positive impacts, including employment generation, improved regional trade, and skills transfer to local communities.





• Outline approach-specific mitigation (e.g., waste management plan, erosion control, safe traffic diversion, compensation for economic losses, construction best practices, green design considerations).

3.3.3 Hazard and Risk Assessment

- Identify accidental event scenarios (e.g., collapse risk, major spills of construction materials, flooding).
- Assess the likelihood and consequences of each hazard.
- Propose emergency response and preparedness plans, clarifying roles and responsibilities of government agencies, project contractors, and local communities.

3.3.4 Public Consultation and Participation

- Engage affected communities and key stakeholders to discuss the draft ESIA findings, proposed mitigation measures, and potential project benefits.
- Organize stakeholder forums to validate conclusions and recommendations.
- Ensure inclusive participation, particularly of women and vulnerable groups (e.g., through separate focus groups or safe consultation spaces).
- Document and integrate stakeholder feedback into the final ESIA and ESMP.

3.3.5 Environmental and Social Management Plan (ESMP)

1. Management Framework

- Clearly define roles and responsibilities for ESMP implementation, including the Project Implementation Unit (PIU), contractors, local authorities, and community-based organizations.
- Specify timelines, reporting relationships, and budget allocations.

2. Mitigation/Enhancement Action Plans

- Present a consolidated matrix of impacts, mitigation/enhancement measures, responsible entities, schedules, and estimated costs.
- Include topics such as waste management, air quality, occupational health and safety, emergency response, biodiversity management, social impact management, labor influx, and GBV prevention and response.

3. Monitoring Plan

- Identify key indicators (environmental and social) for monitoring project impacts and the effectiveness of proposed mitigation actions.
- Include frequencies, methodologies, location of sampling sites, and thresholds that would trigger corrective measures.





 Provide a clear format for data collection, analysis, and reporting to relevant authorities and financing partners.

4. Capacity Building

- Assess institutional capacities for ESMP implementation and propose relevant training needs for NEA, local government, contractors, and community organizations.
- Budget and timeline for capacity-building components.

5. Grievance Redress Mechanism

- Define a clear, transparent process for addressing complaints from project-affected persons (PAPs), communities, and other stakeholders.
- The mechanism must have clear procedures for reporting Gender-Based Violence that ensure privacy and put the needs of survivors first.

3.3.6 Resettlement Action Plan (RAP), if Required

- If the project requires land acquisition and/or displacement (physical or economic), prepare a RAP consistent with the laws and regulations of The Gambia and AfDB/ECOWAS standards.
- Detail the cut-off date, affected assets and livelihoods, entitlements, compensation frameworks, resettlement assistance, special provisions for vulnerable persons, budget, and monitoring framework.
- Integrate meaningful consultation and disclosure processes, ensuring PAPs' informed participation in decision-making.

4. DELIVERABLES AND REPORTING

The Consultant shall prepare and submit the following deliverables:

1. Inception Report

- Summarizes the Consultant's understanding of the assignment, initial findings, refined methodology, stakeholder engagement plan, and detailed work schedule.
- Submitted within three (3) weeks of contract commencement.

2. Scoping Report

- Details findings from scoping consultations and initial assessments, including project description, preliminary identification of key impacts, proposed study boundaries, and Terms of Reference for subsequent tasks.
- Submitted after scoping fieldwork and stakeholder engagement, typically within eight (8) weeks of contract commencement.





3. Baseline Survey Report

- Presents an in-depth description of the environmental and social baseline, including data collection methods, results, and analysis.
- Mapping of sensitive environmental features, social data (disaggregated by gender, age, vulnerability).
- Submitted upon completion of baseline studies.

4. Draft ESIA Report

- Integrates the baseline findings, detailed impact analysis, proposed mitigation measures, ESMP, and institutional arrangements.
- Includes a non-technical Executive Summary in English (and potentially local languages as required).
- Submitted for review and comments by the Client, NEA, ECOWAS, AfDB, and key stakeholders.

5. Draft RAP (if necessary)

- Covers the scope of displacement, entitlements, compensation process, and grievance mechanisms.
- Submitted alongside or soon after the Draft ESIA if involuntary resettlement is triggered.

6. Final ESIA (including ESMP) and RAP

- Incorporates all comments received on the draft versions.
- Must include proof of stakeholder validation sessions and updated costs and responsibilities for mitigation and monitoring.
- Submitted after stakeholder review and within the timeline agreed upon in the Inception phase.

7. Summary for Disclosure

• A user-friendly summary of ESIA findings and mitigation measures for public disclosure in local communities, including relevant translations where necessary.