TERMS OF REFERENCE
FOR

CONSULTANCY SERVICES FOR FEASIBILITY STUDY, ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT, DETAILED ENGINEERING DESIGN AND PREPARATION OF TENDER DOCUMENTS FOR UPGRADING OF KIHANSI – MLIMBA – TAWETA – MADEKE – LUPEMBE – KIBENA REGIONAL ROAD (223KM) TO BITUMEN STANDARD.

1.0 INTRODUCTION

The Government of the United Republic of Tanzania has received funds from African Development Bank (AfDB) and intends to use part of it to carry out Feasibility Study, Environmental & Social Impact Assessment, Detailed Engineering Design, Preparation of Tender Documents and Update for Upgrading of Kihansi – Mlimba – Taweta – Madeke – Lupembe – Kibena Regional road (R.670) to Bitumen Standard.
The project was agreed during the Appraisal Mission, as a pipeline project which will be implemented under Bagamoyo – Horohoro/Lungalunga – Malindi road project, which is part of East African Coastal Corridor: (Malindi – Mombasa – Lunga Lunga/Horohoro –Tanga – Bagamoyo road; 454km). The project will be financed by African Development Bank (AfDB) and the Government of Tanzania.

The Madeke – Lupembe – Kibena road section (127km) located in Njombe region was designed under a Consultancy agreement with TANROADS Njombe Region in 2014. The Kihansi – Mlimba – Taweta road section (96km) in Morogoro region will be treated as new study. In view of the above the Consultancy services under this ToR is subdivided as follows:

a) Feasibility study, Preliminary Design, Environmental and Social Impact Assessment, Scoping Report, Terms of Reference and Resettlement Action Plan and initial Survey of Properties to be affected for Upgrading of Kihansi – Taweta – Madeke – Lupembe – Kibena Road (223km) to bitumen standard

b) Detailed Engineering Design Environmental and Social Impact Assessment, Resettlement Action Plan, Valuation report and Tender Documents for Kihansi – Taweta – Madeke – Lupembe – Kibena Road (223km) to bitumen standard

1.1 Tanzania is in the process of implementing the strategy of paving all regional roads which connect more than one region. The project is part of Government strategy to develop its regional roads network to improve Transportation along Morogoro and Njombe regions and subsequently improve Public Socio-economic development.

1.2 The Kihansi – Mlimba – Taweta – Madeke – Lupembe – Kibena Regional road (223 km) is an engineered earth/gravel road. It is currently undergoing various maintenance interventions ranging from routine maintenance, periodic maintenance, spot improvement and rehabilitation of some sections. Although the road is passable during dry seasons, some of its sections become impassable during rainy season which hinders transportation of goods and passengers.

1.3 The project road is located in Morogoro and Njombe Regions. The Kihansi –Mlimba –Taweta – Madeke – Lupembe – Kibena Regional road (223 km**)** road section starts at Kihansi about 130 km from Ifakara town and ends at Kibena in Njombe town joining to Makambako – Songea trunk road. The route follows the existing earth/gravel road traversing through a number of centres and towns including Kihansi, Chisano, Ngwasi, Mlimba Kamwene, Viwanja Sita, Ibako, Mpanga, Taweta, Madeke, Msiliga, Igombola, Lupembe, Matembwe, Kidegembye, Nyombo and Kibena.

1.4 The road is divided into three sections with a varying terrain. The first section starts at Kihansi and ends at Taweta area which is about 96Km at the boarder to Njombe region. This whole road section is characterised with lowland terrain and swampy areas within the entire road section. At Chainage 0+ 000 – 24 + 700 (Kihansi to Mlimba township), the road is paved with recorded road width of 6m. The second section which is about 61Km within Njombe region, starts at Taweta and ends at Lupembe township, which is characterised with highlands and mountainous terrain. Together with steep grades, hairpin curves, the area is localised by possible landslides and hence require slope stability consideration. The third section which is also within Njombe region traverses mostly within rolling terrain starts at Lupembe town and ends at Kibena area in Njombe town, which has a total recorded length of about 66 km. These locations and any other areas of concern require special attention and thorough investigation.

1.5 Part of the road in Njombe region from Taweta – Lupembe – Kibena (127km), Feasibility and Detailed Engineering Design was completed in June 2014 by M/s Howard Humphreys (Tanzania) Ltd under the supervision of Regional Manager TANROADS Njombe, but due to time elapsed since design was carried out, some of the design parameters might be inadequate for the proposed road. As part of the fulfillment of this assignment, the Consultant shall review the available feasibility study and detailed design reports and update all parameters based on the most current design information available. The findings of the design review shall be shared with and get prior approval of the Client prior to completion of the assignment.

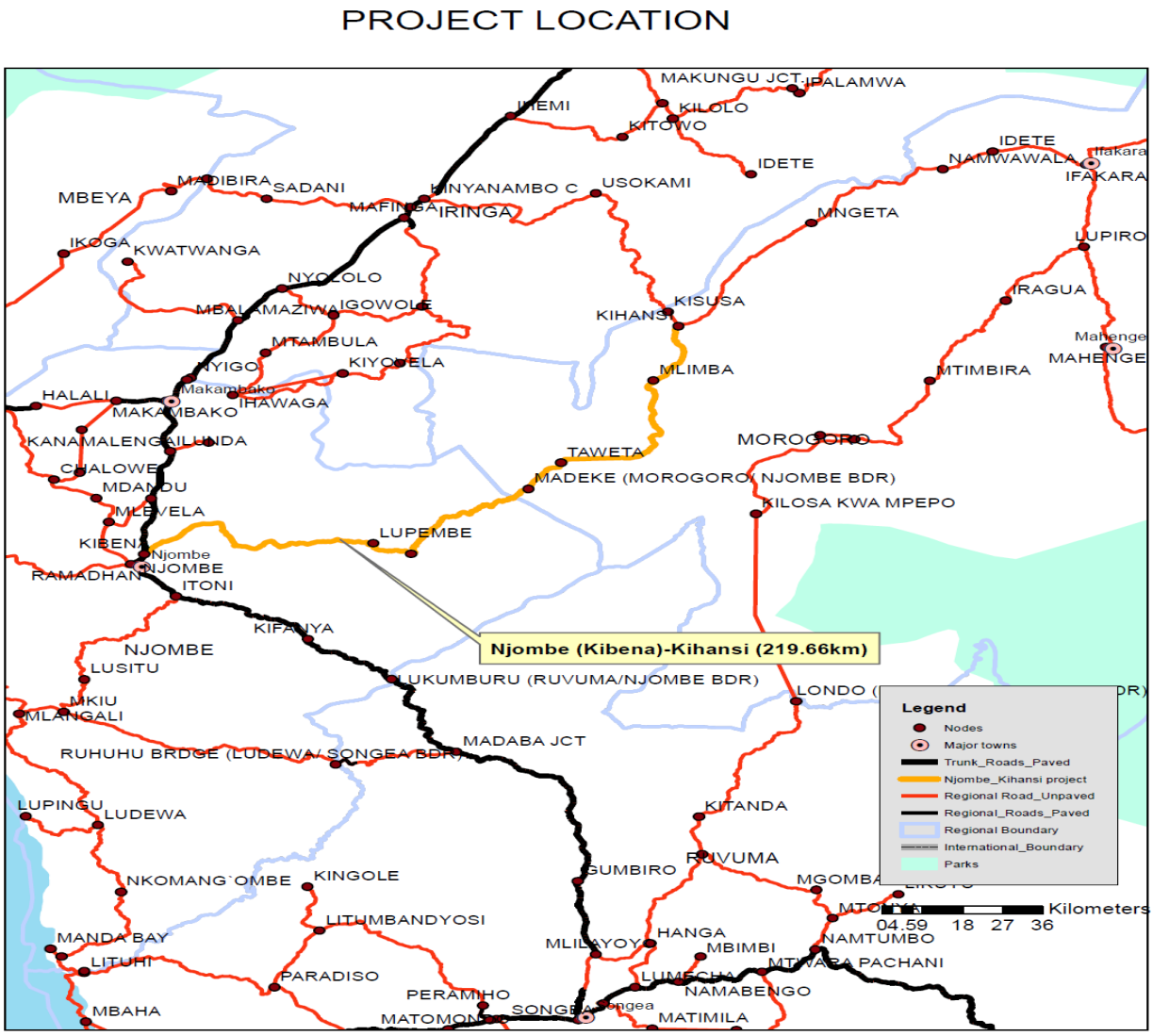
1.6 The road crosses several seasonal and perennial rivers such as Kihansi, Mgugwe, Kamwene, Mpanga, Mwala, Kitolange, Kishasha, Pumbwe, Mnyera, Mbwanda, and Mfuji rivers. These rivers have various types of drainage structures including pipe culverts, box culverts, and bridges. Together with the proposed road upgrading study, investigations and detailed design of all drainage structures will be part of the assignment.

1.7 The road passes through areas with potential economic activities such as agriculture, livestock keeping, forestry, tourism, fishing, business Centre, industries etc. However, these economic potentials are not fully exploited due to lack of reliable road transport infrastructure.

1.8 The proposed project road traverses through the existing road which is managed by TANROADS Morogoro and Njombe Regions. A road corridor should be reserved to meet the requirement of the Road Design Geometric Manual 2011. Currently the traffic on the proposed road is low, however, it is expected that the traffic will be generated more after opening and upgrading it to bitumen standards. Therefore, it is expected that more vehicles will use the improved road in order to reduce transport costs. Among other benefits, improvement of the road will provide a catalystic impact in reducing poverty through socio-economic growth and exogenous benefit to Tanzania a whole.

1.9 Due to the socio-economic importance of the corridor traversed by the subject road to the development of Southern Highlands and TANZAM Zone and Tanzania at large; the Government of Tanzania using African Development Bank (AfDB) funds has taken some initiatives to improve an alternative road adjoining Morogoro and Njombe Regions.

Figure 1: Location of the Project Road



2.0 OBJECTIVES

2.1. The objective of the assignment is to carry out a Feasibility Study, Environmental and Social Impact Assessment, of Kihansi – Mlimba – Taweta – Madeke – Lupembe - Kibena Regional road with a total of 223 km length, Detailed Engineering Design of Kihansi – Mlimba – Taweta section (96km), Design review/ upgrading of Taweta – Madeke – Lupembe – Kibena section (127km) and Preparation of Tender Documents for the upgrading of Kihansi – Kibena Road (223km).

2.2. The Feasibility study shall determine the technical and economic feasibility for upgrading the paved/gravel road to bitumen standards taking into account, environmental and social aspects. The Consultant shall undertake detailed engineering design, and preparation of tender documents for International Competitive Bidding (ICB) according to the Public Procurement Act, 2011, Public Procurement (Goods, works, Non- Consultant services and Disposal of Public Assets by Tender) Regulations, 2013 and their amendments of 2016.

3.0 SCOPE OF CONSULTANCY SERVICES

3.1 The Consultant shall carry out all the tasks necessary to achieve the defined objectives. The services shall be carried out in two phases namely:

Phase I: a) Feasibility study, Preliminary Design, Environmental and Social Impact Assessment, Scoping Report, Terms of Reference and Resettlement Action Plan and initial Survey of Properties to be affected for Upgrading of Kihansi – Taweta – Madeke – Lupembe – Kibena Road (223km) to bitumen standards.

Phase II: b) Detailed Engineering Design Including Environmental and Social Impact Assessment, Resettlement Action Plan, Valuation report and Tender Documents for Kihansi – Taweta – Madeke – Lupembe – Kibena Road (223km) to bitumen standards.

3.2 The progression of the consultancy services contract from Phase I to Phase II, shall depend on the results of the feasibility study. Cost for each phase of the consultancy shall be estimated separately.

3.3 The Consultant shall carry out the Environmental and Social Impact Assessment. The Assessment shall be undertaken in accordance with the requirements of the legislation and policies of the United Republic of Tanzania. The detailed scope for undertaking the Scoping Exercise and detailed Environmental is herewith attached as Appendix 1.

3.4 The Client will provide the Consultant with available data relevant to the study objectives and services. The Consultant shall however be solely responsible, for the accuracy, analysis and interpretation of all data received and for the recommendations in the reports.

3.5 The Consultant shall design the road to a design life of 20 years including carrying out analysis of climbing lanes, to determine suitable area for climbing, escape ramps, study of the terrain and pedestrians and traffic at the populated centers, cattle crossing infrastructures and design relevant service roads and street lights to safeguard segregation of traffic in townships, pedestrians and cyclists and introduction of truck lay bay areas along the route. The street lights should preferably be solar powered type.

PHASE I: FEASIBILITY STUDY AND PRELIMINARY DESIGN

3.6 The scope of services for Feasibility Study shall include the following:

- Preliminary design
- Preliminary survey, soils and materials investigations;
- Traffic surveys and analysis;
- Preliminary pavement design;
- Economic analysis and evaluation;
- Scoping Report and Term of Reference;
- Environmental and Social Framework (ESF) Tools; and
- Sustainability of the project.

It should be noted that the road once upgraded will serve various communities, villages, and townships along the identified corridor and therefore evaluation and subsequent design of short access roads should be included in the scope of the Consultant's services.

Preliminary Survey and Investigations

Road Alignment and Condition Survey

3.7 The Consultant shall carry out desk studies of the existing road alignment and condition survey data from available information. This shall be followed by field surveys for the establishment of the road centreline with particular attention given to characteristics of the alignment such as low and high points of vertical alignment, sub-standard curves, deep cuts, high fills, overtopping sections, etc. Where potential improvement of the existing alignment is envisaged the coordinates of the locations will be captured. The Consultant shall capture the coordinates of locations of drainage structures, overtopping sections, large river crossings, railway crossings, villages, towns, markets, public services facilities, etc. However, it is desired that the alignment should follow as closely as possible the existing road to avoid disruption of communities.

3.8 The Consultant shall investigate the alternative routes, if any along the project area and recommend the best route based on technical, economic, social and environmental assessment.

Route Selection

3.9 The existing road alignment shall as much as possible be adopted for this design. However, realignment on road sections in uninhabited areas may be proposed based on sound professional judgment and shall be agreed upon between the Consultant and Client.

3.10 Any proposed realignments/bypasses or spur roads will be guided by the existing Land use plan of the respective district/Town Master Plan and shall be agreed upon between the Consultant and TANROADS during the Inception Report stage.

Preliminary Topographic Survey

3.11 Topographical survey report shall be a standalone report. The topographic surveys undertaken by the Consultant shall be according to the Land Surveying and Mapping Standards of Tanzania, and shall be recorded in standard survey field books/electronic data book, which shall be submitted and become the property of the Client at the completion of the assignment**.** The co-ordinates of all intersection points shall be in Universal Transverse Mercator (UTM) system and shall be tied to the National Survey Grid, and levels related to the National Benchmarks. Monumentation of all control points shall be made using 12mm steel pins embedded in concrete cast in-situ. The description cards for the control points shall be prepared and submitted to the Client and detailed in the report to be submitted to the Client for future reference.

3.12 The topographic surveys shall be carried out for the whole project road and shall include: -

- Verification and reinstatement of control points established during the former period of Detail Design and Construction comprising the primary network of permanent control points at a maximum interval of 3000 m along the road thereafter to be distributed to a maximum of 300m as secondary points, which should be inter-visible. Additional, control points should be established as necessary.
- Heighting of the primary and secondary controls has to be done by Spirit Levelling, and presentation of Final Reduced Levels has to include Computation Data Sheets in excel format.
- Survey of the existing road, junctions, kerbs, drains, culverts, road furniture, utilities, buildings etc. within the road reserve for preparation of mapping to a scale of 1:2000 and completion of the engineering design as necessary,
- Detailed surveys at all proposed locations for new drainage structures including at least a length of 50 m downstream and upstream of the structures,

- Levelling along centreline at 50m intervals for the longitudinal profile,
- Cross-section levelling at approximately 2m intervals and at any local irregularity. Cross sections are to cover at least 30m each side of the future centreline.

3.13 Computation and definition of the geometric characteristics of the centreline of the road must be carried out, setting out data prepared and the definition of the vertical and horizontal alignment computed and presented in any other format but not excluding X, Y, Z format at every 25m intervals of the road centreline.

3.14 The topographic data shall be available and presented on maps with a scale of 1:2000 for the following:

- Existing road, other roads, footpaths, rivers, creeks, watercourses, drains;
  - Buildings: - houses of stone, mud, public buildings; including planned relocation
  - Land use: sports fields, cemeteries, cultivation, forests, etc.;
  - Trees with diameter exceeding 0.5m and height exceeding 1.50m.
  - Main fences/bench marks and grid lines; and
  - Existing national trigonometric points, and national bench marks, Consultant's primary and secondary trigonometric points and benchmarks with co-ordinates and

3.15 In addition, electronic copies of the topographic data saved in M/S Excel and topographic drawings in DXF or DWG format shall be submitted in CD ROMs and in USB flash memory stick compatible with Windows 8/10 and Vista, for future reference and actions.

Preliminary Soils and Materials Investigations

3.16 The Consultant shall investigate the soils along the project road with a view to determining the characteristics of existing soil layers. The soil types shall be described and assessed in terms of their suitability for road construction, resistance to erosion and other relevant factors. Sub-grade soils shall be analysed by excavating pits or auger and collecting soil samples for laboratory tests. Generally, test pits shall be excavated every 1000m. Additional test pits shall be carried out where there is a remarkable change in soil characteristics and the tests to be carried out shall include:

- Particles size distribution
- Atterberg Limits
- Moisture/density relationship, and
- CBR (3 points) and swell after 4-days soaking for each typical soil type identified.

3.17 Consultant shall carryout Pavement evaluation for the existing paved section between Chainage 0 + 000 – 24 + 700 (24.7km; Kihansi to Mlimba town) to establish existing structural and economical values of the existing pavement and find a feasible manner to incorporate the existing pavement into a new design.

3.18 On weak soils and high embankment areas Consultant should do necessary geotechnical design and check for bearing (short & long term), slope stability (local & global, short & long term), amount and rate of settlement (primary & secondary consolidation, elastic deformation) and embankment stability and the tests to be carried out shall include and not limited to the following:

- Particles size distribution
- Atterberg Limits
- Moisture/density relationship, and
- CBR (3 points) and swell after 4-days soaking for each typical soil type identified.
- Test pits plus bulk samples for the existing pavement and alignment survey.

- DCP (Dynamic Cone Penetration) & CBR tests and Falling weight Deflectorneter or Benkiman Beam for the existing pavement
- CHEMICAL PROPERTIES (total dissolved salts, sulphate ex chloride contents; pH value etc.) for corrosion & durability assessment of bridge foundations.

3.19 The Consultant shall carry out studies of the available sources of construction materials for upgrading of the project road. The studies shall include identification of materials in the field as well as testing in the laboratory. Details of tests are similar to those given in preceding section. For borrow areas for fill materials and where the road is to be re-aligned, investigations shall be conducted to locate areas with materials of the desired quality within economic haulage distances. The fill materials shall meet minimum soaked CBR requirements. The location of trial pits and available quantity of materials as a result of such testing shall be estimated for all potential borrow areas. Representative material samples shall be collected in order to conduct detailed testing on the material using procedures similar to those given in the preceding section.

3.20 The Consultant shall carry out investigations for potential sources and conduct necessary tests for sub base and base materials. Tests for stabilization and blending of materials for sub-base and base courses will also be carried out as deemed necessary.

Preliminary Drainage Studies and Surveys

3.21 The Consultant shall undertake desk studies from available information on the drainage condition along the project road. The Consultant shall also carry out visual survey to assess the functionality and deficiencies of existing drainage structures such as side drains, mitre drains, pipe and box culverts, bridges, etc. Where ponding, drainage bottlenecks, or overtopping are observed the Consultant will assess the requirement for additional cross drainage structures.

3.22 The Consultant shall carry out a detailed condition survey for culverts and bridges in order to assess the adequacy of the structure for the waterways, load carrying capacity, anticipated serviceability and the requirement for repair, rehabilitation, widening and reconstruction of structures showing distress. The survey report shall include but not limited to:

a) Dimensions (width, length, number of spans, height and associated vertical clearance, channel water depth);
b) Types of structures (concrete, steel, timber);
c) Conditions of superstructures
d) Conditions of substructures and bridge bearings;
e) Erosion around piers, abutments, and banks;
f) Guard rails, approach slabs and traffic safety conditions;
g) Hydraulic capacity and highest water levels; and
h) Conditions of river channel (shape, vegetation growth, barriers, navigation Considerations etc.);

Hydrological Study and Analysis

Climate

3.23 The Consultant shall describe the climatic conditions of the study area by providing details of:

a) Rainfall (monthly distribution and intensity, including rain days per month);
b) Temperature (minimum, median and monthly ranges throughout the year); and
c) any other climatic features of importance.

Catchment Area

3.24 The Consultant shall define the catchment areas for all the major drainage structures on topographical maps or aerial photographs. The sites of the meteorological and hydrological

existing stations in the area shall also be shown. Rainfall intensity, run-off duration/intensity relationship, catchments run-off characteristics and the channel slopes/discharge characteristics for each catchment area will be determined based on the available aerial photographs, topographic maps and field investigations as necessary.

Peak Flow

3.25 The Consultant shall estimate/compute peak flow through the river/stream for a return period of 100 years for bridges, 50 years for Box culverts and 25 years for pipe culvert using generally acceptable standard procedures such as the Rational Method for catchments between 1.0 sq. km or where drainage flow distance is less than 1 km and the "Transport Road Research Laboratory (TRRL) East African Flood Model" for catchments larger than 1.0 sq. km but less than 200 sq. km. For catchment areas that are greater than 200 sq. km the Consultant is advised to use at least three International recognized large catchment models which compute reliable results of water discharges.

Channel Stability

3.26 The Consultant shall investigate channel stability, channel-bank stability and maximum flood level.

Preliminary Design

Pavement Design

3.27 The Consultant shall carry out a preliminary pavement design on the basis of sub grade characteristics and design traffic loading for the design period, which is the same as that for economic analysis. The Consultant shall use the design methods for pavement design as specified in the Pavement and Materials Design Manual (PMDM) published by the Ministry of Works in 1999. The recommended pavement structure with respect to the type and thickness of structural layers as well as the type and thickness of surfacing will be derived from specifications shown in relevant tables of the PMDM and Interim Guideline for the Design of Hot-MIX Asphalt: - MOWTC 2018. However, the final decision on the type of pavement designs will depend on the results of the economic analysis.

Geometric Design and Volume Computations

3.28 Based on the topographic surveying and the designed pavements, the Consultant shall improve the horizontal and vertical alignments as necessary to comply with the approved design standards appropriate to the traffic and engineering characteristics of the road. The Consultant shall use the designed alignments to perform volume computations for earthworks and pavement layers.

Drainage Structures

3.29 The Consultant shall provide new drainage structures on the basis of hydrological study, load carrying capacity and structural stability. The Consultant where necessary shall recommend appropriate remedial measures to the existing structures to improve structural stability, load carrying capacity and meet the design standards.

3.30 The Consultant shall check the structural condition of the existing drainage structures including the inlet and outlet of the structures and carry out the design of their remedial/repair works. The Consultant shall also carry out hydrological analysis for all new drainage structures and existing

ones which are hydraulically and structurally unsound and in need of replacement. All existing drainage structures which don't meet the design standards shall be replaced.

3.31 The catchment areas, rainfall, run-off duration/intensity relationships, catchments run-off characteristics and channel slopes/discharge characteristics for each catchment shall be determined on the basis of available topographic maps and field investigations as necessary. The appropriate return flood period and corresponding water levels will be established and the adequacy of existing waterways should be checked. Appropriate flood design model like the East African flood design model should be used.

Scoping Report and Terms of Reference

3.32 The Consultant shall carry out Scoping exercises and Refining the Terms of Reference to guide full ESIA study based on the national legislation and regulations.

3.33 Among others, the Scoping Report shall describe nature of the project; proof of land ownership and location; activities to be undertaken during the construction, operation and decommissioning phases; the design of project; site layout; materials to be used and services, products and waste to be generated by project and its disposal. Action plan to ensure health and safety of workers and neighbouring communities during project implementation. Environmental and Social Management Plan (ESMP) and Monitoring Plan; economic and social – cultural impacts to the local community and the nation in general; the project budget. How scoping exercise was undertaken; identification of issues and problem; synthesis of results of scoping exercise including details of potential negative and positive impacts; stakeholder's groups identified and their involvement; spatial, temporal and institutional boundaries of the project; project alternatives and any other relevant important information.

3.34 Before undertaking the Scoping Exercise, the Consultant has to prepare and fill in EIA Application Form No.1 and Scoping Report Form No.4 for registering the projects at NEMC. Thereafter, the scoping exercise and consultation with all relevant stakeholders to the proposed project (i.e. Vice-President's Office, NEMC, Ministry of Natural Resources and Tourism, General Public etc…) shall be conducted. In the process of scoping, the Consultant shall review the scope for undertaking ESIA. The Scoping Report must be submitted to TANROADS for review and submission to NEMC for approval.

3.35 Since the road works are likely to affect the lives of the communities staying along the project road, the Consultant shall as part of the preliminary social mitigation plan, devise HIV/AIDS awareness and prevention programme. The programme shall target the road construction workers and the general public within the area of influence of the road.

Environmental and Social Framework (ESF) Tools

3.36 The Consultant shall conduct preliminary Environmental and Social Impact Assessment (ESIA) study and prepare Environmental and Social Framework (ESF) Documents as per World Bank Environmental and Social Framework (2018). The ESF Tools includes: Environmental and Social Commitment Plan (ESCP); Environmental and Social Management Framework (ESMF); Resettlement Plan Framework (RPF); Gender Based Violence - Action Plan (GBV-AP); Grievance Redress Mechanism (GRM); Labour Management Plan (LMP); Vulnerable Group Policy Framework (if relevant).

Economic Evaluation

3.37 Economic evaluation will be undertaken based on TANROADS Investment Appraisal Manual of 2015. The activities to be undertaken include but not limited to the following;

Survey of National Socio-Economic Profile

3.38 The economy of a region and its transport infrastructure are closely inter-related. The economic justification for a road project often depends upon the economic activities in the region and the potential for their further growth. The growth of traffic on the roads is likely to be closely governed by the inter-relationship between transport demand and certain selected economic indicators. Based on this the consultant shall carry out the following activities; -

- Give general overview of the country's economic profile, including GDP, growth rates of economic sectors such as agriculture, manufacturing, mining, tourism, transport and communication, construction, etc. and their contribution to GDP.
- Indicate trend of the growth of other macro-economic indicators such as inflation, exchange rates, etc. for the past 5 -10 years.
- Give description of the country's population, growth rates and population projections.

Transport System of the Country

3.39 The Consultant shall provide information on the main transport modes and their context; the road network in km by classification and surface type; vehicle fleet and its growth rate in order to determine transport demand in the country. The new development in the transport sector such as construction of the Standard Gauge Railway (SGR) should be acknowledged.

Socio-Economic Profile of the Region and Project Area of Influence

3.40 The Consultant shall collect and analyse the socio-economic data for the past 5-10 years from the project regions as well as project influence area so as to get an idea on how the economic growth has taken place in relation to traffic growth, thus giving a basis for estimation of future traffic growth generated by various sectors of the economy. Such data shall include but not limited to;

i. Population growth and changes in rural and urban population by distribution;
ii. Regional and national economic growth;
iii. Development in agriculture including area under crops, potential area for crops, livestock, irrigation, minerals such as gemstones, gold, coal, iron ore, uranium, natural gas etc., manufacturing industries such cashew nuts and tuna processing, commerce, tourism, forestry, fisheries within the influence area;
iv. Influence of new road for both transport and cargo freight within Tanzania and neighbouring countries;
v. Private and public investments along the project area;
vi. Development of social services, medical facilities, educational centres; refugees' camps and
vii. Other factors as might be identified by the Consultant.

3.41 The Consultant should carry out economic appraisal of the proposed road in a wider perspective in order to determine traffic which will use the proposed road project.

3.42 The above data should be analysed statistically to determine the growth rates and elasticity of traffic with respect to GDP, population, industrial production and agricultural output.

Traffic Surveys and Analysis

3.43 The Consultant shall carry out classified traffic counts for 7 consecutive days out of which 4 days will be for 12 hours and 3 days for 24 hours. The counting should be carried out at the permanent locations that were established by TANROADS. The ADT shall be converted to Annual Average Daily Traffic (AADT) by applying seasonal adjustment factors established by TANROADS.

3.44 Historical traffic data shall be collected depending on its availability (preferably about 5 -10 years) so as to establish meaningful past growth trends for each vehicle class.

3.45 Origin and destination (O-D) surveys shall be carried out at appropriate locations for 3 consecutive days which must encompass the weekly market day and one working day. The O-D information shall include vehicle particulars, commodity O-D particulars, vehicle utilization and route particulars. The points at which the data is collected should be carefully chosen on the road network such that it should be possible to derive the volume of traffic likely to use the facility under consideration. The ADT data obtained from O/D surveys should be presented in trip matrix format.

3.46 The Consultant should come up with future traffic forecast for each vehicle category for the next 10 to 20 years after project completion. All traffic (light, medium and heavy vehicles) forecasts shall be given at three growth rates, namely; low, medium and high.

3.47 Axle load surveys should be carried out at appropriate locations for seven consecutive days at 24 hours on the project road to capture information on directional traffic loading in order to determine the Vehicle Equivalent Factors (VEF) for various categories of vehicles for the estimation of E80s for traffic loading on the project road.

3.48 All available statistics on accidents which can form some inputs in the HDM-4 model and also form the basis for designing the improvements at accident prone locations on existing roads shall be collected and analyzed.

Traffic Projections

3.49 Traffic counts and O-D surveys would provide information about present traffic on the road (in the case of existing roads), or the possible diverted traffic (in the case of new construction, such as bypass). For design purpose, however, it is necessary that classified traffic should be predicted for design period i.e. 20 years excluding the period of construction.

3.50 The traffic forecasting method should base on the growth in population, Gross Domestic Product (GDP), per capita income and elasticity of transport demand for both passengers and freight in relation to income and population.

3.51 Based on the above, generated traffic as well as suppressed and diverted traffic shall be determined.

Economic Analysis

3.52 The Consultant shall be required to use the guidelines and standards developed in TANROADS' Investment Appraisal Manual of 2015 for Economic Analysis.

3.53 The basic purpose of economic analysis of a road project is to measure its economic costs and benefits in order to determine whether the net benefits accruing from the proposed project justify investment in such a project. Based on the above, the economic analysis for this project will be undertaken based on the following assumptions:

(i) Economic analysis period is considered to be 20 years excluding the period of construction;
(ii) A discount rate of 12% shall be applied;
(iii) Vehicle Operating Costs (VOC) from TANROADS' Investment Appraisal Manual, 2015 should be applied. However, the Consultant is required to update the items whose prices change with time. Such items include fuel prices, crew wages, and prices of new vehicles.
(iv) The Standard Conversion Factor (SCF) of 0.83 should apply as calculated by TANROADS. This factor is used to convert financial or market prices to economic costs. However, the consultant will be required to explain the concept of the SCF.

3.54 The consultant shall carry out the economic evaluation of alternative technical solutions for upgrading of the project road using the HDM-4 version 2.08 model or latest model in order to determine economic viability of the proposed road project. Calibration of some data collected from the project area should be made in order for the HDM-4 model to give better results.

3.55 The following economic indicators shall be calculated by the above models;

- Economic Internal Rate of Return (EIRR)
- Net Present Value of Investment (NPV) at 12% discount rate

Interpretation of the economic analysis results as well as recommendation on the best option should be made clearly to enable the client to make decision.

Economic Costs

3.56 Costs to be considered in the economic analysis shall comprise but not limited to:

- Vehicle Operating Cost (VOC) and Supervision Costs
- Construction Cost
- Supervision Cost
- Maintenance Costs
- Land acquisition and resettlement costs;
- Environment mitigation and monitoring measures costs; and
- HIV/AIDS awareness and mitigation costs;

The above costs will be converted from financial to economic based on standard conversion factor of 0.83.

Benefits

3.57 Benefits to be considered in the present economic analysis shall comprise but not limited to:

- Savings on Vehicle Operating Costs (VOC);
- Savings on Travel Time Costs;
- Saving on Accident Costs;
- Saving in Maintenance Costs;

Savings will be calculated as differences of costs and benefits under "with" and "without" project cases.

Sensitivity Tests

3.58 The Consultant shall carry out sensitivity analysis for the recommended alternative showing variations of NPV and IRR assuming construction costs variation of $\pm$10% and $\pm$20%; and variation of traffic levels over the life of the project of $\pm$10% and $\pm$20%. The sensitivity analysis shall also include a switching value analysis for construction costs and traffic levels.

3.59 The Consultant shall also develop a Risk Assessment in order to highlight the likelihood of an unsatisfactory outcome. The Risk Analysis methodology shall provide a framework within which it is possible to identify the most likely outcome of a series of relationships based upon the possible values of the input variables to those relationships.

3.60 The Consultant will rank the results of different options and make recommendations to the Client.

Reports

3.61 The Consultant's Feasibility Study Report for the road shall include plans, typical cross-sections, soils and materials report and traffic data as well as preliminary engineering design drawing for the proposed construction, at following scales:

1: 5,000/500 horizontal/vertical alignments
1: 250 cross-sections
1: 250 bridge/culverts
In addition to the drawings the consultant shall prepare and submit to the client a terrain design model based on the commonly used CAD computer models.

Sustainability of the Project

The Consultant shall describe and propose the sustainability of project after upgrading to Bitumen Standard.

PHASE II: DETAILED ENGINEERING DESIGN, ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT, RESSETTLEMENT ACTION PLAN AND PREPARATION OF TENDER DOCUMENTS

3.62 Depending on the results of the feasibility study and authorization by the Client, the Consultants shall undertake the detailed engineering design of the selected option.

Design Standards

3.63 The following approved standards by the Ministry of Works, Transport and Communication shall be adopted and adhered to: -

- Geometric design:
  - MOW Road Geometry Design Manual of 2011
  - Code of Practice for Geometric Design (Draft) published by SATTC -TU, 1998
- Pavement and Materials:
  - MOW Pavement and Materials Design Manual, 1999
  - Interim Guideline for the Design of Hot-MIX Asphalt: - MOWTC 2018
- Specifications:
  - MOW Standard Specifications for Road Works, 2000
- Testing Procedure:
  - MOW Central Materials Laboratory Testing Manual, 2000
- Structures:
  - British Standards BS 5400
- Hydrology and hydraulics:
  - TRRL East African Flood Model / any other internationally recognised model
- Traffic Signing and Marking:
  - A Guide to Traffic Signing (MoID, 2009)
- Safety Auditing Manual:
  - A Guide to Road Safety Audit (MoID, 2009)
- Surveying:
  - Land Surveying and Mapping Standards of Tanzania (Land Surveying Regulations CAP 390)
- Economic Evaluation
  - TANROADS Investment Appraisal Manual 2015
  - Baseline Traffic Counts in Tanzania Mainland & Establishment of a Comprehensive Traffic Census Methodology for TANROADS (ICT, 2009)

3.64 The Consultant shall be responsible for the design details within these Terms of Reference (TOR). The methodologies used in the design of pavement, earthworks, drainage structures, shall give

preference to the use of available local construction materials. At all times a balance must be maintained between capital and maintenance costs.

Hydraulics Design and Analysis

3.65 The Consultant shall investigate scour depth around abutment, pier and other drainage structures. The Consultant shall also design hydraulic opening of drainage structures to accommodate maximum flow anticipated with a provision for adequate free board.

Topographic Surveys

3.66 Topographical survey report shall be a standalone report. The topographic surveys undertaken by the Consultant shall be according to the Land Surveying and Mapping Standards of Tanzania, and shall be recorded in standard survey field books/electronic data book, which shall be submitted and become the property of the Client at the completion of the assignment**.** The co-ordinates of all intersection points shall be in Universal Transverse Mercator (UTM) system and shall be tied to the National Survey Grid, and levels related to the National Benchmarks. Monumentation of all control points shall be made using 12mm steel pins embedded in concrete cast in-situ. The description cards for the control points shall be prepared and submitted to the Client and detailed in the report to be submitted to the Client for future reference.

3.67 The topographic surveys shall be carried out for the whole project road and shall include: -

a) Verification and reinstatement of control points established during the former period of Detail Design and Construction comprising the primary network of permanent control points at a maximum interval of 3000 m along the road thereafter to be distributed to a maximum of 300m as secondary points, which should be inter-visible. Additional, control points should be established as necessary;
b) Heighting of the primary and secondary controls has to be done by Spirit Levelling, and presentation of Final Reduced Levels has to include Computation Data Sheets in excel format;
c) Survey of the existing road, junctions, kerbs, drains, culverts, road furniture, utilities, buildings etc. within the road reserve for preparation of mapping to a scale of 1:2000 and completion of the detailed engineering design as necessary;
d) Detailed surveys at all proposed locations for new drainage structures including at least a length of 50 m downstream and upstream of the structures,
e) Levelling along centreline at 25m intervals for the longitudinal profile; and
f) Cross-section levelling at approximately 2m intervals and at any local irregularity. Cross sections are to cover at least 30m each side of the future centreline.

3.68 Computation and definition of the geometric characteristics of the centreline of the road must be carried out, setting out data prepared and the definition of the vertical and horizontal alignment computed and presented in any other format but not excluding X, Y, Z format at every 25m intervals of the road centreline.

3.69 The topographic data shall be available and presented on maps with a scale of 1:2000 for the following:

a) Existing road, other roads, footpaths, rivers, creeks, watercourses, drains;
b) Buildings: - houses of stone, mud, public buildings; including planned relocation;
c) Land use: sports fields, cemeteries, cultivation, forests, etc.;
d) Trees with diameter exceeding 0.5m and height exceeding 1.50m;
e) Main fences/bench marks and grid lines; and
f) Existing national trigonometric points, and national bench marks, Consultant's primary and secondary trigonometric points and benchmarks with co-ordinates.

3.70 In addition, electronic copies of the topographic data saved in M/S Excel and topographic drawings in DXF or DWG format shall be submitted in CD ROMs and in USB flash memory stick compatible with Windows 8/10 and Vista, for future reference and actions.

Pavement Investigation and Design

3.71 The Consultant shall review and verify the pavement investigation and designs for the existing sections. Pavement deflection measurements, to assess the residual life of the existing pavement shall be carried out using non-destructive tests such as the Standard Falling Weight Deflect meter (SFWD). The interval of the tests will depend on pavement condition and will vary from 100m intervals where damage is not severe to 50m intervals in areas of severe damage.

The thickness of the existing pavement layers on carriageway and shoulders shall be determined by means of trial pits at maximum intervals of 500m. The trial pits shall be excavated on the shoulders at the edge of the carriageway and shall extend approximately 0.2m into the carriageway pavement. The interval shall be reduced where there is excessive variance in the test results. The excavated pits shall be reinstated accordingly.

3.72 Additional trial pits shall be excavated at local areas showing excessive distress (rutting, structural depression, cracking etc.). The reason for the distress shall be determined and any need for remedial measures identified. Special attention should be given on water logged areas where moisture has affected the pavement structure and improvement should be carefully proposed.

3.73 The Consultant shall arrange for reinstatement of the pavement as soon as possible after testing and shall ensure that no open trial pits present a traffic hazard at any time. The total pavement surface shall be inspected in order to assess the types, quantities and cost of required pre-overlay repairs.
Carriageway pavement design shall be carried out using state-of-the-art analytical design and be checked against at least by 2 internationally recognized design methods.

3.74 Shoulder pavement design shall be of the same pavement layers as the carriageway and shall thus take into consideration the likely maximum load on the structure and the possible requirement for edge support at embankment slope.
Particular attention shall be given to the specification of ageing resistant bitumen products. New technology based on performance ("Super-pave system") for asphalt pavement mix design shall be applied.

3.75 The pavement shall be designed to carry traffic over a 20 years' design period of the proposed project road and in accordance with the Pavement and Materials Design Manual, 1999. Selection, provisions and design of bituminous base or asphalt concrete wearing course shall be based on the Interim Guideline for the Design of Hot-MIX Asphalt.

3.76 Other parameters to be considered during pavement design shall include: results of the pavement evaluation, soils and materials tests and other engineering treatments dictated by available natural materials. Access roads joining the project road shall be paved up to the end of the road reserve, i.e. *30m* from the centreline.

Soils and Materials Investigations

3.77 The Consultant shall review all existing relevant data and perform investigations to verify suitability and sufficiency of materials for construction of wearing course, base course, sub-base improved sub grade and fill within economic haulage distance. The following shall be undertaken:

a) Geo-technical investigations at sites for new bridges and major culverts and where major embankments shall be constructed, including sampling, field and laboratory testing to achieve necessary basis for foundation design, stability analysis, assessment of settlements of embankments etc.

b) Proof drilling and pitting to verify quantity and quality of materials from existing borrow pits and identification of potential supplementary suitable sources as necessary to obtain sufficient quantities within economic haulage distance.

3.78 The Consultant shall carry out sub surface investigations for all major drainage structures which include pitting, hand auguring and/or drilling down to foundation level including logging, SPT and taking of disturbed and undisturbed samples. Seismic investigation shall also be carried out if considered necessary by the Consultants. Allowable bearing pressures of subsurface stratum shall be determined at proposed foundation levels of structures.

3.79 Analysis and testing of alignment soils and potential construction materials shall be carried out to determine their suitability for the works. The Consultant shall perform all necessary tests as stipulated in the PMDM to verify the type and strength of the sub-grade soils. Special attention shall be given to identification of sections with problem soils.

3.80 Potential gravel sources shall be tested for:

- Grading (particle size distribution),
- Atterberg Limits,
- Moisture/density relationship,
- California Bearing Ratio (CBR)
- Any other necessary tests as per PMDM.

3.81 Potential sources of hard stone shall be tested for:

- Los Angeles Abrasion,
- Aggregate Crushing Value (ACV)
- Ten Percent Fine Value (TFV),
- Sodium Sulphate Soundness,
- Bitumen Affinity,
- Specific Gravity and Water Absorption,
- Soluble salts Content,
- AIV (Aggregate Impact Value)
- Any other necessary tests as per PMDM and the TANROADS Interim Guideline for the Design of Hot-MIX Asphalt: - MOWTC 2018.

3.82 The Consultant shall identify existing water sources for supplying water for construction works, and assess its quantities and quality. It should be noted that water to be used for the implementation of the project shall not be on the expense of local community. Where construction water is not available from existing sources, the Consultant shall explore alternative sources such as bore holes or shallow ponds and identify associated costs.

Detailed Engineering Design Requirements

Horizontal and Vertical Alignment

3.83 The horizontal alignment for project road shall be determined by points at intervals of 25m along the centreline; tangent points and such other critical points as may be required. All primary and secondary points shall be in UTM system and shall be coordinated to the National Grid System. Wherever possible, the primary and secondary points shall be tied to at least three permanent

features using distances or a combination of distances and angles. The Consultant shall submit a summary of description cards for the primary and secondary control points, consisting of photographs, their respective co-ordinates, and sketches of the control points indicating their location in relation to the closest permanent features.

3.84 The vertical alignment shall be designed to take into account the hydraulic and soil conditions and the needs to raise the embankment to avoid flooding.

Earthworks and Pavement Design

3.85 The pavement shall be designed to carry traffic over a 20-year design period of the proposed project road and in accordance with the Pavement and Materials Design Manual, 1999.

Design of Drainage Structures

3.86 All existing data and the results of the field investigations for soils, foundations, hydrology, etc. shall be assessed and used as a basis for the design of drainage structures. Detailed hydraulic computation and structural designs shall be carried out and fully documented in the reports. All drainage structures shall be designed according to BS 5400 using HA Loading and 37.5 units of HB Loading.

3.87 All pipe culverts should preferably be of reinforced concrete. The minimum size of cross pipe culverts shall be 900 mm diameter, while those for access roads shall be a minimum of 600 mm diameter. The Consultant shall make sure sufficient drainage structure lengths are provided and invert levels are properly designed and determined based of the vertical profile along the drainage channel line up to the right of way as a minimum.

Road Safety

3.88 The Consultant shall identify all possible accident black spots and incorporate the measures in the design to improve road safety. Improved layout and visibility at junctions, proper separation of pedestrians and cyclists from the vehicular traffic and the provision of pedestrian crossings, bus bays and parking areas shall be included in the design, where possible. Other measures to be considered include provision of wide shoulders in towns/villages, climbing lanes and escape ramps on steep grades.

3.89 A detailed traffic engineering design shall be carried out to specify the necessary traffic control features. This design shall include detailed traffic analysis including where appropriate, design traffic forecasts for major intersections. Based on the traffic analysis, the Consultant shall conduct intersection capacity and related traffic studies to determine the location of signs, signals as necessary, pavement markings, and facilities for pedestrians and non-motorized traffic around populated areas and other control features.

3.90 A detailed scheme for the management of the traffic flow shall be developed to ensure that vehicle and pedestrian movement is properly handled during the construction period. This plan shall include details of the location and design of by-pass lanes, temporary structures, barriers, signs, signals and other physical features necessary to accommodate traffic flow during construction. In addition to the design plan, the Consultant shall prepare a traffic operations plan detailing the construction sequencing, public information announcements, use of traffic control devices and other activities designed to minimize traffic disruption.

Street Lights

3.91 The Consultant shall consider provision of street lights at urban and other highly populated areas, village areas, pedestrian crossings, bus bays and parking areas. For easy and reliable power supply, the Street lights should be both electric and solar powered system, with priority assigned to solar power source.

Engineering Drawings

3.92 The Consultant shall prepare the following engineering drawings for the project using format and title sheets as required by TANROADS, with the originals becoming the property of the Client.

(i) Topographic Plans, scale 1:2000
(ii) Plans and Profile, scale 1:2000/1:200

Showing natural ground levels, horizontal and vertical curve details, running chainage, cross-section chainages, side drains location, description and references to all drainage works, location of bench marks, location of road furniture, any other relevant information in the format approved by TANROADS.

(iii) Typical Cross-Sections, scale 1:50

Showing all details of road cross section in cuts and fills, side drains, pavement thickness, camber and super-elevation and pavement widening. The cross sections shall also show natural ground level and super-imposed road prism and structural drawings details as required.

(iv) Cross Sections, scale 1:100

Showing natural ground level and superimposed road prism at 25m intervals.

(v) Bridges, scale 1:100 and 1:50/20 for more detailed elements
Showing all the details for construction of a bridge superstructure and sub structure as well as any protection works

(vi) Culvert details, scale 1:50

Showing details of all types of culverts, their inlets and outlets and any necessary protection works.

(vii) Soil plans

Showing the location of borrow and quarry sites and characteristics of soils for various sections of the route using the appropriate scale.

(ix) Traffic Management Plans

Showing details of the location of by-pass lanes, temporary structures, barriers, signs, signals and other physical features necessary to accommodate traffic flow during construction.

(viii) Auxiliary Works

Showing all auxiliary works using the appropriate scales.

Draft Final ESIA Report, Properties Valuation Report and RAP

3.93 **The Consultant shall conduct and prepare detailed Environmental and Social Impact Assessments (ESIA) Report, Properties Valuation reports and Resettlement Action Plan (RAP) in line with the recommendations of the Environmental and Social Framework (ESF) tools prepared during the final Feasibility Study and Preliminary Engineering Design. The Environmental and Social Assessment shall be conducted in accordance with the requirements of the Environmental Impact Assessment and Audit Regulations (2005). The draft final ESIA report, Valuation report and RAP shall be prepared and submitted in line with draft Detailed Engineering Design report. The Detailed Scope for conducting Environmental and Social Impact Assessment is attached herewith as Appendix 1 of these Terms of Reference**

3.94 The Consultant shall undertake detailed survey of all the properties to be affected by the proposed road project for preparation of Valuation report and compensation schedule. The report shall indicate the names and addresses of the properties owners for development of the detailed Resettlement Action Plan (RAP) for compensation payment.

3.95 The Consultant shall assess the likely impact of HIV/AIDS, TB and STI's on the project road and propose measures to mitigate the same in accordance with National HIV/AIDS, TB and STI's policy and strategies. The Consultant shall also prepare an awareness programs which aim at educating the communities on the control of HIV/AIDS, TB and STI's.

3.96 The consultant shall identify the potential locations along the road reserve and propose facilitation of trade as a measure to prevent road reserve encroachment by street vendors. **In addition, the Consultant shall design proper beautification measures for road reserves and median(s) areas.**

Construction Quantities

3.97 The calculated quantities for the items of construction shall be based on the final design drawings. The earthwork quantities shall be derived from calculations based on the field cross sections along the road centreline and in accordance with acceptable methods of measurements that shall be agreed with the Client. A detailed bill of quantities shall be prepared under the following sections: General; Drainage; Earthworks and Pavement layers of Gravel or Crushed Stone; Bituminous Layers and Seals; Ancillary Road works; structures and Day works.

Cost Estimates

3.98 The Consultant shall estimate likely ruling bill rates applicable to the proposed time of construction, showing how these are derived. In order to make a fair and reasonable estimate of the cost of project, the Consultant shall prepare a unit price analysis of each item using basic cost elements (labour, materials, equipment, tools, overheads, on - site costs, profit, etc.) and showing separately the cost of all taxes (direct or indirect, duties, levies and fees). The estimated financial cost resulting from this analysis shall be accurate to within $\pm$10%. The cost estimates shall also include the costs for implementation of EMP, RAP, and HIV/AIDS alleviation programme.

3.99 The Consultant shall give cost estimates broken down by main works' items into foreign and local currency components as follows: -

(i) For foreign currency:

- Imported equipment, materials and supplies;
- Identifiable foreign components of domestic manufactured equipment, materials and supplies;
- Salaries of expatriate personnel, and
- Profit and overheads of foreign firms where appropriate.

(ii) For local currency:

- Right of way acquisition;
- Local materials, supplies, and services;
- Salaries and wages of local employees both skilled and unskilled.

3.100 In addition, the Consultant shall present separately the taxes and duties element of the cost estimates.

Construction Schedule

3.101 In order to assist in evaluating the required construction period and forward budget needs, the Consultant shall carry out a network analysis of the project using suitable deterministic or probabilistic theory or a combination of both showing, inter alia: -

- Major activities and their duration
- A "network" showing the proposed ordering or sequencing of the major activities.
- Duration of the entire project in the form of a bar chart
- Monthly cost of each activity
- Anticipated monthly expenditure presented in form of an S-curve.

3.102 In carrying out the analysis of the construction schedule, due account shall be taken of the climatic conditions of the areas concerned.

M&E Framework

3.103 The consultant shall be expected to outline a Monitoring and Evaluation (M&E) framework that will be used after completion of the implementation phase. This is intended to establish the extent to which a Project meets its objectives, which will likely include supporting economic and social development. M&E will be expected to concentrate on the measurement of direct outcomes that are known to have immediate economic benefits that can be attributed to the road improvements.

3.104 The Consultant in consultation with the clients will document suitable Key Performance Indicators (KPI) that can be utilized to summarize the performance of the project including but not limited to the following; average annual traffic growth, average change in IRI, average speeds, accident rates (casualties per veh-km) and annual savings in VOC on project roads.

The framework shall include a project logical framework with indicators and baseline data. The consultant will provide guidance on timing of subsequent surveys that the client is expected to undertake before, during and after project implementation for successful project evaluation.

Tender Documents

3.105 The Consultant shall prepare complete Tendering Documents based on the format for Procurement of Medium and Large Works under National & International Competitive Tendering-December 2018, revised June 2019.

3.106 The Consultant, after due consultation with the Employer, shall package the project road into 3 lots packages, depending on factors such as availability of construction materials, construction water sources, etc. and prepare the tender documents accordingly.

3.107 The Consultant shall consider the best way of including provision of the Corporate Social Responsibility (CSR) in the project costs.

3.108 The Tender Documents shall be prepared in 3 lots in accordance with the latest version of the **AFDB's Standard Bidding Documents – Large Works one Envelope without prequalification –August 2021** for the Procurement of Works (Consultant to use latest version in case AFDB issued a new version).

3.109 The volumes III (A) & III (B) shall be factual reports clearly marked on the cover " FOR INFORMATION ONLY AND NOT PART OF TENDER DOCUMENTS" with preamble in the text stating that these reports are only representing the investigations and findings (without analysis or interpretation of results/findings) of the Employer's Consultant and that it shall be the Tenderer's responsibility for any source and quality of materials, etc. without binding the Employer.

4.0 PROFESSIONAL STAFF

4.1 The professional staff to be provided by the Consultant is estimated at **68 staff-months** covered by the services of Team Leader/Senior Highway Engineer; Highway Engineer, Transport Economist; Soils/Materials Engineer, Bridge/Structural Engineer, Topographical Surveyor, Hydrologist, Environmentalist, Sociologist and Valuer.

4.2 The Consultant shall work in association with a Registered Firm of Environmental Experts that will provide qualified and Registered Environmental and Social Experts and relevant staff for undertaking the ESIA study and develop RAP; and in association with the Registered Properties Valuation Firm that will provide qualified and registered Land Valuers and relevant supporting staff for undertaking Valuation of affected properties and prepare Properties Valuation Report(s) and Compensation Schedules.

4.3 The services are anticipated to be completed within 8 months for Phase 1 and 8 months for Phase 2 from the Contract Effective Date. The duties/responsibilities and qualifications of the key staff are as indicated below:

i) Team Leader

The Team Leader shall be responsible for the proper conduct of the entire study and shall be the principal contact person between the Consultant's team and the Client.

The Team Leader must be a registered Civil Engineer with a degree in Civil Engineering. Postgraduate qualification in Highway Engineering is an added advantage. He/she must have at least fifteen (15) years of cumulative experience related to road studies and designs. He/she must have served in a similar capacity on at least three (3) projects of similar magnitude and complexity one in mountainous terrain in the past 10 years. In addition, he/she must have a working experience of at least of 3 years in sub-Sahara Africa. Proficiency in written and spoken English is mandatory.

ii) Highway Engineer

The Highway Engineer shall be responsible for the design of the geometrical aspects of the road and shall assist the Team leader in the design of geometric design and also provide assistance to the ESIA/RAP team during the valuation of properties to be affected by the project.

He/She must be a registered Civil Engineer with a degree in Civil Engineering. Postgraduate qualification in Highway Engineering is an added advantage. He/She must have a minimum of ten (10) years cumulative experience in road studies and designs. He/She must have served in a similar capacity on at least three (3) projects of similar magnitude and complexity one in

mountainous terrain in the past 10 years. In addition, he/she must have a working experience of at least 3 years in Sub-Sahara Africa. Proficiency in written and spoken English is mandatory.

iii) Transport Economist

The Transport Economist shall conduct the economic analysis for the entire project. The Transport Economist will oversee the traffic counting, axle load measurements and traffic projections. He/She shall be responsible for conducting economic evaluation of the project during feasibility study. When final construction costs are known from the Detailed Engineering Design, the Transport Economist shall be responsible for updating economic analysis by inserting a chapter in Engineering Design Report.

He/she shall have a minimum of first degree in Economics. A postgraduate qualification in transport economics is an added advantage. He/She must have at least ten (10) years of working experience in carrying out economic analysis of public investment projects. He/She must have served on similar position in at least 3 projects of road investment studies of similar magnitude within the last 10 years. He/She must have at least 3 years working experience in Sub Sahara Africa. He/She must have proven knowledge and experience in use of HDM-4 model. Proficiency in both written and spoken English is essential.

iv) Soils / Materials Engineer

The Soils/Materials Engineer shall be responsible for conducting and supervising the materials investigation with a view to achieving optimal design and construction strategy. The Soils/Materials Engineer shall carry out the pavement design and should be conversant with current practice in testing and pavement construction techniques.

He/She must be a registered Civil Engineer with a degree in Civil Engineering. A postgraduate qualification in geotechnical or pavement engineering is an added advantage. He/She must have a minimum of Ten (10) years of specific experience in pavement evaluation, materials testing, soils investigation and pavement design. He/She must have served as Soils/Materials Engineer on at least three (3) road projects of similar magnitude and complexity in the past 10 years. In addition, he/she must have a working experience of at least 3 years in Sub-Sahara Africa. Proficiency in written and spoken English is mandatory.

v) Bridge/ Structural Engineer

The Bridge/Structural Engineer shall be responsible for the assessment of existing bridges and design of new bridges and other structures along the project road.

He/She must be a registered Civil Engineer with a degree in Civil, Bridge or Structural Engineering. Postgraduate qualification in Bridge or Structural Engineering is an added advantage. He/She must have a minimum of ten (10) years' experience in studies and detailed design of bridges/structures. He/She must have served as a Bridge/Structural Engineer on at least three (3) bridge projects of similar magnitude and complexity involving design of road bridges within the last 10 years. In addition, he/she must have a working experience of at least 3 years in Sub-Sahara Africa. Proficiency in written and spoken English is mandatory.

vi) Geotechnical Engineer

The Geotechnical Engineer shall be responsible for conducting and overseeing the geotechnical investigation with a view to achieving optimal design and construction strategy. The Geotechnical Engineer shall carry out foundation design and should be conversant with current practices in geotechnical investigations and modern pilling construction techniques.

He/she must be a registered Engineer with a degree in Geotechnical or Civil Engineering. A postgraduate qualification in Geotechnical Engineering is an added advantage. He/she must have a minimum of Ten (10) years cumulative experience in geotechnical investigations and foundation designs. He/she must have served as a Geotechnical Engineer on at least three (3) Bridge projects with deep pile foundations of similar magnitude and complexity in the last ten (10) years. He/she must have at least three (3) years working experience in Sub Sahara Africa. Proficiency in both written and spoken English is essential.

vii) Topographical Surveyor

The Topographical Surveyor shall be responsible for conducting and supervising the survey team. He/she will be responsible for planning of the fieldwork, select known survey reference points, and determine the precise location of important features in the survey area. He/she shall be responsible for searching legal records, look for evidence of previous references survey points (geodetic reference points and national benchmarks) and analyse the data to determine the location of boundary lines and record the results of the survey, verify the accuracy of data, and prepare plans, maps, and reports. The surveyor shall mark all properties to be affected by the proposed road to facilitate valuation for compensation.

He/She must be a registered Surveyor with a degree or diploma in land surveying. Post graduate qualification in surveying is an added advantage. He/She must have at least ten (10) years of cumulative experience related to Land surveying activities. He/She must have served as a Topographical Surveyor on at least three (3) road projects of similar magnitude and complexity within the last 10 years one in mountainous terrain. In addition, He/She must have at least 3 years working experience in Sub Sahara Africa. Proficiency in written and spoken English is mandatory.

viii) Hydrologist

The Hydrologist shall be responsible for estimating and assessing the relationship between rainfall, run off and soils and rock features of the catchments along the project area with focus on surface water, including rivers and dams. He /she shall study and update the available hydrological data by computer models or any other means in order to maintain and develop successful flood water management strategies. He /she shall provide advice and information to the Bridge/ Structural Engineer on hydraulic characteristics of the catchments along the project area.

He/She must have a degree in Civil Engineering. Post-graduate qualification in Hydrology/Hydraulics Engineering is an added advantage. He/She must have at least ten (10) years working experience related to water/flood management schemes. The ability to use appropriate flood design models is essential. He/She should have served as a Hydrologist on at least three (3) roads projects one in mountainous terrain of similar magnitude and complexity within the last 10 years. In addition, He/She must have at least 3 years working experience in Sub Sahara Africa. Proficiency in written and spoken English is mandatory.

ix) Environmentalist

The Environmentalist shall be responsible for carrying out an environmental impact assessment of the project and prepare Environmental and Social Management Plan (ESMP) in order to minimize any negative impacts that the road rehabilitation will have on the environment.

The Environmentalist shall have a degree in Environment Management, Environmental Engineering. Post-graduate qualification in Environment Management, Environmental Engineering or related discipline is an added advantage. She/he must have at least eight (8) years working experience related to environmental issues. She/he must have done an EIA of at least

three (3) projects of a similar nature within the last five (5) years. She/he must have at least 3 years working experience in Sub Sahara Africa. Proficiency in written and spoken English and Swahili are mandatory.

x) Sociologist

The Sociologist shall be responsible for conducting the social impact assessment in the corridor of impact and prepare mitigating plans and Resettlement Action Plan (RAP) in order to minimize any negative impacts that the road construction will have on the people along project area. Furthermore, the Sociologist will be responsible for proposing measures to prevent vendors from the common practice of encroaching the roads reserves.

The Sociologist shall be a holder of a degree in Social Science. Post graduate qualifications in Social Science is an added advantage. She/he must have at least eight (8) years working experience related to social issues. She/he must have done a SIA on at least two (2) road development projects within the last five (5) years. In addition, She/he must have at least 3 years working experience in Sub-Sahara Africa. Proficiency in both written and spoken English and Swahili are mandatory.

xi) Valuer

The Valuer shall be responsible for conducting valuation of properties to effect compensation of properties to be affected.

She/he must be a registered Valuer/Land Economist with a Bachelor degree or Advanced Diploma in Land management and Valuation. A postgraduate qualification in land management and valuation is an added advantage. She/he must have a minimum of ten (10) years cumulative experience in conducting valuation of properties in infrastructure projects. She/he must have done valuation on at least three (3) development projects within the last 10 years. She/he must have at least 3 years working experience in Sub Sahara Africa. Proficiency in both written and spoken English and Swahili are mandatory.

4.4 In addition to the above key staff the Consultant shall determine the Supporting and Backup staff deemed necessary to assist with successful completion of the assignment. However, their qualifications will not be considered in the evaluation of the proposals.

TIMING

5.0 The services will commence 1 month after the effective date of the contract and are estimated to be completed within Sixteen (16) months.

5.1 The following time frame/schedule (in months) shall be adhered to in carrying out the study. As such the various deliverables shall be submitted not later than the dates shown below:

Phase I: Feasibility study

Signing/Effective Date of Contract	-	M
Commencement of services	-	M + 1
Inception Report	-	M + 2
Draft Feasibility Study report including; Preliminary Design Report + Scoping Report - Draft ESF Tools	-	M + 6

Comments on the draft final feasibility, preliminary and scoping by Client - M + 7

Final Feasibility Study report including;
Preliminary Design Report + Final ESF Tools - M + 8

Phase II: Detailed Engineering Design (Subject to Instruction from Client)

Commencement of the Detailed Design (Subject to Client's Instruction) - M + 9

Draft Final Engineering Design Report including Tender Documents,
Detailed ESIA & Valuation report & RAP and cost estimates - M + 14

Client's Comments on Draft Design, ESIA & Valuation Report & RAP - M + 15

Final Report and Tender/Contract Documents
and Detailed ESIA, RAP, Valuation Report and cost estimates - M + 16

6.0 REPORTS

6.1 The Consultant shall prepare, and submit all reports in English and presented on A4 sized paper. All reports shall be submitted initially as draft versions, which shall be finalized to accommodate Clients' comments. Survey data for both draft and final reports shall be submitted in a format compatible to current operating window system.

6.2 The Consultant shall arrange to present the Reports to the panel of TANROADS experts. The presentations shall be made at least 5 days after submission of the Draft Feasibility Study and draft final reports in hard and soft copies of the reports. The presentations shall preferably be in Power Point. Also, the Consultant should be available during the review assignment.

6.3 THE CONSULTANT'S FAILURE TO SUBMIT REPORTS WHETHER AT INTERMEDIATE STAGES OR OVERALL ON SPECIFIED TIME PERIODS SHALL RESULT TO IMPOSITION OF LIQUIDATED DAMAGES EQUAL TO $1/1000^{TH}$ (ONE THOUSANDTH) OF THE VALUE OF THE INVOICE RELATING TO A PARTICULAR STAGE OR OVERALL AND PAYABLE FOR EACH CALENDAR DAY, WITH A MAXIMUM LIMIT OF 15% (FIFTEEN PERCENT) OF THE VALUE OF THE CONTRACT.

PHASE I:

Inception report (5 Copies)

6.4 This report shall briefly describe the mobilization and establishment status of the Consultant, the specific staffing plan, the updated work plan the Consultant proposes to follow in carrying out the assignment, based on the Consultants initial findings, details of any constraints or inputs required from the employer and such remarks as are deemed appropriate including the works done so far. This report shall be submitted not later one month from the date of commencement of the services.

Draft Feasibility Study (10 copies), Scoping Report and Term of Reference and ESF Tools (2 hard copies and soft copies)

6.5 The Draft Feasibility Study and Preliminary Design Report shall summarize all the work performed, the findings and recommendations of the Consultant. The report shall include maps, plans and diagrams.

6.6 **The Scoping Report & Terms of References and EIA Registration Form (2 copies).** The Scoping report shall cover issues and its synthesis during public consultations and refined Terms of Reference for review and approval by the National Environment Management Council. The report shall be submitted in line with dully filled Form No. 4 as indicated in Third Schedule of the EIA and Audit Regulations, 2018 and in line with Draft feasibility study.

6.7 The Draft Environmental and Social Framework (ESF) tools **(2 Copies each).** The ESF Tools includes: Environmental and Social Commitment Plan (ESCP); Environmental and Social Management Framework (ESMF); Resettlement Plan Framework (RPF); Gender Based Violence - Action Plan (GBV-AP); Grievance Redress Mechanism (GRM); Labour Management Plan (LMP); Vulnerable Group Policy Framework (if relevant). The tolls should be prepared in accordance with the AfDB/World Bank's or TANROADS Environmental and Social Framework (ESF).

6.8 The Consultant's Feasibility Study Report for the road shall include plans and profiles typical cross-sections, soils and materials report and traffic data as well as drainage structure drawings for the proposed construction, at following scales:

1: 5,000/500 horizontal/vertical alignments
1: 250 cross-sections
1: 250 bridge/culverts

The intervals for levels in the profile should not be more than 100 meters. In addition to the hard copies of the drawing the Consultant shall prepare and submit to the Client soft copies of design drawings together with the Digital Terrain Model (DTM) in DXF or DWG format. In addition to the above, the Consultant shall submit to the Client the soft copy for the following files from HDM-4 object files for further verification: -

The Consultant shall arrange to present Draft Feasibility Study Report to a panel of TANROADS experts. The presentations shall be at least 5 days after submission of the hard copies of the reports. The presentations shall preferably be in PowerPoint.

Economic Study Report (10 copies)

6.9 In addition to the hard copies of the drawings the Consultant shall prepare and submit to the Client soft copies of design drawings together with the Digital Terrain Model (DTM) in DXF or DWG format. In addition to the above, the Consultant shall submit to the Client the soft copy for the following files from HDM - 4 workspace for further verification:

i) Vehicles.dbf
ii) Improves.dbf
iii) Annual works.dbf
iv) HDM-4 rundata.dbf
v) Objects data

6.10 The Consultant shall arrange to present Draft Feasibility Study Report to a panel of TANROADS experts. The presentations shall be at least 5 days after submission of the hard and soft copies of the reports. The presentations shall preferably be in PowerPoint.

Final Feasibility Study (10 copies), Preliminary Engineering Design (10 copies) and Final Environmental and Social Framework (ESF) tools (5 copies each).

6.11 The Final report shall be submitted in hardcopies after receiving Clients' comments on the Draft Final Feasibility Study Report, and Draft Environmental and Social Framework (ESF) tools incorporating all the revisions deemed appropriate by the Consultant after receipt of comments on the Draft Final Report of the study from the Client. The models and/or calculations used in the economic analysis shall also be made available in a compact disc and USB flash drive compatible with MS Windows software. The consultant shall also prepare an executive summary (5 copies), highlighting most important findings from the studies, conclusions and recommendations.

Record of Documents

6.12 After delivery of all Final documentation, the originals of the documents are to be deposited with TANROADS headquarters in soft copy compatible with software used and agreed with the Client at inception, such as Microsoft Word for word processing, Microsoft Excel for spreadsheet, Microsoft project for project management, AutoCAD Civil 3D etc.

PHASE 2:

Draft Final Design Report (5 copies); Draft Tender Documents; Draft Detailed ESIA (3 copies); Draft Properties Valuation Report (3 copies); Draft RAP (3 copies); and Cost Estimates

6.13 The Draft Final Design Report shall summarize the findings, analysis, results and recommendations of the detailed engineering design, and shall consist of road plans and profile drawings, typical cross-sections drawings, drainage plans, design of drainage and other structures, traffic data, topographic data, setting out data, bills of quantities, bidding documents, estimate of construction costs (and its price analysis including all supporting material). The draft final design report shall comprise all the assumptions and criteria used in the analysis and design of the work together with all details and standards used. All design calculations for pavements and structures shall be enclosed in form of annexes. The draft final design report shall be submitted together with the following reports:

i) Materials Report (5 copies)

The report shall summarize all geotechnical findings and adoption of those findings to design quantities, and qualities of materials to be available with the corresponding excavation depth, test results and any other related information in respect of materials quarries.

ii) Hydrological - Hydraulic Report (5 copies)

The report shall summarize hydrological and hydraulic analysis/calculations together with the assumptions and criteria used for the design of drainage structures, waterway openings, major watercourses, etc.

iii) Engineering Drawings (5 copies)

The engineering drawings shall be prepared to A3 size. The drawings shall include cross sections drawn at 25m intervals, layout plans showing contours and other details, Typical Sections, Typical Drawings Details and Specific Details of all structures, together with a Culvert Schedule, Bridge Schedule and a Schedule of Drawings. All drawings should clearly show: - Designed by, approved by, with the name and signature of the responsible engineer and the date clearly displayed.

iv) Survey Report (5 copies)

The Survey report shall be submitted together with other reports.

v) Confidential cost estimate (5 copies)

The confidential cost estimate for works and services shall be in the form of completed Bills of quantities. The estimate shall be submitted together with other reports.

i) Draft Environmental and Social Impact Assessment Report (3 copies), Draft Valuation Reports (3 copies) and Draft RAP (3 copies)

These reports shall be submitted in line with **draft Detailed Engineering Design** report to be reviewed by the TANROADS and other relevant Stakeholders. After being reviewed by the relevant Stakeholders the consultant shall incorporate all raised comments and resubmit the reports accordingly.

In addition, the consultant shall also submit a soft copy of the draft final reports in editable and PDF format for review.

vi) Environmental and Social Impact Assessment Reports (20 copies)

Detailed Environmental and Social Impact Assessment including Environmental and Social Management Plan; Resettlement Action Plan and properties Valuation Report.
In addition, the consultant shall also submit a soft copy of the draft reports in editable and PDF format for review.

Final Design Report; Tender Documents; Detailed ESIA Report; Properties Valuation Report; RAP; and Cost Estimates

6.14 The reports shall be submitted not later than 30 calendar days from the date of approval by Client of Draft Final Design Report and Draft Final Tender/Contract Documents. This report shall incorporate all revisions deemed necessary arising from comments received from the Client and other stakeholders. The Consultant shall submit electronic copies of all the reports, including the Tender Documents in Microsoft Office format. The submission will include the following copies:

- Final Detailed Engineering Design Report [5 copies]
- Economic Report [5 copies]
- Tender Documents [10 copies]
- Engineering Drawings [5 copies];
- Confidential cost estimates [5 copies]
- Hydrological - Hydraulic Report [5 copies]
- Materials Report [5 copies]
- Final ESIA report (5 Copies)
- Final RAP (5 copies)
- Properties Valuation report (6 copies)

Final Detailed ESIA Report, Properties Valuation report, RAP and Cost Estimate

- **Final Detailed ESIA Report, Properties Valuation report, RAP**: This will cover five (5) colored copies of the Environmental and Social Impact Assessment (ESIA) Report accompanied with a stand-alone Non-Technical Executive Summary in both English and Swahili versions, the Properties Valuation Report (6 copies) and Resettlement Action Plan (RAP) (5 copies).

- These reports shall be submitted in line with **final Detailed Engineering Design report** to be reviewed by TANROADS and other relevant Stakeholders for their review and approval. These reports shall incorporate all revisions, arising comments from key stakeholders on the draft final reports and presentation. In addition, an electronic copy on CD or Flash disk in PDF and editable format shall be submitted.

Record of Documents

6.15 After delivery of all final documentation, the originals of the documents are to be deposited with TANROADS headquarters in Compact Disc compatible with software used and agreed by the Client, such as Microsoft word for word processing, Microsoft Excel for spreadsheet, Microsoft project for project management, AutoCAD etc.

7.0 SPECIFIC RESPONSIBILITIES OF THE CONSULTANT

7.1 All information, data and reports obtained from TANROADS in the execution of Consultancy services shall be properly reviewed and analysed by the Consultant. The Consultant shall be responsible for the correctness of using such data. All such information, data and reports shall be treated as confidential.

7.2 The Consultant shall be responsible for arranging for all necessary office and living accommodation, transport, equipment, supplies, secretarial services, and such other services, necessary for the proper implementation of the services.

7.3 The Consultant shall be responsible for making sure that all key staff proposed in the Technical proposal and approved by TANROADS are available at all time of the assignment as per the schedule provided in the contract. TANROADS will keep on investigating their presence and take contractual measures to the consultant including deduction of the relevant fees in case of absence.

7.4 The Consultant shall be responsible for making sure that, the Valuation Report, Compensation Schedules and ESIA reports are prepared to the quality acceptable by the relevant authorities (Chief Valuer/NEMC). Thus, the Consultant shall participate at his/her own cost, to the verification/disclosure and reviews of the reports to be arranged by the Client and relevant authorities

7.5 The Consultant shall be responsible for making sure that the assignment is done according to the requirements of the Terms of Reference and the standards. Any cost that will be incurred by the employer for review of any resubmitted report due to substandard work will be borne by the Consultant and will be deducted directly from any monies payable to the Consultant.

Counterpart Staff Involvement

7.6 TANROADS may assign up to 3 counterpart staff (2 Engineers and 1 Transport Economist) relevant to the assignment during execution of the services to work with the Consultant in all aspects of the study as a way of knowledge transfer. The counterparts shall be involved in the field as well as the Consultant's home office. The Consultant shall allow under the reimbursable expenses provisional sums of **TZS 60,000,000.00** for **each phase**, necessary cost related to the assignment during field and office work, including providing the counterparts with any appropriate per diem, accommodation, transport and training.

Project supervision

7.7 TANROADS will assign its staff for supervision of the assignment during execution of the services. The consultant shall inform the supervisor on specific schedule of undertaking activities for close follow-up.

8.0 PAYMENTS TO THE CONSULTANT

8.1 The consultant shall build up the costs for carrying out the assignment using the forms provided in the Request for Proposal (RFP).

8.2 Payment shall be made according to the following schedule:

Phase I

a) **Twenty percent (20%)** of lump-sum amount for phase I shall be paid to the Consultant upon submission of acceptable by Client of Inception Report

b) **Forty percent (40%)** of the contract amount for phase one shall be paid upon submission and acceptance of Draft Feasibility Study Report highlighting among others, the following aspects:

- Feasibility Study requirements and actual activities performed;
- Project description in terms of rationale, objectives, scope and limitations;
- Finalized Project costs and financing plans;
- Project implementation including implementation arrangements, schedule, and contract documents/procurements packages; and
- Project justification including economic and financial analysis, analysis of environmental impact and social dimensions and potential Project risks.

c) **Forty percent (40%)** of the contract amount shall be paid upon submission and acceptance of Final Feasibility Study Report (including Preliminary Design Report, Preliminary ESAIA and RAP);

Phase II

a) **Forty percent (40%)** of the contract amount shall be paid upon submission and acceptance of Draft Final Engineering Design Report (including Final ESIA & RAP, Valuation Report and Confidential Cost Estimates), The Consultant shall be required to present a Draft Design Report to TANROADS Professionals on a date to be agreed during the course of the Contract's implementation. The presentation shall be carried out at TANROADS Headquarter.

b) **Thirty-Five percent (35%)** of the Contract Amount for Phase II shall be paid to the Consultant upon submission of the Final Detailed Engineering Design Reports, Bidding Documents and Engineering Cost Estimates. The Final Design Report shall accommodate all relevant comments from the Client

c) **Twenty-five percent (25%)** of the contract amount shall be paid upon submission and acceptance of Final Reports and Tender Documents (including Draft Tender Documents, Detailed ESIA & RAP, Valuation Report and Confidential Cost Estimates). The Final Report shall accommodate all relevant comments from the NEMC and Chief Valuer for ESIA and Valuation of Properties respectively.

8.3 The Consultant shall allow under the reimbursable expenses the following provisional sums necessary to cover the cost related with the project supervision.

a. Provisional sum amounting to TZS 240,000,000.00 for purchase of Two Brand New Four Wheel Drive, long Wheel base vehicle Double cabin pickups for the project supervisors.
b. Provisional sum amounting TShs1, 800,000.00 for the airtime for the project supervisor, calculated at a rate of TZS 5,000 per day over the contract period.
c. Provisional sum amounting to TZS 140,000,000.00 should be included in the as the cost for undertaking Environmental and Social Impact Assessment and Property Valuation

d. Provisional sum amounting to TZS 140,000,000.00 should be included in the as the cost for undertaking Geotechnical Investigations and laboratory work

Payment of all Provisional Sums shall be supported with relevant confirmation attachments.

NOTE:

The Environmental and Social issues under this Consultancy shall be finalized upon approval of the Valuation Report and Compensation Schedules by the Chief Valuer and approval of the ESIA Report by the Minister for Environment that leads to obtaining the EIA Certificate for the project.

Contrary to the above note, 30% of Final payment shall be withheld by Client and paid to the Consultant once both reports are approved by the relevant authorities.

9.0 OBLIGATIONS OF THE CLIENT

9.1 The Employer will make available: study reports, including appendices, etc. relevant to the assignment, that have been carried out by or for the Employer and any other relevant data available, which are necessary for the proper execution of the assignment

9.2 The Employer will provide liaison with the Government Ministries and Departments in order to introduce the Consultant to them. However, the Consultant shall be fully responsible for collecting data and information from these agencies; paying for them where applicable.

10.0 ASSISTANCE TO THE CONSULTANT

10.1 The Employer will assist the Consultant to:

(i) Obtain formal consent from outside authorities or persons having rights or powers in connection with the works or the site thereof;
(ii) Obtain ministerial orders, sanctions, licenses and permits in connection with the works;
(iii) Register a non-Tanzanian firm and senior staff with the Engineers Registration Board. Any associated cost will be borne by the Consultant.

11.0 PROJECT COORDINATION

The Consultant will be responsible to the Chief Executive, TANROADS and reports to the Director of Planning and work closely with the Directorate's staff to accomplish specific task components on daily basis.

Appendix 1:

DETAILED GUIDES FOR UNDERTAKING ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

1.0 INTRODUCTION

The detailed scope for undertaking Environmental and Social Impact Assessment is intended to guide the Consultant to address relevant environmental and social issues during the assessment process. Among others, the ESIA shall be conducted in accordance with the requirements of the National Environmental Impact Assessment and Audit Regulations (2005) and its Amendments of August 2018. The Consultant shall do everything necessary to meet the objectives of the services and not less than the following tasks that should be undertaken during the Environmental and Social Impact Assessment. In the process of consultation (Scoping process) with relevant stakeholders like environmental authorities, the Consultant may further be required to finalize the Terms of Reference for the undertaking of ESIA according the agreement with these stakeholders.

2.0 OBJECTIVE OF ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

The main objective of the consultancy services is to undertake the Environmental and Social Impact Assessment (ESIA) which include preparation of the Environmental and Social Safeguards (ESF) Tools, the Environmental and Social Management Plan (ESMP), Health and Safety Management Plan (HSMP) as well as to undertake the Resettlement Action Plan (RAP) for the Upgrading of the road project to bitumen standard. The ESIA will address environmental and social impacts which may a Project from mobilization, construction, operation and decommissioning activities and provide mitigation measures to prevent or minimize adverse impacts. Ultimately, ESMP and HSMP will be developed as tools of which its recommendations will be used by the Design Consultant in the finalisation of road designs and be included in the Tender Documents.

3.0 SCOPE OF CONSULTANCY SERVICES

The Consultant shall perform all impacts analyses related to services as described therein with due care and diligence to attain the objective of the assessment, among others, the Consultant shall perform the following tasks:

1. ESIA Registration, Scoping and Terms of References

Before undertaking the Environmental Impact Assessment the Consultant has to fill in the Scoping Report Form No.4 and prepare a Scoping Report in line with Terms of Reference to be submitted to the National Environment Management Council (NEMC) for registration of the project and approval of Terms of References.

Among others, the Scoping Report shall include the following as per Regulations 10 (1) of the EIA and Audit Regulations Amendments of 2018:

a) The nature of the project;
b) The proof of land ownership, including location of the project and the physical area that may be affected by the project's activities;
c) The activities that shall be undertaken during the project construction, operation and decommissioning phases;
d) The design of the project;
e) A site layout plan;

f) The materials to be used and source, products and byproducts, including waste to be generated by the project and the; methods of their management;
g) The potential environmental impacts of the project and the mitigation measures to be taken during and after implementation of the project;
h) An action plan to ensure the health and safety of the workers and neighboring communities during the project;
i) A declaration that the proposed project is not within or near sensitive ecosystem;
j) Environmental and Social Management Plan (ESMP) and Monitoring Plan;
k) The economic and socio-cultural impacts to the local community and the nation in general;
l) **Summary of costs of project implementation** ***which includes Earthworks, Pavement layers, Bituminous Layers, Drainage structures and Culvert which account for almost 55% of the total project costs and this shall be considered by NEMC for calculations of the review charges excluding Contingency, Laboratory test, Labour charges, materials and equipment's that account for almost 45% of the remaining project costs.***
m) How the scoping exercise was undertaken;
n) Identification of issues and problem;
o) Synthesis of results of the scoping exercise including details of potential negative and positive impacts;
p) Stakeholder groups identified and how they were involved in the scoping exercise;
q) Spatial, temporal and institutional boundaries of the project;
r) Project alternatives; and
s) Any other relevant information which the Council may require.

In the undertaking of scoping exercise, the Consultant has to refine the Terms of Reference (TOR) in consultation with various stakeholders to cover environmental and social issues which may emerge from the consultation process during the scoping exercise. The TOR shall be among the appendices of the Scoping Report.

2. **Environmental and Social Safeguards (ESF) Tools**

The Consultant shall prepare the Environmental and Social Framework (ESF) tools based on the World Bank ESF such as Environmental and Social Management Framework (ESMF), Labor Management Plan (LMP), Stakeholder Engagement Plan (SEP), Resettlement Policy Framework (RPF), Gender Based Violence Action Plan, and Environmental and Social Commitment Plan (ESCP). These ESF tools shall be used to guide the undertaking of detailed ESIA studies and development of Resettlement Action Plan (RAP).

3. The Environmental and Social Impact assessment (ESIA)

The Consultant shall review relevant available documents such as the ESIAs, ESMPs and RAPs for related projects, Preliminary design reports and other relevant documents for the similar projects such as the approved Terms of References by NEMC, the World Bank ESF and Project Safeguard Instruments Frameworks such as Environmental and Social Management Framework (ESMF), Labor Management Plan (LMP), Stakeholder Engagement Plan (SEP), Resettlement Policy Framework (RPF), Gender Based Violence Action Plan, and Environmental and Social Commitment Plan (ESCP), maps, previous studies if any and conduct detailed environmental and social impact assessment study, field investigations and other the related works herein described as well as any other related work required to attain the stated objectives.

In accordance with World Bank ESS-1 and other relevant provisions of the ESF, the environmental and social impact assessment will be carried out to assess the environmental and social risks and impacts of the project throughout the project life cycle. The assessment will be proportionate to the potential risks and impacts of the project, and will assess, in an integrated way, all relevant direct, indirect, and cumulative environmental and social risks and impacts throughout the project life cycle, including those specifically identified in ESSs 2–10. Further, the environmental and social impact assessment will include and take into account coordination and robust, effective and inclusive and informed consultation and information disclosure with affected people and other interested parties, including persons with disabilities and other

members of vulnerable groups, particularly at the earliest stages of the project, to ensure that all potentially significant environmental and social risks and impacts are identified and addressed.

The assessment will evaluate the project's potential environmental and social risks, including in relation to labor and working conditions (including child labor, forced/trafficked labor, terms and conditions of employment, occupational health and safety), community health and safety conditions, gender-based violence, ethnicity, HIV/AIDS and poverty levels. The environmental and social assessment will include stakeholder engagement as an integral part of the assessment, in accordance with ESS10, as well as relevant sections of ESS5 and ESS7. The ESIA report shall include the overall Environmental and Social Management Plan (ESMP), as well as the outlines for preparation of Management Strategies and Implementation Plans- MSIPs): such as Contractor's C-ESMP (contain Code of Ethical Conduct and Chance Finds Procedures, workers camp Management Plan, and Erosion and Sediment Control Plan), Health and Safety Management Plan (HSMP); Emergence Preparedness and Response Plan (EPRP); Borrow Pits and Quarry Sites Operation and Reinstatement Plan (BPQSORP); Waste Management Plan (WMP); Community Communication and Engagement Plan (CCEP); Traffic Management Plan (TMP); Gender Based Violence and Protection Plan including Child Abuse Protection Plan (CAPP). The ESIA for each subproject shall make reference of the project Grievance Redress Mechanism (GRM); as well as Labor Management Procedures (LMP), and Vulnerable Groups Planning Framework (where appropriate).

Specifically, the Consultant shall undertake the following sub-tasks for preparation of each ESIA and RAP study.

Sub-Task (i): Description of the proposed Project

The Consultant shall provide a brief description or profile of TANROADS, background to the project proposal and its justification, need and purpose of undertaking the study, project duration, ESIA study methodologies and approaches applied and structure of the report.

In summary the proposed project description will provide to the extent possible its geographic, environmental, social, and temporal context, including any offsite investments that may be required (e.g., dedicated access roads, water supply, housing, and raw material and product storage facilities), as well as the project's primary suppliers. Through consideration of the details of the project, indicate the need for any plan to meet the requirements of ESS1 through ESS10 and include map/s of sufficient detail, showing the project site and the area that may be affected by the project's direct, indirect, and cumulative impacts.

The consultant will include a readable map of the project area, financing arrangement, geographic location showing the road project area of influence that will be subject to ESIA and RAP.

Additionally, the consultant shall include description of project activities to be implemented in each phase of project life i.e., pre-construction or mobilization, construction, operation and post-construction (demobilization). This part is meant to give a general idea of what the project will entail. To avoid unnecessary details, focus on the project activities based on project phases i.e., mobilization or pre-construction phase, construction phase, operation phase and demobilization phase.

The description shall include the following information:

(i) ***Background information:*** This shall include the title of the proposed subproject and developer; project justification and objectives; funds and source of funding or financier(s); project location including maps of appropriate scale; project design, size, and capacity; area of influence of the project works; project life span and project components; and land size required;

(ii) Project Activities: Description of project activities shall be based on phases of project life cycle i.e. mobilization or pre-construction, construction, operation and maintenance, demobilization and decommissioning phases:

- ***Mobilization or Pre-construction activities*;** Describe activities pertaining to land acquisition; construction camp and site workshop; project design; land dispossession and property valuation; relocation and compensation arrangements;
- ***Construction Activities;*** Describe all associated activities during construction works such as extraction of construction materials and water indicating their types and sources; blasting; cut and fill; land clearance; soil and gravel compaction and leveling, trenching, drilling, types and sources and amounts of waste generation and including their disposal; dust emissions, etc.
- ***Operation and maintenance activities;*** Identify and describe all the associated activities to be conducted during project operation and maintenance such as project health and safety measures, operation and management of project facilities along the project such as workshops, camps and public toilets, etc.
- ***Demobilization Activities;*** Identify and elaborate on the activities to be conducted during demobilization or decommissioning of the project including movement and demolition of construction facilities, restoration of degraded sites, termination of the temporary workers' employment, waste management, etc.

***(iii) Project Requirements*:** Identify all types, sources and quantities of construction materials, equipment and chemicals required by the project. Source and quantities of water, energy, manpower (staffing and support) and other facilities and services required in each phase of project life etc.

Sub-Task (ii): Provide Baseline Condition or Description of the Physical, Biological, and Socio-Economic and Cultural Environment

In order to forecast the impacts, it will be necessary to determine the initial reference or baseline state of the environment. As detailed designs are already in place, the baseline information should be site-specific as possible rather than generic information and covering wider areas. It is therefore, required to describe the existing environmental and socio-economic elements that would be directly and/or indirectly affected by the construction of the road project (direct and indirect influence area). The 'environment' to be affected must be based on the project definition of the terms that would include physical, biological, socio-economic, cultural and historical factors.

The Consultant shall also present road accident data, nature of the accident, prone accident area, population distribution, gender and age in relation to road accident, motorized and non-motorized traffic on the existing road project. The baseline Gender based violence, including sexual exploitation and abuse and workplace sexual harassment environment and Labor and working conditions, including in relation to child labor, employment discrimination, forced and trafficked labor, employer compliance with national labor laws, community health and safety, GBV, and transmission of HIV/AIDS and other communicable diseases, shall also be determined and presented.

The Consultant shall indicate sources of data and methodologies used to acquire the data. The methodology will be subject to the Client's approval. All the relevance acquired baseline data will be used during construction and operation phases of the proposed road project when comparing between the existing and anticipated risks and impacts of project.

(a) Physical environment: This shall cover geology; hydrometrics; topography; landscape analysis, land cover, soil erosion, climate and meteorology, air quality, noise levels, and water quality, river basins, and flood areas, among others. erosion; seismic activity, natural hazards, climatic conditions and meteorology; ambient air quality; noise quality; surface and groundwater quality; hydrology; existing sources of air emissions; existing water pollution discharges; receiving water quality; traffic data, etc.

(b) Biological environment: This shall cover baseline data for flora, fauna, rare, threatened or endangered species, ecologically important or sensitive terrestrial and aquatic habitats and the ecological complexes of which they are a part, including available forest reserves, rivers, streams, lakes, wetlands, other significant natural sites; species of commercial importance; and species with potential to become nuisances, vectors, or dangerous (of project site and potential area of influence of the project). The Consultant shall assess and determine the existence and extent of any modified, natural, critical habitat in the area of study in accordance with their definitions set out in ESS6 and applicable Tanzania regulations. Special attention should be given to those ecologically sensitive areas, such as legally protected areas, key biodiversity areas and other internationally recognized areas of high biodiversity values, if any. Internationally recognized biodiversity screening tools such as IBAT may be employed; IUCN Red List and/or nationally listed species of concern shall be referenced. Further, the Consultant is expected to examine invasive alien species, living natural resources (e.g., forest) and ecosystem services and provide appropriate as part of the overall ESMP. Should there be Natural or Critical habitats in the project area, a Standalone Biodiversity Management Plan shall be developed.

(c) Socio-economic and socio-cultural environment: Socioeconomic and socio-cultural environment: This shall cover villages/towns/local communities; cultural heritage which may be affected by the project; population; land use; planned development activities; community structure; labor and working conditions, including incidence of child and forced/trafficked labor, employment; household property ownership; household resource control; education levels (enrollment, transition and drop-out rates); adolescent pregnancy; social amenities, learning institutions, hospitals along the project road; livelihood means, distribution of income, goods and services; social services, recreation; public health; gender gaps and HIV/AIDS and other serious health issues, incidence and types of disabilities, cultural/historic properties; tribal peoples; and customs, aspirations, and attitudes of the communities living along the proposed road project and details of civil society organizations (CSOs) working in the project area and any other relevant information that can be considered sufficient as source of data. The consultant shall provide Survey design, sampling and data requirements and tools for data collection and analysis.

(d) Gender based violence (GBV), including sexual exploitation and abuse and workplace sexual harassment environment. As for GBV risks, the consultant needs to outline the country and district level violence context and the project related risks. As for district level risks, prevalence of different forms of violence should be defined (e.g., intimate partner violence, physical violence and any forms of sexual violence, levels of trafficking, proxies of gender norms such as acceptance of violence and prevalence of child marriage etc.). To assess the project related risks, the ESIA shall include information of poverty levels in the intervened area, potential risks of labor influx (in terms of absorption capacity of external workers to the communities and ratio of influx of workers vis-à-vis community members), amount of works and difficulties to supervise. Consultations regarding GBV shall be conducted only with key stakeholders (NGOs, CBOs, governmental authorities). Stakeholder consultations should never directly ask about individual experiences of GBV and how one reports such cases, is there any system in place to mitigate/counter them. Focus on gaining an understanding of the experiences of women and girls in affected communities, including wellbeing, health and safety concerns.

(e) For ESIAs to capture the socio-economic, cultural and risk context for women, they should consider:

- Existing gender country diagnostics/country action plans and PROJECT Gender Policy and Action Plan.
- Data on partner/non-partner physical violence against women.
- Data and/or information on cultural practices vis-à-vis women (early marriage,
- physical practices).

- Existing services available from GBV Services Providers.
- Where health centers are located and what types of services are offered (e.g.,
- whether they treat sexually transmitted diseases, provide reproductive health services, have supplies of rape kits including post-exposure prophylactics and emergency contraception, etc.).
- Whether women have easy access to these services, and if they have mobility and/or economic constraints that may impede access; and,
- Information obtained from consultations carried out in the preparation of the project.

(f) Road safety environment. This shall cover existing road accident data, nature of the accident, prone accident area, population distribution, gender and age in relation to road accident, motorized and non-motorized traffic on the existing road project.

Through community consultations, the ESIA Consultant shall identify any sensitive sites in terms of road safety. The sensitive sites which may be affected by the project shall be summarized in a table or tables indicating their locations (e.g., chainage), baseline information/key features (see requirements in Annex A.1). Relevant maps are to be included in the report showing the locations of any sensitive sites. The Consultant shall highlight the proposed engineering measures for improvement of road safety as well as explore and advise further improvement.

(g) Socio economic needs assessment: The Consultant shall assess the current socio-economic situations of the communities living along the project corridor and identify their needs where if addressed, would improve their well-being and thus project positive social benefits arising from the project. These needs include but are not limited to sanitation, health, markets, education, social services, local transport networks, food etc. The analysis will be included in the ESIA and the costs presented in the cost estimates and tender documents.

The Consultant shall indicate sources of data and methodologies used to acquire the data including community consultations. The methodology will be subject to the Client's approval. All the relevance acquired baseline data will be used during construction and operation phases of the proposed road project when comparing between the existing and anticipated risks and impacts of project.

Sub-Task (iii): Describe the Policy, Legal and Institutional Framework

Describe the policy, legal, standards, guidelines, strategies, international conventions and treaties, and the institutional framework that are of relevant to environmental and social management and as applicable to land acquisition and resettlement with regard to the proposed undertaking in particular. They should be those, which relate but not limited to environmental quality, health and safety protection of sensitive areas and protection of endangered species, land and land use, land acquisition, labor rights, road safety, child protection, persons with disabilities, gender equality and GBV, etc. A description of the World Bank environmental and social safeguard framework and standards to be triggered by the project should be provided. The Consultant shall also analyze the gap between Tanzania and the World Bank Legislations and procedures and the relevant and applicable International Standards and Conventions.

Furthermore, the Consultant shall clearly describe the linkage between the functions of the relevant institutional or administrative frameworks in Tanzania and the proposed project undertakings. On the social side, the Consultant shall provide the institutional arrangements for dealing with child abuse protection and gender-based violence, the different stakeholders involved and their roles and responsibilities.

a) The following are, but not limited to, the relevant policies legislation, strategies and guidelines to be cited in relation to the proposed project undertaking.

Policies	Legislations
• National Environmental Policy (1997); • National Water Policy (2002); • National Forestry Policy (1998); • The Wildlife Policy of Tanzania (2007); • National Gender Policy (2002); • National Transport Policy (2003, 2011); • National Agriculture and Livestock Policy (1997); • National Land Policy (1995); • National Mineral Policy (1997, 2009); • National Energy Policy (1992, 2015); • National Human Settlement Development Policy (2000,2002); • National Policy on HIV/AIDS (2001); • Construction Industry Policy (2003); • National Agricultural Policy (2013); • National Employment Policy (2008);	•Road Act (2007); • Environmental Management Act (2004); • Railway Act No. 4 (2002); • Energy and Water Utilities Authority (EWURA) Act (2001); • Water Resources Management Act No. 11 of (2009); • Beekeeping Act No. 15 (2002); • Mining Act No. 14/10 (2010); • Occupational Health and Safety Act (2003); • HIV and AIDS (prevention and Control) Act No. 28/08 (2008); • Wildlife Conservation Act (2009) revised in 2013; • Local Government Laws (Miscellaneous Amendments) Act (2006), No. 13/06; • Village and Urban Land Acts (1999); • Land Act No. 2/04 (2004), amendment of the Land Act (1999); • Forestry Act No. 14 (2002); • The Standards Act No. 2 of 2009; • Land Acquisition Act 1967, Revised in 2012; •Contractors Registration Act (1997); • Engineers Registration Act 1997 (Amendments 2007); • The Industrial and Consumer Chemical (management and Control) Act, (2003); • Employment and Labour Relations Act (2004); • The Petroleum Act of 2015; • Explosives Act (1963, 2002); • Urban Planning Act (2007); • Land Use Planning Act (2007); • Workers' Compensation Act (2008);
Regulations, Strategies and Guidelines	
•Environmental Impact Assessment and Audit Regulations (2005) and Amendment of 2018; • Mining (Environmental management and Protection) Regulation (1999); • Environmental Assessment and Management Guidelines in the Road Sector (2004, 2011); • Land Regulation (2001); • National Strategy for Growth and Reduction of Poverty (NSGRP - MKUKUTA -2003, 2010); • Environmental Code of Practice for Road Works (2009); • Tanzania Development Vision (TDV) 2025 (2000); • Road Sector Compensation and Resettlement Guidelines (2009); • Environmental Management (Air Quality Standards) Regulations, 2007; • National Environment (Noise Standards and Control) Regulations 2003; • Environmental Management (Water Quality Standards) Regulations, 2007; and • Environmental Management (Hazardous Waste Control) Regulations, 2009.	
International Standards and Conventions	
• The relevant and applicable International Standards and Conventions to be reviewed include but not limited to: • World Bank Environmental and Social Framework, including the World Bank Environmental and Social Standards (ESSs), 2018 and related World Bank – standards and good practice notes, such as those dealing with GBV in infrastructure projects, project security, and worker camps/accommodation. • World Bank Group EHS Guidelines (including EHS General Guidelines, and sector specific EHS Guidelines (e.g. road, construction materials extraction). • The United Nations Framework Convention on Climate Change (UNFCC), 1992 • International Convention on Trade of Endangered Species (CITES);	

- Convention on Biological Diversity (1996); and
- United Nations Convention to Combat Desertification (1997);
- Basel Convention on Control on the Trans-Boundary Movement of Hazardous Waste and Disposal.
- International Labor Organization Fundamental Labor Rights Conventions

b) **Institutional Framework**: Furthermore, the Consultant shall clearly describe the linkage between the functions of the relevant institutional or administrative frameworks in Tanzania and specifically for carrying out the environmental and social management of the proposed project including management of contractors and implementation of mitigation and monitoring measures. This assessment will cover the nature, function, and capacity of the environmental agencies at both local and national levels.

c) On the social side, the Consultant shall assess the institutional arrangements for the implementation of the RAP, including the processes involved in identification and valuation of the affected assets, the different stakeholders and their roles and responsibilities. Recommendations will be given, if necessary, for the expansion and capacity development including the training of staff to allow implementation of the necessary ESHS measures. The institutional analysis will include sources of funds and the necessary arrangements to allocate resources to ESHS management. Where necessary, clear mechanisms for the integration of the relevant ESHS aspects in the procurement process and supervision of ESHS measures shall be indicated including but not limited to processes and procedures for managing Contractors such as bidding documents, Contractors' ESMPs and Contracts.

The consultant shall evaluate the ESHS management capacity of the Borrower (and contractors in general) in relation to the potential demands of the Project, including:

(i) Previous experience with the Bank or other multilateral or bilateral financing agencies and the performance of the Borrower and the national, subnational, sectoral, and local institutions involved in the preparation and/or implementation of similar previous projects.

(ii) Technical and institutional capacity of the Borrower and relevant national, subnational, or sectoral implementing institutions or agencies related to the preparation and implementation of the project, including the relevant institutional coordination arrangements.

(iii) To inform the assessment, as well as the design, of measures needed to address any identified gaps, the Consultant can consult relevant stakeholders, including those identified with input from the Borrower. This will include discussions with government officials and other development partners and engagement with civil society and project-affected people. The purpose of this is to inform the Consultant's assessment of the Borrower's capacity to implement the SEP, ESMP and RAP and the design of the implementation arrangements and capacity-building measures to be included in the ESMP to address any capacity gaps that may be identified.

(iv) An analysis of the project context through reviewing environmental and social compliance performance and track records of past projects in the sector in Tanzania,
Gaps and need for service providers and third-party supervision will be identified. All institutional aspects including any gap-filling measures will be included in the Implementation arrangements section of the ESMP.

Sub-Task (iv): Stakeholder Consultations and Public Involvement

In undertaking consultations, the Consultant will refer to People Centered Design Manual (PCDM) for more details. The Consultant shall identify and consult and document all the relevant stakeholders at national, regional and local levels, paying special attention to the participation of members of groups in a situation of vulnerability and inclusion of the needs and interests of women, persons with disabilities and other members of vulnerable groups. This includes the Government Agencies, local NGOs, affected households and groups/communities and other interested parties in order to obtain their views regarding the proposed project implementation arrangement.

The consultant shall indicate who they are, where they are, why they are important in this project, which issues are critical to them and how they will effectively be contacted and involved in the ESIA and RAP studies. Consultations shall also provide inputs to inform the designs, so that these cater to the community's needs. Particular attention shall be paid to groups in a situation of disadvantage (e.g., children, people with disabilities, the elderly and women) that may be affected by the proposed project. All road user groups of the communities including but not limited to pedestrians, bikers, motorcyclists, public transport users, pastoralists and farmers shall be consulted and their concerns taken onboard. Consultant shall undertake consultative meetings in all village centers along the road project and shall provide all evidence collected.

The Consultant shall undertake consultation in two phases:

i. ***This first round of community consultations*** (including active listening consultations) -Results will inform preliminary design and the environmental and social impact assessment (ESIA) process, collecting information that will ensure that the designs will respond to mobility and accessibility functions for all. This will add value to inform the conceptual road design and help propose solutions that reduce social and road safety risks, while considering the needs of the vulnerable who face specific challenges using the roads, in particular the elderly, those with chronic illnesses and persons with disabilities. The approach will have sensitive treatments to discuss with women and men, girls and boys independently to ensure all voices are heard.

ii. ***Discussing Design: Second Round of Consultations***. A second round of consultations performed during design review stage to gather feedback from the communities to test that the proposed solution is people-centered and addresses other functions for which the communities currently use road space for. This second round of consultations will intensify engagement beyond normal consultation practice to discuss the design attributes with all groups previously engaged during the first round of consultations. This engagement will walk through the details of the design proposal and gather detailed information that will be used to review the design as needed and prepare the detailed designs. For other locations such as village main square, engagements discussion will be undertaken at site. The discussions will also cover the management of social risks, including those associated with child labor, forced labor, human trafficking, GBV, HIV/AIDS, and occupational health and safety and community health and safety, during construction.

Consultant shall propose a program for inclusive, participatory public consultation and information disclosure with affected people/communities, ensuring the effective participation by members of vulnerable groups, during the ESIA and development of RAP and the most appropriate methods to establish public views should be used. The consultation process shall ensure that the views of interested and affected parties are adequately and accurately incorporated in the project design.

All the public consultation issues and responses will be provided in summary and table format indicating how the views and problems are captured and to which extent will be solved by the study and the project implementation. There will need to be clear documentation in the Environmental Impact Statement (EIS) that there were stakeholders' consultations at all levels with photographs taken with dates, minutes of the meetings, participant's names and signatures annexed to the report.

Among others, the Consultant shall ensure the involvement of the following authorities/institutions:

(i) Vice President's Office - Division of Environment;
(ii) Ministry of Works and Transport;
(iii) Ministry of Water and Irrigation;
(iv) Ministry of Lands, Housing and Human Settlement Development;
(v) Ministry of Natural Resources and Tourism;

(vi) Ministry of Community Development, Gender and Children;
(vii) Ministry of Agriculture;
(viii) Ministry of health;
(ix) Prime Minister's Office – Policy, Labor, Youth, Employment and Persons with Disability;
(x) Local Governments authorities in the project area;
(xi) TARURA;
(xii) Occupational Health and Safety Authority (OSHA);
(xiii) TTCL;
(xiv) Police Tanzania;
(xv) Tanzania bureau of statistics;
(xvi) Tanzania National Roads Agency (TANROADS);
(xvii) National Environment Management Council (NEMC);
(xviii) Utility Companies (e.g., TANESCO, TTCL, Water Supply Companies etc.);
(xix) Local Communities in the project area;
(xx) Landowners and other project affected people;
(xxi) Traditional healers.
(xxii) Regional Authorities and
(xxiii) Relevant NGOs and CBOs; including those representing the needs and interests of women, persons with serious illnesses, persons with disabilities and other members of vulnerable groups and Regional Authorities.

Consultations and public involvement/citizen engagement will only be conducted after the Client provides clearance to the Consultant to proceed. The Client may request the Consultant to coordinate their efforts with other that the Client may be advancing in the context of the preparation of the PROJECT. This may include participation in capacity building exercises.

Sub-Task (v): Analysis of Alternatives to the Proposed Project

The Consultant shall describe different project alternatives that were examined in the course of designing of the proposed project and identify other alternatives, which would achieve the same objectives. The options include 'No action' alternative to demonstrate environmental and social conditions without the project. Consideration of alternatives should extend to sitting, design, technology, construction techniques, phasing and schedule, operating and maintenance procedures as well as views of stakeholders. Alternatives should also include all proposed road re-alignment sections and potential material sources. The ESIA report should address all positive and negative impacts on each alternative and provide necessary information to facilitate decision on the best alternative.

Analysis and comparison of project alternatives shall focus on the potential environmental and social impacts; natural resources valuation, economic analysis; technology, compensation and resettlement, suitability under local conditions; institutional, training, and monitoring requirements. When describing the impacts, indicate which are irreversible or unavoidable and which can be mitigated and how. To the extent possible, quantify the costs and benefits of each alternative, incorporating the estimated costs of any associated mitigating measures. The consultant shall develop the summary of project alternatives by ranking and give weighting by using multiple environmental, social and economic criteria as well as stakeholder views to select the best project alternatives.

Sub-Task (vi): Impact and Risk Identification and Assessment

- Based on the World Bank's ESF (including Environmental and Social Standards (ESS1-10)) and in accordance with national environmental regulations, the Consultant shall identify, analyze and assess environmental and social impacts and risks (positive and negative, direct and indirect, cumulative impact) of the proposed project works on natural resources, human beings and the ecosystems based on the phases of project life cycle; i.e., mobilization or pre-construction phase,

construction phase, operation phase and demobilization and decommissioning phase. Aspects of climate change should be considered in impact and risk identification throughout the project cycle.

- Methods applied in impact and risk identification and the criteria used in evaluating the levels of impacts significance of the proposed project works must be specified.
  The impacts analysis should focus on both positive and negative impacts and be able to state whether the impacts are positive or negative; direct or indirect; short term or long term; reversible or irreversible. The impacts and risks shall be disaggregated as possible by different sectors of the population including women, men, girls and boys, people with disabilities and elders (and any other vulnerable population).

- The assessment shall also examine the potential for linear resettlement that usually involves projects producing linear patterns of land acquisition. An overview of different groups of people and their cultural, ethnic, and socio-economic characteristics shall be provided, and how they are likely to benefit and/or be negatively affected by the project, paying particular attention to gender issues and the special needs and interests of members of vulnerable groups.

- The ESIA study shall clearly identify and analyze cumulative and residual impacts. Wherever possible, describe impacts quantitatively, in terms of environmental components affected (area, number), environmental and social costs and benefits. Assign economic values when feasible.

- The Consultant shall characterize the extent and quality of available data, explaining significant information deficiencies and any uncertainties associated with the predicted impacts.

- The Consultant shall use the most up to date data and methods of analyzing and assessing environmental and social impacts and risks. Uncertainties concerning any impact and shall be indicated.

- The Consultant shall conduct a review of gender issues in the project area and include the proposed project influence to the lives of men, the elderly, women, children, and disabled so as to come up with a quantifiable analysis of the benefits which will accrue to them during and after the construction period.

- Apart from general/generic assessment, ESIA consultant is requested to focus on specific impacts and risks assessment and summarize these specific impacts and risks in Table in **Annex A.2.**

- Biodiversity Risk and Impact Assessment: ESIA Consultant shall conduct adequate assessment on likely issues/impacts on biodiversity, and propose specific measures and investments to prevent or minimize potential negative impacts and risks on biodiversity (e.g. wildlife crossing, poaching risks due to the improved road, if any) ESIA consultant should focus on any necessary repair or rehabilitation of existing road facilities (e.g., any undersized culverts/bridges of the existing roads that may affect hydraulic transparency and ecological continuum, causing impacts on wetlands, mangroves, riparian forest, and fish habitats); identify aspects of existing roads that have caused unacceptable negative impacts and propose corresponding mitigation measures.

- Road Safety: The improved roads may lead to road accidents due to the increased traffic volume and speed. These impacts/risks should be mitigated by specific road safety measures.

- Quarry and Borrow Pit: ESIA consultant is requested to assess the impacts and risks from source materials (e.g., quarry, borrow pits) which have been selected 1 for the road subproject and should identify which of those are considered as associated facilities to the project according to the ESF definition. If main contractor is responsible for selecting these sites (e.g., quarry, borrow pit) at a later

stage, the ESIA should (i) have exclusion criteria: borrow pits and quarry sites that are close to sensitive areas (e.g. protected areas) will be excluded from the project; and (ii) include a quarry/borrow pit management plan outline.

- Cultural heritage (e.g., historical monuments/buildings, traditional burial sites, worship places/buildings, and sacred places/trees) are likely to be present within or along the road corridor. Risks and impacts from damage to physical cultural resources may thus occur. ESIAs consultant is to identify these cultural heritage sites present or likely to be present within or along the road corridor (see Table A.1), assess impact and risks, and propose cultural heritage management measures in ESIA.

- Analyze impacts related to labor market, child labor, vulnerability in immigration. Cross border.

If these offsite sites (e.g. quarry, borrow pit) are considered as associated facilities, the impacts and risks assessment should be included in ESIA report.

- Finally, the consultant for this assignment has to identify and coordinate the work with other consulting firms which have been mobilized to undertake environmental and social assessments of the projects that may have influence on, benefit from or be affected by the proposed project to make sure that impacts from those projects and components are also factored into this assessment. Also, the Consultant shall identify any ongoing projects along or near the project road and show how they may impact or be impacted by the proposed project.

Sub-Task (vii): Considerations and Awareness Campaign on Gender and Gender Based Violence Issues

The Consultant shall develop a gender awareness campaign program for communities along the project road. Particular emphasis shall be given to equal access to information about HIV/AIDS, STIs and TB and COVID-19, access to services for survivors of GBV (health, legal, psychosocial, police) in the living communities, gender equality including equal access to opportunities (e.g., jobs, education, schools), gender and GBV sensitization in communities and promotion of participatory decision-making process at community, ward, district, regional and national level. Community based organizations of women working on gender and GBV shall be identified so they can be allies in the awareness raising efforts on promotion of gender equality and GBV prevention during project implementation. The Gender awareness campaign program shall be annexed in the ESIA report.

Note*: Consultations regarding GBV shall be conducted only with key stakeholders (NGOs, CBOs, governmental authorities). Stakeholder consultations should never directly ask about individual experiences of GBV. Rather, they should focus on gaining an understanding of the experiences of women and girls in affected communities, including wellbeing, health and safety concerns. Consultations regarding GBV will include women-on-women only consultations as well as men, with consultation facilitators/moderators as well as participants being only women, to ensure confidentiality and openness in discussion of GBV-related issues.*

Sub-Task (viii): HIV/AIDS, STI, TB and COVID-19 Awareness and Prevention

Consultant shall develop baseline data on HIV/AIDS, STI and TB and COVID-19 awareness along the project area and assess risks of HIV/AIDS and COVID-19 support systems available, government and NGO programs within the project area and development of project HIV/AIDS and COVID-19 strategy and awareness campaign for the communities around the project area. Particular emphasis shall be given to communities interfacing with construction workers.

This will include carrying out a Knowledge Attitude and Practice (KAP) survey, preparing an action plan and carrying out Information Education and Communication (IEC) strategies to host communities, prepare

the capacity building training program for peer educators (reference people) to be selected from the targeted groups as well as the local Community Based Organizations (CBOs) for continuity, prepare the coordination of activities for HIV/AIDS, STIs, TB and COVID-19 fostering establishment of networks with local institutions/organizations engaged in the health sector along the site and prepare the program to ensure availability awareness and protection materials and recommending a program of care and treatment for infected and affected persons.

The Consultant shall review the ongoing measures on HIV/AIDS awareness within the project area and propose the mitigation measures. The proposal shall include a plan of action which will identify responsible key implementers, time frame and expected output. The Action Plan as well as capacity building and training program shall be appended in the ESIA report.

Sub-Task (ix): Propose Impact Mitigation Measures

The Consultant shall discuss the comprehensive and cost-effective mitigation measures for minimizing or eliminating all the identified adverse impacts in project phases. Measures for enhancing positive or beneficial impacts should also be recommended. The costs of implementing these mitigation measures shall wherever possible be estimated and presented. The costs shall be included in the BoQ.

A clear summary table shall be prepared by the Consultant. The table shall include the identified impacts and risks with locations, mitigation measures with locations, project phase (design, pre-construction or mobilization, construction, demobilization, operation, and maintenance), responsible key implementers, timeframe, and expected output and mitigation costs as well as indicators to measure results. (See requirements in Annex A.1).

The proposed mitigation measures shall be properly designed and specified with clear Pay Items in the Bidding Documents. The cost estimate shall be included in the Bills of Quantities (BOQ) for the project and should also include cost of supervision for the implementation of mitigation measures by qualified professionals. Also, measures to address emergencies should be covered. Measures for enhancing beneficial impacts should also be recommended and shall be in accordance with national laws and World Bank ESF.

Sub-Task (x): Resource Evaluation or Cost Benefit Analysis.

The Consultant shall conduct the environmental and social costs analysis (resource evaluation) in regards to the proposed project as well as review the economic study (Cost Benefit Analysis) undertaken during the Preliminary Engineering Design to ascertain the environmental, social and economic viability of the proposed road project. Both environmental and economic costs analysis will provide the inputs for preferred project alternatives. The Economic Internal Rate of Return (IRR) and Net Present Value (NPV) of the project at a discount rate of 12% or as decided in consultation with TANROADS should be calculated and interpretation of the results be provided.

Sub-Task (xi): Development of the Environmental and Social Management Plan (ESMP)

The Environmental and Social Management Plan focuses on four generic areas: implementation of mitigation measures, institutional strengthening and training, monitoring and ESMP Sub-plan for sensitive impacts concerned. In addition, the ESMP shall precisely indicate measures to mitigate Environmental, Social, Health and Safety throughout the project cycle. The ESMP shall specify impacts mitigation plan and environmental monitoring plan requirement. The costs, responsibility and timeframe for mitigating each impact and monitoring of each environmental and social parameter should be provided. Impact Mitigation plan and monitoring plan should be based on the project phases i.e. mobilization or Pre-construction, Construction, Operation and Demobilization phase.

The Consultant is required summarize the ESMP as per table A.3 in annex A.3.

Institutional arrangements required for implementing this management plan shall be indicated. The monitoring plan for proposed mitigation measures shall also include among others the identified impacts, parameters, timeframe, responsible institution/person, project phase, monitoring costs etc. Where monitoring and evaluation will require inter-agency and inter-Government's collaboration, this should be indicated.

Identify institutional needs to implement environmental and social assessment recommendations. Review the authority and capability of institutions at local, regional, and national levels and recommend how to strengthen the capacity to implement the environmental and social management and monitoring plans. The recommendations may cover such diverse topics as new laws and regulations, new agencies or agency functions,

inter-sectoral arrangements, management procedures and training, staffing, operation and maintenance training, budgeting, and financial support.

The ESMP is among the key major working tool for contractor during project implementation and therefore the consultant shall provide the following detailed sub-plans which cover the sensitive identified risks and impacts on the proposed road project. These sub-plans shall be appended in the ESIA report and include but not limited to the following.

a. **Borrow Pit and Quarry Site Operation and Closure Management Plan;** i.e. number of proposed borrow pits, distance from the road and residential areas, area coverage, types of materials, quantities, access road, land acquisition and closure plan.

b. **Gender Based Violence and** Sexual Exploitation and Abuse-Sexual Harassment (GBV/SEA-SH) and Protection Action Plan; The ESMP will define the specific ways that GBV/SEA-SH risks are to be addressed in the project by identifying mitigation measures including the development of a GBV/SEA-SH Action Plan. The GBV/SEA-SH Action Plan will include specific arrangements for the project by which GBV risks will be addressed. This includes considerations such as: a) awareness raising strategy, which describes how workers and local communities will be sensitized to GBV/SEA-SH risks, and the worker's responsibilities under the Code of Conduct, b) GBV Services Providers to which GBV/SEA-SH survivors will be referred, and the services which will be available; c) GBV Allegation Procedures on how the project will provide information to employees and the community on how to report cases of GBV breaches to the GRM; and d) Accountability and Response Framework.

c. **Child Abuse Protection Plan;** i.e., Access to services for survivors of Child Abuse Protection (health, legal, psychosocial, police etc.), child abuse Code of Conduct etc.

d. **Grievances Redressing Mechanism (GRM) Plan**; the Consultant will prepare a road project specific GRM, in making reference to the PROJECT Stakeholder Engagement Plan (SEP). This will include, but will not be limited to uptake points, GRM Committee, and resolution process based on the road project area unique characteristics and in line with the World Bank ESS10. The project GRM will include clear channels for grievances reporting as well as dedicated, confidential ones to handle GBV submissions.

e. **Emergence Preparedness Plan**; i.e., risks identified, emergency reporting procedures, health facilities, police stations, complexity of the emergency, emergency institution on the project site, emergency training and etc.

f. **Community Communication Strategy Plan;** i.e., project organization framework, project chain of command, helping desks for communication, communication facilities, accessibility to health,

legal, psychosocial, police etc. The plan will aim at operationalizing the PROJECT- SEP in the road project.

Sub-Task (xii): Development of Environmental and Social Monitoring Plan (E&SMP)

The purpose of environmental and social monitoring is to measure the environmental effects of the project (quantitatively) whenever possible. The **E&SMP** shall therefore describe the monitoring activities that will ensure the adverse environmental and social impacts are minimized while the positive impacts are enhanced during the project implementation.

The plan shall also describes how, when and where the monitoring activities will be undertaken and who will carry them out. It shall entail compliance for carrying out the plan, and outlines mechanisms for checking environmental performance during the operation life of the project. In preparation of the monitoring plan, the consultant shall ensure that the plan consisting the activities, each with a specific purpose, key indicators, and significant criteria.

The **E&SMP** shall therefore include but not limited to following:

(i) Phases of the project;
(ii) Identified impacts
(iii) Aspect/parameter to be monitored;
(iv) Monitoring frequency;
(v) Monitoring site/sample area;
(vi) Measurement unit/method;
(vii) Target level/Standard;
(viii) Responsibility for monitoring; and
(ix) Estimated monitoring costs.
(x) A summary presentation of all the E&SMP aspects in tabular form is advisable.

Note: ***The requirements for ESIA report shall be complied as outlined in Annex A.***

(2) **Development of Resettlement Action Plan (RAP).**

The consultant shall develop a Resettlement Action Plan in accordance with National Legislations, these TOR and the PROJECT Resettlement Policy Framework (RPF). Under this assignment, the consultant shall undertake the Socio-economic survey of the affected people along the project to determine their socio-economic state and the needs as well as assistance that may be provided by the project, paying particular attention to gender issues and the special needs and interests of women, persons with disabilities and other members of vulnerable groups. The consultant shall use the valuation reports developed during baseline design to verify and ensure that, all PAPs are included and their entitlements are well captured. The RAP shall contain a detailed entitlement matrix as well as the budget for RAP implementation/livelihood restoration of economically affected households, GRM operationalization and Monitoring.

Sub-Tasks-1: The RAP will include: -

- The proposed project and its potential impacts on the displaced persons and other adversely affected groups,
- Appropriate and feasible mitigation measures, and
- The legal and institutional arrangements required for effective implementation of resettlement measures.

Sub-Tasks -2: Socio-economic survey

The consultant will undertake a socio-economic survey to ensure that relevant data pertaining to the following is presented: Apply an acceptable methodology to delineate the area of potential resettlement impacts and identify all the affected persons and households through a census survey. Ensure that the PAPs census survey covers all people living along the affected area and using a cut-off date establish a

baseline to exclude subsequent inflows of people from eligibility for compensation and resettlement assistance; undertake using an acceptable participatory methodology a socio-economic survey of affected people. Furthermore, the names and address of the properties' owners and other project affected people should be indicated in an inventory (inventories) for each household whether owner, licensee, tenant, squatter or illegal occupant, classified by type (female headed, male headed, child headed) and indicating gender (number of males and females) per household. The consultant shall verify situations where the people might have been made to vacate the road reserve area so as to minimize costs and include their costs as part of assistance. The results of the socio- economic survey will include: -

- A demographic profile with socio-economic characteristics of the Project Affected Persons (PAPs);
- The magnitude of the expected loss (total or partial) of assets, and the extent of physical and/or economic displacement;
- A profile on vulnerability clearly stipulating setting agreed criteria and the levels of vulnerability of different categories of PAPs;
- Socio- cultural characteristics of PAPs;
- Develop a profile of PAPs, providing acceptable identification corresponding to assets (structures/properties/crops) to be affected including those who were forcefully evicted if any;
- Mapping of project area, settlements and location of the PAPs. The maps should be in appropriate scales and should be easy to interpret;

Sub-Task 3: Valuation of properties, assets and livelihoods to be affected

The Consultant shall identify the properties, assets and livelihoods of the affected Persons around the project areas which will be impacted by the project operations. These will include. Land, trees, crops, structures, any development on land e.g. fish ponds, irrigation schemes etc. Clearly state: The valuation will take advantage of the laws and regulations of Tanzania and where it is determined to be less favorable, the WB standards will be applied and more specifically ESS5. All land affected will be measured and sketch maps provided with coordinates. Valuation methodology will be detailed in the RAP and in line with the World Bank ESS as it fits.

Legal framework and WB standards

The valuation of properties to be affected should be guided by the Valuation and valuers registration Act,2016 of Tanzania along with its regulations (Valuation and valuers Registration Regulation,2018, The land Act no. 4,1999 and Land Acquisition Act,1967 of Tanzania and should be in line with requirements of the World Bank ESS5. The types and numbers of the properties, assets and livelihoods to be affected should be indicated. Furthermore, the names and address of the properties' owners and other project affected people should be indicated in an inventory for each household whether owner, licensee, tenant, squatter or illegal occupant, classified by type (female headed, male headed, child headed) and indicating gender (number of males and females) per household.

Valuation Methodology

The consultant shall define and provide the rationale of the methodology to be used in valuing losses, to determine their replacement cost; and a description of the proposed types and levels of compensation under Government of Tanzania regulations/ World Bank ESS5 and such supplementary measures as are necessary to achieve replacement cost for lost assets; RAP should include information on how each property's value was calculated. RAP will list properties to be affected visa vie formula of calculation. RAP should include land parcel size and its coordinates together with each parcel's sketch maps and resettlement map.

Compensation Procedures

Specify procedures for compensation payment, paying attention to gender relations, power and control; ensure provision for assistance to vulnerable groups – specify who are vulnerable, weighting and ranking of PAPs depending on vulnerability and the type of assistance to be provided; review and develop effective and sustainable livelihood restoration preferably Community Driven Development approach and

enhancement measures for PAPs especially the informal traders. For the married couples, RAP shall ensure dual bank accounts to avoid inequality on the utilization of the compensation funds. The Consultant shall utilize the information from the Valuer to address resettlement issues and develop Resettlement Action Plan

NOTE: The Resettlement Action Plan shall be developed as per detailed guidelines in Annex C and submitted as standalone document.

4.0 REPORTING

ESIA report: Notwithstanding the above requirements, the contents and the structure of the Environmental and Social Impact Assessment Report should be in accordance with the Environmental and Impact Assessment and Audit Regulations.

The ESIA should be concise and limited to significant environmental and social Issues. The main text should focus on the key issues and actions supported by summaries of the data collected and citations for any references used in interpreting data. Detailed or un-interpreted data are not appropriate in the main text and should be presented in appendices or a separate volume. Unpublished documents used in the ESIA may not be readily available and should also be assembled in appendices.

The RAP and Valuation Report: Shall be prepared in accordance with the Road Act of 2007, Land Act of 1999 and the Regulation of 2001, Valuers Registration and Compensation Act, 2016 as well as WB ESS5. In addition, the valuation should detail the methodology for which the value of assets was calculated.

The consultant shall participate in the verification of all land affected within the footprint and assets including structures, properties, trees, crops and livelihoods affected by the project in order to provide the basis for compensation/resettlements; to be acquired and livelihoods lost.

NOTE:

After submission of draft final ESIA, RAP and Valuation reports the Consultant shall make presentation of study's findings to the Client. The Consultant shall arrange to present the key findings identified during the ESIA, RAP and Valuation exercise to the panel of TANROADS experts in TANROADS HQ. The presentations shall be made at least 5 days after submission of the draft report in hard copies. The presentations shall preferably be in Power Point.

Also, the consultancy shall include site visit(s) for verification of the Draft ESIA report and Property Valuation Report in relation to the actual situation on site. In this regard the Consultant shall support his Environmentalists, Sociologists and Valuers to join the TANROADS team of experts during the site verification.

9.0 ANNEXES

Annex A-1 Summary of Sensitive Sites, their baseline Information, Impacts and Mitigation Measures

Chainage (* specifying KM point of road) Or Location	Sensitive sites/ receptors	Baseline	Impacts and Risks (construction & operation)	Mitigation Measures (during design/construction/ operation)	Monitoring	Responsible Entity	Cost if substantial
Note: *1.ESIA Baseline Chapter shall provide adequate baseline information for sensitive sites/receptors identified. Sensitive sites may include stream, wetland, forest, wildlife; cultural heritage, school, village etc. which may be affected by the project. It should also include baseline child labor, labor market and "In-immigration"*			*Note:* *Apart from generic assessment in the ESIA, impacts and risks of the project on the identified sensitive sites/ receptors are to be assessed.*	*Note:* *Apart from generic mitigation measures in the report, specific mitigation measures for the identified sensitive sites/receptors are to be proposed. ESMP will include, among others, mitigation measures, monitoring, responsible entities, and cost estimation for ESMP budget.*			

Annex A-2:

Table A.2 Summary of Impact and Risks (in ESIA report's Impact Assessment Chapter)

Chainage (Specifying KM point of road) Or Location	Sensitive sites/areas/ receptors	Impacts and Risks
Construction		
Operation		

ANNEX A-3

Table A.3 Summary of Environmental and Social Management Plan

Chainage (Specifying KM point of road) Or Location	Sensitive sites/areas/ receptors	Impacts and Risks	Mitigation Measures	Monitoring*	Responsible Entity	Cost if substantial
Pre-Construction						

Construction						
Operation						

Environmental & Social Monitoring Plan (ESMoP)

Environmental Impacts /risks	**Parameters**	**Monitoring frequency**	**Sampling Area**	**Measurement Unit**	**Method**	**Target level/ Standard**	**Responsibility for monitoring**	**Annual costs estimate (Tsh)**
Construction Phase								
Air Quality	Dust (PM_{10}), NOx, SOx, COx, VOC's and Hydrocarbons	Once in three months	Project site	ppm, mg/ m^3	*Detector tubes, Gas analyzers, Dust level Meters*	0.00 1	Proponent	1,400,000
Operation Phase								

Annex B: Outline for ESIA

As stated in Task 1, the ESIA preparation shall be outlined as shown below:

1. Executive Summary
2. Introduction
3. Project Description
4. Policy, Legal and Administrative Framework
5. Description of Environmental and Social Settings;
6. Public Consultation;
7. Identification, Assessment and Analysis of Impacts;
8. Project Alternatives
9. Mitigation measures
10. Environmental and Social Management Plan
11. Environmental and Social Monitoring Plan (E&SMP)
12. Resource Evaluation or Cost Benefit Analysis
13. Decommissioning Plan;
14. Conclusion and recommendations;
15. List of References (Literature cited); and
16. Appendices

Annex C: Property Valuation Requirements

1. The Consultant shall deploy a Registered Valuers for valuation and marking of all properties to be affected by the project within the Right of Way and Road corridor. The exercise should be conducted in accordance with the National Land Act No 4 and 5 of 1999 Land Regulations of 2001 Land Acquisition Act (1967RE 2001) Valuation and Valuer Registration Act of 2016 and its Regulations of 2018. The Property Valuation Report should be prepared and submitted to TANROADS.

2. The valuers should seek approval of compensation rates from the Chief Government Valuer before undertaking Valuation exercise

3. The Valuers shall ensure Authorised Land Officer is involved in issuing land form No. 69 to all affected persons

4. The Valuers must ensure that all Project Affected Persons (PAPS) and local leaders have signed all required forms by the law i.e.; Form No. 1 (Valuation permit by property owner); Form No. 2 (Valuation rejection by Property Owner); Form No. 3 (Identification of affected property); and Form No. 4 (Computation of values); A copy of the form should be provided to each PAP for Verification Purpose. All PAPS must be notified at least two (2) weeks before the valuation exercise in order to prepare them for exercise. The valuers should ensure that the computation of property values is fair and full.

5. The Property Valuation Report should be prepared in Kiswahili language using valuation database system to indicate in specific, names, place, properties and costs for each affected person, also includes; Disturbance allowances, Accommodation allowances and Transport allowances. The valuers shall liaise with the Local Valuers in order to obtain properties values used in the project area and other important information for valuation exercise.

6. The Valuers shall be required to participate during verification and disclosure exercises. The Consultant shall facilitate his participation.

7. The Draft Valuation report should be submitted along with copies of Valuation form no.1, Valuation Form No.3 and Land Form No 69

8. The ESIA Consultant shall include a brief description of Property Valuation report as established by the Valuers by indicating types and amount of properties to be affected within the road corridor and reserve area by specific location. The brief should also include a total compensation cost of affected properties.

Annex D. Outline for RAP

The scope and level of detail of the resettlement plan vary with the magnitude and complexity of resettlement. The plan is based on up-to-date and reliable information about (a) the proposed resettlement and its impacts on the displaced persons and other adversely affected groups, and (b) the legal issues involved in resettlement. The resettlement plan covers the elements below, as relevant. When any element is not relevant to project circumstances, it should be noted in the resettlement plan.

i. Executive Summary
ii. Introduction-Description of the project, Location-More now of the specific project
iii. Project Components/Activities
iv. Potential impacts and alternatives / mechanisms to minimize impacts

v. Objectives of the Resettlement Action Plan
vi. Methodology for Conducting RAP- Applied by the consultant- could go beyond the listed)
vii. Census Survey and Baseline –Socio-Economic studies (General and Specific), Data should include HHH and Other HH members, Information about vulnerable (Assistance to be provided as part of implementation),
viii. Data of land (type, use, ownership), structures (type, use,), crops, other affected structures etc.
ix. Identify public/community information to be affected
x. Established cut-off date
xi. Legal Framework-Covering applicable legal and administrative procedures –Laws and regulations relating to agency for implementing resettlement activities
xii. Institution Framework for the RAP –Who is/will be responsible
xiii. Valuation of and compensation of assets-methods used
xiv. Eligibility-Definition of Displaced person and criteria for determining their eligibility for compensation and another resettlement assistance
xv. Community Participation/Stakeholders Engagement –Where relevant also for host communities
xvi. Summary of the views, how they were taken into account in preparing- Date/venue/signature etc.
xvii. Resettlement alternatives - In-Kind, Cash