

# TERMS OF REFERENCE

## CONSULTANCY SERVICES FOR THE ROAD SAFETY AUDIT STAGE FOUR (4) (DURING CONSTRUCTION) AND STAGE FIVE (5) PRE-OPENING OF THE DAR ES SALAAM BUS RAPID TRANSIT INFRASTRUCTURE PHASE 3 (BRT -3)

### 1. INTRODUCTION:

#### 1.1 Project Background

The Government of the United Republic of Tanzania, through the Tanzania National Roads Agency (TANROADS), has received a credit from the International Development Association (IDA) towards the cost of the Dar es Salaam Urban Transport Improvement Project (DUTP) and intends to apply a portion of the proceeds of credit for eligible payment under the contract for which this Terms of Reference is issued for undertaking Road Safety Audit stage 4 (during Construction) and Stage 5 (Pre-opening) of the BRT phases 3 project.

Following occurrence of various road accidents and incidents to road users and, workers along BRT-3 project construction zone, the World Bank (IDA) Mission team during the progress meeting instructed TANROADS to immediately recruit an independent **Roads Safety Audit** to carryout Road Safety Audit Stage 4 (During Construction) in each quarter and carryout Road Safety Audit Stage 5 (Pre-OPENING) of the Bus Rapid Transit Infrastructure phase 3 (BRT-3) project.

Stage 4 Road Safety Audit considers safety compliance of the contractors during implementation of construction works including assessment of advance warning, guidance by means of road signs and devices, speed control, clear and efficient traffic control, protection of workers and safe access for construction vehicles. The audit also monitors the implementation of recommendations raised in road safety audit stage 3 on design. This audit check drawings on probable road safety issues and all available information for the Dar es Salaam BRT system to check all geometric design and other road safety features including safety barriers provision, road side obstacles, visibility condition at intersections, cross section, drainage, shoulders, edge treatment and road side areas has been incorporated into the design. The RSA should also check if adequate attention has been given to the safety needs of all road users, especially the vulnerable ones i.e. the pedestrians, pedal cyclists, passengers waiting for transport, motorcycle riders, road-side vendors etc.

Tanzania National Road Agency (TANROADS) on behalf of the Ministry of Works would now like to procure experienced Individual Consultant/Road Safety Auditor to undertake the Road Safety Audit Stage 4 and Stage 5 for the ongoing BRT phase 3 project. The aim is to propose best practice road safety interventions for enhancing safety to all road users, especially the most vulnerable – pedestrians so that the design can be changed to eliminate or reduce risk.

#### 1.2 Project Descriptions:

The BRT Phase 3 project involves the construction of infrastructure that includes 23.3 Km of exclusive BRT lanes and non-Motorized Transport (NMT) facilities. The BRT Phase 3 project is subdivided into the following road sections:

1. Maktaba Street/Azikiwe Street (total length 0.95 km, Urban Arterial Road)

2. Bibi Titi Mohamed/Julius K. Nyerere Road (18.15 km, Urban Arterial Road)
3. Nelson Mandela Road (0.7 km, Urban Arterial Road)),
4. Uhuru Street (3.215 km, Urban Arterial Road)
5. Lindi Street (0.34 km, Feeder Road),
6. Shauri Moyo Street (0.295 km, Feeder Road),

The total length of BRT 3 roads therefore amounts to 23.65 km. Some connecting roads included in the project concern:

- Jet Road to Jet Club Feeder Station (0.2 km)
- Kitunda Road to Banana Feeder Station (0.175 km)
- Mombasa Jct. Road (0.213 km)

The Contractor, M/s Sinohydro Corporation commenced construction works in May 2023 under supervision of M/S SMEC International Ltd. in association with M/s Mhandisi Consultancy Ltd. and M/s Habconsult Ltd.

## **2. OBJECTIVE OF THE ASSIGNMENT**

The objective of this assignment is to undertake an independent Road Safety Audit Stage 4 Stage 5 for BRT phase 3 project. The aim is to ensure safety and universal accessibility for all road users and preparing for cleaner and greener BRT operations. To achieve these, the Consultant is required to check incorporation of all recommendations of Road Safety Audit stage 3 on design and monitoring safety compliance of the Contractor during construction work. In addition, the Consultant should check the preparation for future connectivity of Compressed Natural Gas (CNG) and electricity for BRT operations.

The Specific Objective of the Assignment:

- (i). Carryout Road Safety Audit Stage 4 (during construction) to check major traffic management schemes. This audit assesses traffic control measures including one-way systems, road closures, parking restriction in order to reduce the risks and number of conflicts, control of speed in construction zone, assess quality and uniformity of temporary road signs etc;
- (ii). Review the detailed scheme for management of traffic flow and other road users during construction including location and design of by-pass lanes, temporary structures, barriers, signs, and other physical features necessary to ensure proper traffic management, proper protection and signage in work zones;
- (iii). Identify potential safety concerns on the proposed schemes and recommending safety measures to eliminate or minimize potential problems;
- (iv). Check if recommendations proposed in Road Safety Audit stage 3 (on design) report have been incorporated in the design and implemented during construction;
- (v). Desk review: (a) Studying the revised design drawings on probable road safety issues and all available information for the Dar es Salaam BRT system to check all geometric design and other road safety features

including safety barriers provision, road side obstacles, visibility condition at intersections, cross section, drainage, shoulders, edge treatment and road side areas; and (b) review the legal requirements and tools in the country of study regarding road safety including the “ Tanzania Guide to Road Safety Audit 2009”; (c) review status of incorporation of 2018 RSA recommendations and suggest design modification;

- (vi). Carryout Road Safety Audit stage 5 (Pre-opening) immediately after road project completion before the road is opened to traffic which involves detailed inspection of the road and all signs, markings, guardrails and other furniture. The objective is to check for any hazardous features that was not captured at previous audit stage. At this stage also check the road way if is free of construction equipment, construction materials etc;
- (vii). Check the connectivity with other phases in a comprehensive way, through the safe interaction of the infrastructure, the operation of the new system and the compatibility of all road users. Intermodal nodes must provide connections in a secure way, in time (traffic light control for each user) and space (allocating pedestrian crossings, bike lanes and mixed lanes for the allowed maneuvers);
- (viii). Undertake a detailed site inspection of the proposed road project and review proposed route from a road safety perspective including taking photos/images of the project road to identify any hazardous road features i.e. road signs, road markings, erection of guardrails, pedestrian facilities, walkways, bridges, intersection layout, bus bays, climbing lanes, side slopes, ramps, curbs extensions, bollards spacing, facilities for people with disabilities, mix of use, cyclists, parking and facilities for PTW etc.;
- (ix). Review management of traffic flow during construction of roads including location and design of bypass lanes, temporary structures, barriers, signs, signals and other physical features necessary to ensure safe and proper traffic flow and safe passage of other road users and recommend any improvement measures;
- (x). Inspect the site during daylight conditions and during night lighting conditions. Further where it is desirable to observe the site during peak and off-peak operating conditions. It is also desirable to conduct inspections under adverse weather conditions such as fog and rain;
- (xi). Complete the checklists as agreed and use photos/images to support descriptions of deficiencies. It is desirable to capture spatial references to support location descriptions of deficiencies where appropriate. Hold Road Safety Audit Completion meeting to present the findings and recommendations;
- (xii). Prepare Road Safety Audit reports at each stage and submit the same to Client timely;
- (xiii). Complete the checklists as agreed and use photos/images to support descriptions of deficiencies. It desirable to capture spatial references to support location descriptions of deficiencies where appropriate. Hold Road SAFETY Audit Completion meeting to present the findings and recommendations;

- (xiv). Check speed control of passing vehicles and site vehicles into work zones to avoid high risk to workers, pedestrian and cyclists. In urban areas lack of provision for cyclists and pedestrians around work zones often poses a problem for these vulnerable road users; and
- (xv). Prepare Roads Safety Audit reports at each stage and submit the same of Client.

### 3. SCOPE OF THE ASSIGNMENT:

- (i). Desk review: (a) studying the design drawings on probable road safety issues; and (b) review the legal requirements and tools in the country of study regarding road safety including the Road Safety Audit Guide 2009; (c) accident history during construction; (d) gather addition information necessary for the audit that were not provided;
- (ii). Holding a commencement meeting to exchange information with: (a) TANROADS Road Safety, Design Consultant to clarify any ambiguities regarding road safety and gain a full understanding of the proposed traffic management schemes; (b) driver of buses and commercial vehicles;
- (iii). Inspecting the site in order to check undocumented problems and visualize the future proposals and their effect: (a) to validate the information received from desk reviews; (b) to identify new issues; and (c) to help formulate pragmatic mitigating measures; (e) A night-time inspection is also recommended; (f) where it is described to observe the site during peak and off-peak operating conditions; (g) If desirable conduct inspections under adverse weather conditions such as rain.
- (iv). To assess the road infrastructure and examine how different road users behave on using the roads during stage 5 audit (Pre-Opening stage), especially the vulnerable ones i.e. the pedestrians, pedal cyclists, passengers waiting for transport, motorcycle riders, road-side vendors etc;

### 4. THE TIME FRAME FOR THE ASSIGNMENT:

The timeline for the consultancy services is expected to be 12 months. The Consultant will be expected to carryout Road Safety Audit stage 4 in each quarter (from RSA stage 4 part 1 to Part 4) to assess safety compliance of the Contractor. The Consultant shall also carryout Road Safety Audit Stage 5(Pre-Opening) after completion of road project including installation of road signs, guardrails, road markings and other safety features the consultant shall commence the assignment within two (2) weeks after contract signing whereby the Audit report required to be submitted within 14 calendar days. The time of 2 weeks will be the period for the revision of the draft report after receipt of comments from client and submit the final RSA Report.

PHASE	TIME REQUIRED	ACTIVITY	OUTPUT
<b>Construction Phase</b>			
Road Safety Audit Stage 4(Part-1)	14 Days	1. RSA 2. Assess Traffic Management Plan 3.Site Visit to assess Contractors' safety	1. RSA Stage 4 (Part-1) Report

		compliance	
Road Safety Audit Stage 4(Part-2)	14 Days	1. RSA 2. Assess Traffic Management Plan 3.Site Visit assess Contractors' safety compliance	1. Road Safety Audit Stage 4 (part-2) Report
Road Safety Audit Stage 4(Part-3)	14 Days	1. RSA 2. Assess Traffic Management Plan 3.Site Visit to assess Contractors' safety compliance	1. Road Safety Audit Stage 4 (part-3) Report
Road Safety Audit Stage 4(Part-4)		1. RSA 2. Assess Traffic Management Plan 3. Site Visit to assess Contractors' safety compliance	Road Safety Audit Stage 4 (part-4) Report
<b>Project Completion</b>			
Road Safety Audit Stage 5 (Pre-Opening)	14 Days	1. RSA 2. Site visit along completed road section	1. Road Safety audit Stage 5 (Pre-Opening) Report

## 5. REPORTING

During the implementation of the assignment, the Consultant shall prepare the Road Safety Audit reports in English language and submit to TANROADS the following reports: -

### (i) Road Safety Audit Stage 4 Report (Part-1 to Part-4)

Road Safety Audit stage 4 to assess safety compliance of the Contractor during construction of road works. The audit also assesses implementation of Road safety audit stage 3 recommendations including review of the geometric design, cross section, drainage, shoulders, edge treatment and road side areas, alignment, junction, roundabout, traffic signs and markings, traffic signals, bridges, safety hazardous or shortfalls. The report shall clearly indicate the findings and recommended safety measures to be implemented by the Contractor. The RSA should also check if the adequate attention has been given to the safety needs of all road users especially the vulnerable ones i.e. the pedestrians, pedal cyclists, passengers waiting for transport, motorcyclists and road-side vendors. The draft audit report sets out clearly what the problems are makes recommendations on how they can be remedied. The recommendations on corrective action should give a clear indication of what needs to be done. It is essential that the location of the problems be clearly identified and this can usually best be done by referring to the chainages starting from start of project to the end. It is necessary to provide Clear photographic records, diagrams, sketch plans, or annotated copies of the scheme drawings. The draft audit report should be submitted within 14 days of contract signing, after which 2 weeks will be the period for the revision of the draft report

after receipt of comments from the Client. The report shall be submitted to TANROADS in Six (6) hard copies and two (2) soft copies.

The auditors shall present the Road Safety Audit findings and recommendations within two weeks after submission of the Road Safety Audit Stage 4 reports in the presence of the Client and Supervision Consultant to discuss the way forward.

## **(ii) Road Safety Audit Stage 5 (Pre-opening) Report**

The Consultant shall carryout Road Safety Audit Stage 5 (Pre-Opening) immediately after completion of road project before opened to traffic which including detailed inspection of installed road signs, guardrails, road markings and other safety features to check any hazardous features. The audit Stage 5 (Pre-Opening) report shall be submitted not later than seven (7) calendar days from the date of completion of the audit. This report shall incorporate all revisions deemed necessary arising from comments received from the Client. The report shall be submitted to TANROADS in Six (6) hard copies and two (2) soft copies for each project.

The Auditors shall present the Road Safety Audit findings and recommendations within two weeks after submission of the audit reports in the presence of the Client and Supervision Consultant to discuss the findings and the way forward.

***“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<sup>TH</sup> (ONE THOUSAND) OF THE INVOICE AND PAYABLE FOR EACH CALENDER DAY, WITH A MAXIMUM LIMIT VALUE OF 15% (FIFTEEN PERCENT) OF THE VALUE OF THE CONTRACT”.***

## **6. SPECIFIC RESPONSIBILITIES OF THE CONSULTANT**

All information, data and reports obtained from TANROADS in the execution of the 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.

The Consultant shall be responsible for arranging for all necessary office and living accommodation, transport, equipment, supplies, and secretarial services, and everything else required for the satisfactory execution of the services.

## **7. THE RESPONSIBILITY OF THE EMPLOYER**

- (a) The Employer will provide project reports and plans including (i) Facilitate access by the Consultant to site (ii) Provide Design Drawings of BRT Phase 3 and projects, Road Safety Audit stage 3 Reports, Traffic Management Plan, etc.
- (b) 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.
- (c) Obtain formal consent from outside authorities or persons having rights or powers in connection with the works or the site thereof;
  - (i) Obtain ministerial orders, sanctions, licenses and permits in connection with the works;

- (ii) Register a non-Tanzanian firm and senior staff with the Engineers Registration Board. Any associated cost will be borne by the consultant.

## **8. PROFESSIONAL QUALIFICATION AND EXPERIENCE OF THE ROAD SAFETY AUDITOR.**

### **▪ *Qualifications and skills:***

#### ***a) Education:***

- (i) The Road Safety Auditor must be a registered Professional Civil Engineer with a Bachelor degree in Civil/Highway Engineering or an equivalent qualification.
- (ii) Postgraduate qualifications in Traffic/Highway Engineering will be an added advantage.

#### ***b) Working Experience:***

- (i). He/ She must have at least 15 years of cumulative experience in design and Supervision of the implementation of road construction projects.
- (ii). He/ She must have served as Road Safety Engineer/Auditor in at least three (3) road projects of similar nature and magnitude in the last 10 years.
- (iii). He/ She must have participated in road safety related training of at least 5 days' course or publication of road safety related research papers.
- (iv). Expertise in use of road design software packages or AutoCAD is an added advantage.

#### ***c) Language and Regional experience:***

- (i) She/he must have a minimum working experience of at least three (3) years in developing countries; and
- (ii) She/he must be proficient in written and spoken English which is mandatory.

## **9. PAYMENT SCHEDULE: -**

The expert shall submit his quotation for the cost of the assignment covering remuneration and reimbursable while accompanying them with the work schedule showing his/her involvement in the assignment.

Payment will be in phases as follows: -

- i) 20% of contract amount upon submission of acceptable RSA Stage 4 (Part-1) Report;
- ii) 20% of contract amount upon submission of acceptable RSA Stage 4 (Part-2) Report;

- iii) 20% of contract amount upon submission of acceptable RSA Stage 4 (Part-3) Report;
- iv) 20% of contract amount upon submission of acceptable RSA Stage 4 (Part-4) Report; and
- v) 20% of contract amount upon submission of acceptable RSA Stage 5 Report;

## **10. INSTITUTIONAL FRAMEWORK**

The Consultant will be reporting to the Director of Infrastructure Planning or his designate.