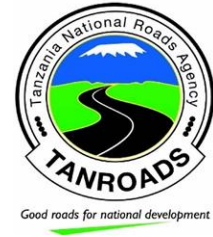




THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF WORKS

TANZANIA NATIONAL ROADS AGENCY



## TERMS OF REFERENCE FOR

### CONSULTANCY SERVICES TO SUPPORT THE IMPLEMENTATION OF DAR ES SALAAM URBAN TRANSPORT IMPROVEMENT PROJECT (DUTP)

#### 1. INTRODUCTION

The Tanzania National Roads Agency (TANROADS) was established in 2000 and is responsible for development and improvement of the national roads network managing Km of roads made up of 12,336 km of trunk roads and 23,875 km of regional roads.

Within its portfolio of Donor Funded Projects, the Government of the United Republic of Tanzania has received a Credit from International Development Association (IDA) towards the cost of implementation of Dar es Salaam Urban Transport Improvement Project (DUTP) and intends to apply part of the proceeds of this Credit for eligible payments to engage a Technical Assistance (TA) firm for consultancy services for providing experts to TANROADS for which these Terms of Reference are issued.

#### 2. PROJECT DESCRIPTION

The Project Development Objective is to improve transport mobility, accessibility, safety, and improve quality of transport service delivery along the selected corridors in the city of Dar es Salaam through provision of enhanced transport facilities that are reliable and cost-effective, thereby supporting economic and social development of the city and the country as a whole.

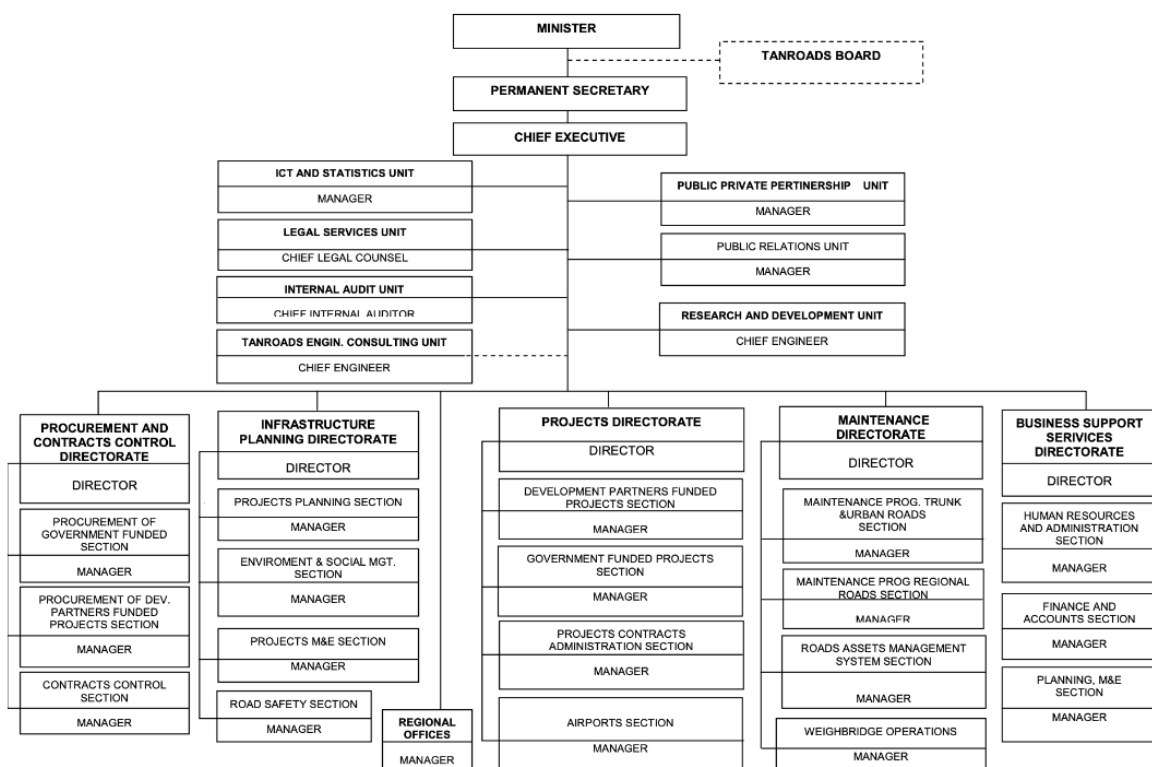
In order to achieve the Project Objective, DUTP is implemented under the following three key components:

- A) Establishment of Third and Fourth Phases of Dar es Salaam BRT System;
- B) Improvement of the Ubungu Intersection and Complementary Road Safety Infrastructure for the First Phase of Dar es Salaam BRT System; and
- C) Institutional Strengthening and Reform, ICT Innovation, Safety Net, and Transport Studies.

### 3. OBJECTIVE OF THE ASSIGNMENT

The primary objective of the assignment is to provide implementation support to TANROADS. The support will be delivered by a TA firm through provision of experts (*at the earliest possible time, not later than a month*) to TANROADS with a view to execute specific specialized tasks when needed.

TANROADS organizational structure is set out below and the firm will be required to provide experts to support TANROADS in various areas related to the sub-projects under implementation through the DUTP project.



The assignment is intended to be undertaken by an experienced firm with a background of similar experience in providing and managing experts in relation to the execution of Highways, Bridges/structural engineering, Traffic Engineering, Intelligent Transport Systems, Contracts Administration as well as Disputes resolutions for Donor Funded Projects in an international context particularly is Sub-Saharan Africa.

The contract for this assignment will be time-based; approximately **75 person-months** are expected from a range of experts both full time and part time over a maximum period of 15 months. The estimated inputs required are only indicative and are to be construed as a mix of skill requirements for these services.

#### **4. REQUIRED EXPERTS**

The Consultant will provide the experts listed below to carry out the required Implementation Support Services.

#### **4.1 CLAIMS AND DISPUTES RESOLUTION EXPERT**

##### **4.1.1 GENERAL**

The Consultant shall engage to the project on part-time basis when need arises, a Claims and Disputes Resolution Expert who will assist in the evaluation of claims and provide support in the case of disputes being referred to DAAB on Works contracts.

##### **4.1.2 DUTIES AND RESPONSIBILITIES**

- i. Review Contractors' work programs and method statements as submitted by Construction Supervising Engineer (Engineer) to ensure conformance with project requirements; adequacy of management and organizational arrangements, health and safety plans, and environmental mitigation plans; sufficiency of personnel and equipment resources and of other facilities; and adequacy of quality assurance and quality control procedures.
- ii. In collaboration with the Engineer, monitor the physical and financial progress of the works undertaken by the Contractor; continuously update the estimated date of completion of critical path tasks and assess the effects resulting from any delays; and make recommendations on appropriate actions needed to be taken by TANROADS to address actual or potential implementation delays, cost overruns, poor quality of the works, and other problems;
- iii. Anticipate claims that may be submitted by Contractors related to Project execution; review recommendations prepared by the Engineer regarding claims submitted by contractors; and support TANROADS' legal counsel (on technical matters only) to resolve claims;
- iv. Monitor contractor's claims and disputes by undertaking the following:
  - (a) Review the Engineer's assessments on contractors' claims and advise the Project Manager on any potential issues and recommends remedial actions.
  - (b) Convene meetings with contractors and the Engineer to allow ample opportunity for identification and early resolution of potential disputes.
  - (c) Collaborate with the Engineer and prepare TANROADS responses on contractors' referrals to Dispute Boards as they may arise from time to time.
- v. Making sure that works quality assurance system is fully followed and implemented Provide expert assistance to the Employer in responding to issues referred to Dispute Boards or Arbitration by the Contractors as well as formalizing referrals to DAAB or Arbitration as need arises.

- vi. Perform any other related duties as shall be required by TANROADS.

### **4.1.3 QUALIFICATIONS AND EXPERIENCE**

#### Education

- Minimum of a Degree in Civil Engineering
- Possession of Master's Degree in Contract Management or Contract Law is required
- Must be a registered professional Civil Engineer or equivalent with a professional body/institution

#### Working Experience

- Minimum of fifteen (15) years' experience related to construction and supervision of civil engineering works.
- Must have served as a Claims Specialist on at least two paved roadworks construction contracts involving supervision services.
- Must have detailed knowledge of FIDIC 2017 Conditions of Contract.
- Working experience of World Bank financed projects is an added advantage.

#### Language and regional experience

- Proficiency in written and spoken English is mandatory
- Minimum working experience of at least 3 years in developing countries or Sub-Saharan Africa.

### **4.1.4 DURATION**

The Expert shall be engaged on part time basis when need arises. An estimated aggregate time input shall be 3 person-months spread over the remaining project duration i.e. up to 30 April 2026.

## **4.2 SENIOR MEASUREMENT ENGINEER CUM QUANTITY SURVEYOR**

### **4.2.1 GENERAL**

The Consultant shall provide a Senior Measurement Engineer cum Quantity Surveyor to take primary responsibility of monitoring and handling all contractual matters related to works measurement, payments, variations, claims, disputes and advising the Project Manager on appropriate actions to ensure that the Works are executed and completed within agreed cost, time and quality. The Expert shall be assigned to support implementation of the Project for Construction of Dar es Salaam Bus Rapid Transit (BRT) Infrastructure - Phase 4 and will provide oversight and standardization of procedures with two other Contracts Engineers/Quantity Surveyors engaged on Phase 1 and Phase 3. Specifically, the scope of services will include but

are not limited to the following:

#### **4.2.2 DUTIES AND RESPONSIBILITIES**

- i. Mentoring and supporting two young Contracts Engineers/Quantity Surveyors engaged on BRT Phase 1 & Phase 3 respectively.
- ii. Establish measurement and valuation procedures consistent with existing BRT Team Protocols for measurement, valuation, certification and payment in collaboration with the Engineer and Project Manager BRT 3.
- iii. Assessing and ensuring that survey, setting out and construction of earthworks, pavement works, drainage and appurtenant structures are carried out according to design and conform to the contract provisions;
- iv. Making sure that works quality assurance system is fully followed and implemented for measured works
- v. Assess and monitor measurements of Road Works items in collaboration with the Engineer on site for compliance with standard procedures for Measurements prior to certification of the same for payment.
- vi. Assess Contractor's Work methodology in line with Contract specifications and bring up shortfalls that may result to poor quality of Works for timely intervention pursuant to the Contract provisions and eligibility for payment
- vii. Conduct site visits and inspect the works in collaboration with the Engineer for conformity with Contract provisions and identify problem areas and reporting the same to the Project Manager / Employer with advice on remedial measures.
- viii. Attending regular site meetings and ensuring that the proceedings are adequately recorded regarding measurement and financial matters
- ix. Ensuring that design review of Road Works including take off-sheets is done and submitted as scheduled.
- x. Ensuring that as-built drawings for Road Works as prepared by the Contractor and approved by the Engineer are done continuously throughout the construction time reflecting agreed final measurements.
- xi. Review Works progress reports and other ad hoc reports submitted by Consultants and Contractors relating to measurement and payments.
- xii. Checking if Interim and Final Certificates as submitted by the Engineer have been correctly and accurately prepared in accordance with the relevant contract prior to payment on behalf of the Employer.
- xiii. Perform any other related duty as shall be required by TANROADS.

### **4.2.3 QUALIFICATIONS AND EXPERIENCE**

#### Education

He/She must be a registered Professional Engineer or Quantity Surveyor with a professional body/institution. He/She must possess a Degree in Civil Engineering, Quantity Surveying or equivalent. Possession of postgraduate degree in Cost Engineering or Contracts Management is an added advantage.

#### Working Experience

- Minimum of ten (10) years post qualification experience involving highway construction.
- Worked on at least two (2) urban infrastructure development project as a Contracts Engineer or Quantity Surveyor.
- Demonstrated knowledge of measurement and valuation including post contract procedures. Knowledge of AutoCAD or other applicable computer-based design packages for computing measurements and quantities is an added advantage.
- Working experience on World Bank or any other donor funded construction projects.

#### Language and regional experience

- Proficiency in written and spoken English is mandatory.
- Minimum working experience of at least 3 years in developing countries or Sub-Saharan Africa.

### **4.2.4 DURATION**

The expert shall be engaged on a full time over the remaining project duration i.e. up to 30 April, 2026 (approx. 15 months).

## **4.3 MONITORING & EVALUATION ENGINEER**

### **4.3.1 GENERAL**

The Consultant shall provide a Monitoring and Evaluation (M&E) Engineer to perform services to the Project on full-time basis.

### **4.3.2 DUTIES AND RESPONSIBILITIES**

- (1) Coordinate the preparation by line departments of project briefs, work plans, budgets, and other working documents as required in the Financing Agreement
- (2) Assist TANROADS IDA Coordinator in preparation and seeking of necessary Bank clearances for all project activities that require clearance prior to execution
- (3) Assist TANROADS IDA Coordinator to prepare for project review meetings by Steering Committee and Technical Committee chaired by PS or his/her designee
- (4) Assist TANROADS IDA Coordinator to follow up evaluation committee meetings and site visits by supervision teams in liaison with line departments and prepare monthly reports on this for inclusion in the monthly progress report to the Bank including E&S safeguard reports
- (5) Assist TANROADS IDA Coordinator to prepare and facilitate field visits and Missions on a timely basis.
- (6) Assist TANROADS IDA Coordinator to track the achievement of results in line with the project results framework.
- (7) Assist in the timely input of data and decisions for clearance, no objection and approval through STEP's system, and ensuring TANROADS' updates are maintained in good order.
- (8) Convene regular coordination meetings within the coordination unit to review progress of the project activities and prepare monthly briefs on the progress.
- (9) Provide monitoring, control and project administration services as required by TANROADS implementation team
- (10) Provide day-to-day management information to the TANROADS implementation team.
- (11) Follow up and prepare inputs to monthly and quarterly reports on various tasks and outputs under the Project, which include consultancy assignments, preparation of bid documents, procurement, contract awards and payments to maintain track of disbursements.
- (12) Follow up and ensure timely review of the consultants' reports and appraisal of agreed project deliverables by the assigned project management team.
- (13) Follow up the payments of consultants, suppliers, and contractors and confirm from contract managers that necessary documentation is submitted to relevant authorities for timely payment.
- (14) Review and update the overall implementation schedule for the Project, and monitor and report on the physical and financial progress of the various components and subcomponents.

- (15) Assist in identifying and initiating remedial actions through the Consultants and Contractors to avoid or mitigate implementation delays, cost overruns, poor quality of studies, designs and works, unmitigated environmental impacts, and other problems on DUTP.
- (16) Assist in ensuring that all activities, actions and processes are carried out according to best practice for the execution of the Project, including monitoring implementation as appropriate, by Contractors, Engineers or Employer's staff.
- (17) Assess detailed work plans for components and subcomponents for compatibility with overall project programme.
- (18) Prepare reports on a real-time basis that provide an overview of implementation, critical path tasks, and other information needed by TANROADS management to oversee Project implementation.
- (19) Attend progress meetings and liaise with other Agencies and stakeholders engaged on DUTP to provide feedback on implementation issues.
- (20) Prepare outputs from field visits and progress review meetings and identify problems that may impact DUTP.
- (21) Coordinate with Supervision Consultants, Contractors and Design Consultants, monitor the physical and financial progress of the DUTP contracts.

Continuously update the estimated date of completion of critical path tasks and assess the effects resulting from any delays.

#### **4.3.3 QUALIFICATIONS AND EXPERIENCE**

##### Education

Registered Professional Engineer with a Bachelor Degree in Civil Engineering; possession of postgraduate degree in related field is an added advantage.

##### Working Experience

- Must have a minimum of eight (8) years' experience in the supervision of large scale infrastructure and transport projects including diverse tasks and responsibilities for road safety and traffic management;
- Excellent in Planning, Coordination and reporting skills with ability to organize a substantial work load comprised of complex, diverse tasks and responsibilities;
- Working with development partners and specifically in project monitoring, reporting and evaluation on World Bank projects is required.



- Demonstrated knowledge in programme management, monitoring and evaluation and supervision under FIDIC Contracts, together with experience and familiarity with Programme/Project Management software such as Microsoft Project is required.
- Specific experience of two (2) years in a similar capacity in projects financed by World Bank or development partners is required.
- Experience in developing monitoring and evaluation tools and materials is required;
- Experience in assessing and designing monitoring and evaluation management systems and procedures, reporting and capacity building measures;

#### Language and regional experience

- Proficiency in written and spoken English is mandatory
- Minimum working experience of at least five (5) years in Tanzania.

#### **4.3.4 DURATION**

The expert shall be engaged on a full time over the remaining project duration i.e up to 30 April,2026 (approx. 15 months).

### **4.4 SENIOR BRIDGE/ STRUCTURAL ENGINEER**

#### **4.4.1 GENERAL**

The Consultant shall engage to the project on part-time basis when need arises a Senior Bridge/Structural Engineer to assist with the review of detailed designs of bridges, underpasses, overpasses and other related structural elements pertaining to the ongoing infrastructure construction.

#### **4.4.2 DUTIES AND RESPONSIBILITIES**

- i. Provide technical input on complex structural engineering problems pertaining to the ongoing DUTP infrastructure construction;
- ii. Provide on-the job training to TANROADS Engineers including the recently young employed graduates on bridges related aspects
- iii. Undertake design review and assessment on other complex bridges under TANROADS jurisdiction;
- iv. Review and advise on the current TANROADS bridge design practices and processes to ensure that they are carried out according to best practices;
- v. Perform any other related duties as shall be required by TANROADS.

#### **4.4.3 QUALIFICATIONS AND EXPERIENCE**

##### Education

He/She must be a registered Professional Civil Engineer with a degree in Civil, Bridge or Structural Engineering or equivalent; postgraduate qualification in Bridge or Structural Engineering is an added advantage;

##### Working Experience

- Must have a minimum of fifteen (15) years' experience related to bridge structures design and construction projects;
- Must have a demonstrable knowledge of bridge design software mostly used in bridge designing;
- Must have performed a monitoring and evaluation of bridge performance and knowledgeable with bridge management systems;
- Must have working experience with current design codes and standards;

##### Language and regional experience

- Proficiency in written and spoken English is mandatory
- Minimum working experience of at least 3 years in developing countries or Sub-Saharan Africa.

#### **4.4.4 DURATION**

The expert shall be engaged on part time basis when need arises. An estimated aggregate time input shall be 3 person – months spread over the remaining project duration i.e up to 30 April, 2026.

#### **4.5 SENIOR HIGHWAY ENGINEER**

##### **4.5.1 GENERAL**

The Consultant shall provide a Senior Highway Engineer to perform services to the Project on part-time basis when required.

The Senior Highway Engineer will provide the project with quality engineering design services and advice for construction. The Senior Highway Engineer shall review all designs and audit construction conformance with design standards.

Specifically, the scope of services expected for the Senior Highway Engineer includes the following:

##### **4.5.2 DUTIES AND RESPONSIBILITIES**

- i. Advise on design reviews and modifications being proposed and during construction
- ii. Reviewing design for compliance with original design intent, with

- internationally recognized best practice;
- iii. Promoting and improving professional standards for road engineering design;
- iv. Mentoring and guiding TANROADS staff high engineering aspects;
- v. On-the job training on state of the art design software related to highway engineering designs.
- vi. Advise and support Project Engineers on any technical design issues arising from the projects.
- vii Perform any other related duty as shall be required by TANROADS.

#### **4.5.3 QUALIFICATIONS AND EXPERIENCE**

##### Education

Must be a Professionally Civil Engineer registered with a professional body/institution with a least a degree in Civil Engineering or equivalent. Postgraduate degree in Highway Engineering or Transportation Engineering is an added advantage.

##### Working Experience

- Minimum of 15 years of progressively responsible experience in designing large multi-disciplinary highways and urban roads projects;
- Demonstrated profound knowledge of internationally recognized highway design standards with good knowledge of applicable computer-based design packages;
- Must have been engaged as a Senior Highway Engineer on at least 2 projects of similar nature over the last 10 years
- Participation in Design Reviews and Construction Management of Bus Rapid Transit (BRT) Infrastructure is an added advantage.

##### Language and regional experience

- Must be proficient in written and spoken English.
- At least 3 years working experience in developing countries including Sub-Saharan Africa.

#### **4.5.4 DURATION**

The expert shall be engaged on part time basis when need arises. An estimated aggregate time input shall be 3 person – months spread over the remaining project duration i.e. up to 30 April 2026 (approx. 15 months).

#### **4.6 SOCIOLOGIST**

#### **4.6.1 GENERAL**

The Consultant shall engage a Sociologist to perform the services on DUTP Project on full-time basis. The specific scope of services will include but not limited to the following:

#### **4.6.2 DUTIES AND RESPONSIBILITIES**

- Review of social impact assessment of the project and prepare a Social Management Plan (SMP) in order to minimize any negative impacts that the project will have on the society.
- Undertake detailed survey of the properties to be affected by the project and indicate the names and addresses of the properties owners and undertake valuation of those properties for development of the Resettlement Action Plan (RAP) and effecting compensations.
- Assess the likely impact of HIV/AIDS on the project road and propose measures to mitigate the same in accordance with National HIV/AIDS policy and strategies. The
- Prepare awareness programs which aim at educating the communities on the control of HIV/AIDS.
- Monitor and report on Contractors' compliance with sites specific Health and Safety Plans and adherence to phased access to site obligations based on any Staggered completion of Resettlement Action Plan (RAP) implementation, and Recommend remedial action to be taken in case of non-compliance.
- Monitor and report on appropriate Engineer's compliance to the terms of reference in the supervision Contract with regard to the SMP and RAP implementation.
- Agreeing with the construction supervision consultant any actions that should be taken by the consultant to rectify any instances where the contractors have not been complying with the social obligations required in national legislation.
- Monitor and coordinate effective implementation of compliance with respect to social safeguards based on the World Bank Environmental and Social Safeguards Policies.
- Assessing and proposing measures to prevent vendors from common practice of encroaching the facilities at the bus stations.

#### **4.6.3 QUALIFICATIONS AND EXPERIENCE**

##### Education

He/She must possess a Bachelor's Degree in Social Science or related disciplines. Possession of postgraduate degree in a related discipline is an added advantage.

##### Working Experience

- Minimum of ten (10) years' experience in infrastructure projects;
- Worked in similar capacity in at least two (2) projects of similar nature in the last ten years; one of which must have been undertaken in an urban environment.
- He/She must have knowledge of GBV, SEA, stakeholder engagement, and labor management, including labor influx issues in relation to infrastructure projects.
- Working experience in World Bank or any other donor-funded construction projects is an added advantage.

#### Language and regional experience

- Proficiency in written and spoken English is mandatory.
- Minimum working experience of at least 3 years in developing countries or Sub-Saharan Africa.

### **4.6.4 DURATION**

The expert shall be engaged on a full time basis over the remaining project duration i.e up to 30 April, 2026 (approx. 15 months).

## **4.7 ENVIRONMENTALIST**

### **4.7.1 GENERAL**

The Consultant shall engage the Environmentalist to perform the services on DUTP Project on full-time basis. The specific scope of services will include but not limited to the following:

### **4.7.2 DUTIES AND RESPONSIBILITIES**

- Review the environmental impact assessment of the project and prepare Environmental Management Plan (EMP) in order to minimize any negative impact that the project will have on the environment
- Review the environmental impact assessment of the project and prepare Environmental Management Plan in order to minimize any negative impacts that the project will have on the environment
- Monitor and report on Contractor's compliance with the site Specific Environmental Management Plans and recommend remedial actions to be taken in case of non-compliance;
- Monitor and report on the appropriate Engineer's compliance to the terms of reference in the supervision Contract with regard to the EMPs and RAP implementation;

- Monitoring civil works contractors are implementing all environmental mitigation and monitoring works required in national legislation, the agreed project Environmental Impact Assessment and the contract documents;
- Agreeing with the construction supervision consultant any actions that should be taken by the consultant to rectify any instances where the contractors have not been complying with the environmental obligations required in national legislation, the agreed Environmental Impact Assessment and the contract documents.
- Monitor and co-ordinate effective implementation of compliance monitoring with respect to environmental and social safeguards based on the requirements of the Environmental Management Act 2004 and the World Bank Environmental and Social Safeguard Policies.

#### **4.7.3 QUALIFICATIONS AND EXPERIENCE**

##### Education

He/She must possess a Bachelor's Degree in Environmental Management or related discipline. He/She must be registered with a relevant professional Licensing/Regulatory Authority.

##### Working Experience

- The candidate must have working experience on environmental management with sound knowledge on environmental issues, initiatives and implementation of mitigation measures in infrastructure projects;
- Worked in similar capacity in at least two (2) projects of similar nature in the last ten years, one of which must have been undertaken in an urban environment;
- Working experience in World Bank or any other donor-funded construction projects is an added advantage.

##### Language and regional experience

- Proficiency in written and spoken English is mandatory
- Minimum working experience of at least 3 years in developing countries or Sub-Saharan Africa.

#### **4.7.4 DURATION**

The expert shall be engaged on a full- time basis over the remaining project duration i.e up to 30 April, 2026 (approx. 15 months).

#### **4.8 SENIOR GEOTECHNICAL ENGINEER**

#### **4.8.1 GENERAL**

The Consultant shall provide a Geotechnical Engineer to perform services to the Project on part-time basis when required. Specifically, the scope of services expected for the Geotechnical Engineer includes the following:

#### **4.8.2 DUTIES AND RESPONSIBILITIES**

- i. Shall be responsible for conducting geotechnical investigation to achieve optimal design and construction strategy when required.
- ii. Shall review bridges foundation designs and advise on their sufficiency;
- iii. On-the job training on state-of-the-art methodologies and software related to geotechnical investigation and analysis.
- iv. Mentoring of staff at the Research and Development Unit (RDU) under TANROADS on geotechnical investigation related issues.
- v. Perform any other related duties as shall be required by TANROADS.

#### **4.8.3 QUALIFICATIONS AND EXPERIENCE**

##### Education

Must be a Professionally registered Civil Engineer, registered with a professional body/ institution with a least a degree in Civil Engineering or equivalent. Postgraduate degree in Geotechnical Engineering is an added advantage.

##### Working Experience

- Minimum of 15 years' cumulative experience in geotechnical investigations and foundation designs.
- Demonstrated profound knowledge of internationally recognized geotechnical engineering standards with good knowledge of applicable computer-based design packages.
- Must have been engaged as a Senior Highway Engineer on at least 2 projects of similar nature over the last 10 years.
- Participation in Design Reviews and Construction Management of Bus Rapid Transit (BRT) Infrastructure is an added advantage.

##### Language and regional experience

- Must be proficient in written and spoken English.
- At least 3 years working experience in developing countries including Sub-Saharan Africa.

#### **4.8.4 DURATION**

The expert shall be engaged on part time basis when need arises. An estimated aggregate time input shall be 3 person – months spread over the remaining project duration i.e. up to 30 April, 2026 (approx.15 months).

## **4.9 INTELLIGENT TRANSPORT SYSTEMS (ITS) SPECIALIST**

### **4.9.1 GENERAL**

The Consultant shall provide an Intelligent Transport Systems (ITS) Specialist to assist TANROADS in review and advise on the ongoing design of the ITS by DART Agency for BRT Infrastructure and oversee the integration/implementation phase.

### **4.9.2 DUTIES AND RESPONSIBILITIES**

- i. Undertake design, review and assessment of traffic management system that will facilitate the traffic detections at designated locations;
- ii. Provide technical input on Dynamic Message Signs (DMS) that will allow the display information in dynamic mode. This will keep drivers/commuters or other road users informed about traffic conditions, queues or other events on the road (crashes, incidents, works etc.);
- iii. Provide technical advice on the system integration. He/she will be responsible in identifying and proposing interfaces with other systems. The interfaces shall consist of protocols based on web services according to international standards and as per the e-Government Authority Guidelines and Standards;
- iv. Design and implement a Computer Aided Design? (CAD). This forms core part of the ITMS which will provide an automated way to different organizations participating in incident and emergencies management agencies to keep track of incidents, activities, information, tasks, messages, and the status of deployed resources. This requires identifying the main agencies and organizations what will access the CAD;
- v. Design and implement a traffic signal control system (TSCS) technology that is oriented to control traffic flows by signalling of intersection and roadways with high vehicle traffic (Motorized and non-motorized) and pedestrians particularly for highly populated areas;
- vi. Advises on the travel time management system. The system shall be able to use the BRT lanes enforcement cameras to measure the travel times and communicate the information to road users and drivers using DMS. The time components shall serve as an overall performance indicator, planning tool, input to project evaluation, real time measure of congestion and in trend analysis;
- vii. Design and implement the passenger information system for the BRT users regarding services, schedules, estimated arrival times and safety



announcements. The solution shall provide information in different means i.e. information on board, information at stations and terminals, information on personal information devices (PIDs);

- viii. Advice and proposes technology for the surveillance and security systems that guarantee security of travellers, pedestrians and staff. The technology shall range from on board CCTV and NVR; On-board silent alarm (OSA) and driver voice communications;
- ix. Propose and implement technology for the lane control signs (LCS). This will allow traffic operators to manage lanes on the carriageway and to display any kind of traffic signs. The LCSs can serve to manage lane status (open or closed), speed limits or other traffic signs. It should be able to inform road users about the availability of each road lane independently;
- x. Design and implement a road data collection system (such as Traffic Detection system) that will provide raw vehicular data required by ITS applications that will enable traffic monitoring and other functions; and
- xi. Perform any other related duty as shall be required by TANROADS.

#### **4.9.3 QUALIFICATIONS AND EXPERIENCE**

##### Education

He/She must have a Degree in one of the following fields; Electronics Engineering, Computer Science, Computer Engineering or other ITS related studies. Possession of postgraduate degree in related field is an added advantage.

##### Working Experience

- Knowledge and experience of Traffic management system, fleet management and traffic signal control system;
- Experience of mobility as a service (MaaS) apps; CCTV Cameras, Voice Communications, Network Video Recorder (NVR), on-board silent Alarm (OSA) and CCTV Visualization display;
- Competent and knowledgeable on data storage technologies; data extractions and reporting tools, backup and recovery of systems, data exchange, VoIP Phone and Wi-Fi ;
- Knowledgeable on the radar technology for multi-lane, multi-object tracking traffic management applications;
- Knowledge of e-Government Authority guidelines and standards on integrations and implementation of IT related projects;
- Worked in similar capacity in at least 2 projects of similar nature, at least one of which must have been undertaken in an urban environment;

- Minimum of eight (8) years post qualification experience in ITS design, installation and applications;
- Working experience in World Bank or any other donor-funded construction projects is an added advantage.

Language and regional experience

- Must be proficiency in written and spoken English
- Minimum working experience of at least 3 years in developing countries or Sub-Saharan Africa.

#### **4.9.4 DURATION**

The expert shall be engaged on part time basis when need arises. An estimated aggregate time input shall be 3 person – months spread over the remaining project duration i.e up to 30 April, 2026.

### **5. ADDITIONAL EXPERTISE**

TANROADS reserves the option of drawing on additional expertise, as and when need arises for which the Consultant will provide and be paid in accordance with the Contract or by agreement in the case that a required expert is not in the contract. The Consultant will be asked to submit a proposal in terms of CV and remuneration of the proposed expert or experts for evaluation. TANROADS shall not be bound to accept any proposal that will be submitted by the Consultant.

### **6. SERVICES AND FACILITIES**

#### **6.1 TANROADS OBLIGATIONS**

The Client shall provide the Consultant's personnel with the following:

- (a) All relevant studies, designs, bid documents, drawings, data, and other documents related to the Project that are necessary for the assignment.
- (b) Introduction letters to study, design and Supervision Consultants and Contractor(s), engaged by the Employer to implement the relevant projects
- (c) Facilitation of the delivery of studies, designs, specifications, bid documents, contracts, reports, invoices, and other documents submitted by other consultants and Contractor(s) to the Employer in order for the Consultant to carry out her/his duties in support of the Employer.
- (d) Facilitation of the issuance of entry and exit visas for the Consultant and accompanying dependants.

- (e) Facilitation of the issuance of any permit required for the Consultant and his appointed Experts.
- (f) Facilitation of the import and export of the Consultant's equipment necessary for the provision of the consultancy services, and of the personal belongings of the Consultant and accompanying dependants. Payments of import duties and or any related tax shall remain under the Consultant's obligations.
- (g) Office space at the TANROADS headquarters or elsewhere as found appropriate inclusive of utilities such as power and water for the Consultant's staff.
- (h) Internet connection and access to printing facilities; photocopy machine and office furniture.
- (i) Transport at work for the purpose of performing the services.
- (j) Travel allowances for official travel outside the duty station.

## **6.2 CONSULTANT'S OBLIGATIONS**

The Consultant shall be responsible for the following:

- (a) The Consultant shall employ only such key professional staff with CVs approved by the Client. Replacement or temporary substitution shall not be permitted unless in emergency or under very exceptional circumstances;
- (b) The Consultant shall arrange and provide transport to all staff to and from the workplace (office);
- (c) The Consultant shall ensure that his staff provide organised training and instructions to junior staff assigned to the project. The training program and reporting should be defined in the Consultant's proposal and agreed with the Client during pre-contract discussions.
- (d) The Consultant shall make his own arrangements for all living accommodation, and personal transportation.

## **7. REPORTING**

### **7.1 GENERAL**

The Consultant shall prepare and submit reports listed below, and in a format approved by the Client: Two (2) hard copies and electronic copies of each report. Electronic copies shall be in Microsoft Office format (PDF or other form as shall be directed by TANROADS). All reports and documents relevant to the services shall become the property of TANROADS.

### **7.2 INCEPTION REPORT**

An Inception Report will be submitted within two weeks after the end of calendar month when the Contract becomes effective. The report will describe the staff mobilisation and the Consultant's establishment for the assignment. The report will also propose a format for Monthly Progress Reports.

### **7.3 MONTHLY PROGRESS REPORT**

The Monthly Progress Report shall contain a summary of activities performed by each expert in the reporting month including training and knowledge transfer activities to BRT and TANROADS staff related to the project. A summary of all work accomplishments including both technical and organisational challenges encountered, recommended solutions and plan of activities for the next month and staff leave schedules. This report shall be submitted to TANROADS not later than the 15<sup>th</sup> day of the month following the end of the reporting month.

### **7.4 COMPLETION REPORT**

At the end of the assignment, the Consultant shall prepare and submit to TANROADS a Completion Report describing whether the primary objective of the assignment has been met or not and recommendations for improvement for future engagement if any.

## **8. DURATION OF THE ASSIGNMENT**

The total duration of the assignment is estimated at 15 months with different staff-inputs and is expected to be effective from February 2025.

## **9. PAYMENTS**

The Consultant's remunerations shall be deemed to cover all of his liabilities, taxes, travel costs, accommodation, transport, computers, intermittent high-level management meetings and support of his head office staff and all his obligations other than additional services not covered by these terms of reference.