**REPUBLIC OF ZAMBIA**

**ROAD TRANSPORT AND SAFETY AGENCY (RTSA)**

**TRANSPORT CORRIDORS FOR ECONOMIC RESILIENCE (TRACER)**

# TERMS OF REFERENCE

## TECHNICAL ADVISOR FOR THE SMART CORRIDOR PROJECT

## DAR ES SALAAM CORRIDOR

Employer: Road Transport and Safety Agency (RTSA)

Financing: World Bank

Reference: ZM-RTSA-564876-CS-QCBS

July 2026

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# 1. Introduction

The Government of Zambia is advancing the development of a SMART (Safety, Mobility, Automated, Real-time Traffic Management) Corridor along the Dar es Salaam Corridor, specifically the Lusaka–Nakonde section, in order to improve corridor efficiency, road safety, enforcement effectiveness, and trade facilitation through an integrated and interoperable corridor management approach. The initiative is expected to reduce transit times and delays at control points, improve speed and loading compliance, strengthen incident detection and response, and improve the completeness and timeliness of corridor performance data available to participating institutions.

The SMART Corridor is structured around four interrelated key pillars: (i) Corridor Monitoring; (ii) Traffic Management; (iii) Trade Facilitation; and (iv) improving Road Safety.

For the purposes of this Terms of Reference (ToR), the SMART Corridor concept shall be understood as a coordinated system of digital, physical, and operational measures that are planned and operated as one corridor ecosystem rather than as isolated projects. This includes not only platforms, sensors, and communications, but also the supporting roadside and corridor infrastructure, institutional workflows, safe stopping and control facilities, and payment and trade interfaces required for the corridor to function as an integrated operating environment.

The Project responds to the need for a coordinated, multi-agency corridor operating environment in which field systems, institutional workflows, and data platforms function as an integrated whole. The functional, technical, institutional, and implementation basis for that system is to be established by the Design Consultant. This assignment provides the Government with independent technical assurance that the basis so established is sound, feasible, and ready for procurement and implementation.

The Government of Zambia, with financing from the World Bank under the Transport Corridors for Economic Resilience (TRACER) Project[1] (Project ID: P180801), is therefore seeking to recruit a reputable international firm to undertake the role of Technical Advisor to the Government on the design and planning of the SMART Corridor.

# 2. Background to the Assignment

The SMART Corridor initiative is intended to establish an integrated, interoperable, and data-driven corridor operating environment that supports corridor monitoring, road safety, enforcement, tolling and Weigh-in-Motion (WIM) operations, border efficiency, trade facilitation, security, and inter-agency coordination. It is aligned with the TRACER programme and with broader national and regional trade-facilitation and corridor-integration objectives.

The Road Transport and Safety Agency (RTSA) shall serve as the lead implementing agency and contracting authority for this assignment, working in coordination with other public institutions including, among others, the Road Development Agency (RDA), Zambia Revenue Authority (ZRA), National Road Fund Agency (NRFA), Zambia Police Service, and border-related agencies. RTSA is a statutory body established under the Road Traffic Act No. 11 of 2002 and is responsible for implementing Government policy on road safety and transport management, and for the registration and licensing of motor vehicles and drivers in Zambia. Further information on the agency's mandate and operations can be found at https://www.rtsa.org.zm/.

[1] https://documents1.worldbank.org/curated/en/099013124091024437/pdf/BOSIB115c56da804a19bb31df94743849b1.pdf

The Technical Advisor shall support RTSA and Government by independently reviewing the Design Consultant's outputs, advising on their quality, feasibility, and readiness for procurement and implementation, and certifying the design deliverables prior to the Employer's approval.

The conceptual basis for the initiative was further informed by stakeholder consultations and by field observations along the corridor, during which key institutions and selected corridor locations, toll plazas, checkpoints, and weighbridge environments were observed. These consultations and field observations confirmed that the SMART Corridor should be conceived primarily as an ITS and digital transformation initiative, rather than as a conventional road infrastructure project, while recognising that targeted and enabling civil works may still be required to support the installation and operation of corridor technologies and associated operational facilities.

Site observations also highlighted the presence of existing roadside monitoring and enforcement infrastructure that may provide a basis for future integration; the operational proximity of toll plazas, police checkpoints, and weighbridge functions, which supports the concept of integrated corridor control "portals"; and the prevalence of single-carriageway sections, roadside activity, village environments, and pedestrian exposure, all of which reinforce the need for digitally enabled safety, enforcement, and speed-management measures. Stakeholder consultations further highlighted the strategic importance of remote visibility of corridor control points, improved transparency of weighbridge and enforcement operations, and a centralised data environment capable of supporting multi-agency monitoring and decision-making from Lusaka.

At its core, the SMART Corridor aims to establish a coherent ITS ecosystem that enables real-time monitoring and management of corridor operations. This ecosystem is expected to integrate multiple functional domains, including traffic management, enforcement, border processes, safety monitoring, and security, while respecting the institutional mandates of the different agencies involved.

Rather than creating a single, centralized operational system for all functions, the project promotes multiple functional systems, managed by different agencies according to their mandates, but fully interoperable and able to exchange data. This approach reflects both institutional realities and international best practice, and aims to:

i) avoid duplication of existing or ongoing systems (such as the ECTS under ZATP-II);
ii) leverage prior investments already made by different agencies;
iii) ensure scalability and flexibility, allowing new modules to be added over time.

The concept therefore foresees a modular architecture, in which different technological layers support distinct operational functions, while feeding into a common data environment. Four functional modules are central to the SMART Corridor concept:

i) Traffic management, tolling, and enforcement modules, including toll plazas, weigh-in-motion, speed enforcement, and police operations;
ii) Border and trade facilitation modules, aligned with One-Stop Border Post (or Non-Stop- Border Stop) operations and existing customs platforms;
iii) Road safety and vulnerable road user protection modules, particularly in village sections and high-accident locations;
iv) Corridor entry and exit monitoring, enabling visibility of vehicle movements into and out of the corridor for enforcement, safety, and trade purposes.

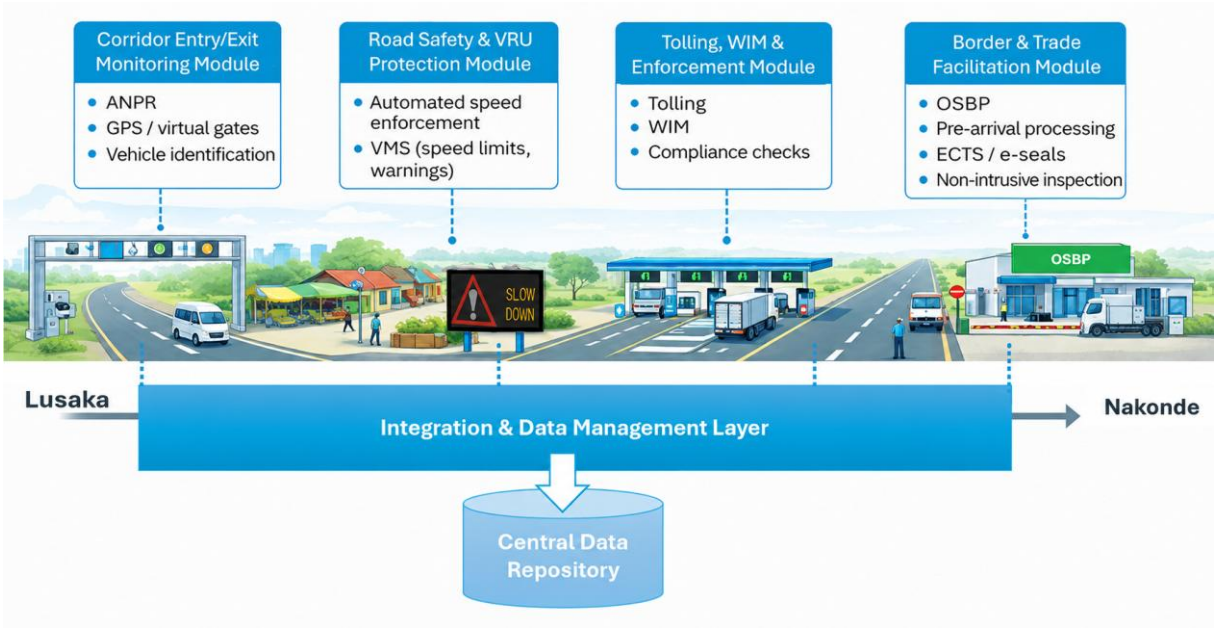


*Figure 1: Conceptual illustration of SMART Corridor functional modules along the corridor*

All four functional modules shall be supported by **a common Integration and Data Management Layer**, enabling data-sharing, coordinated decision-making, corridor-wide performance monitoring, and differentiated role-based access for participating institutions through a central data repository and operational control capability.

## 3. Objective of the Assignment

The primary objective of the Technical Advisor assignment is to act as the Government's independent technical reviewer and advisor, ensuring that the outputs of the Design Consultant:

i) fully comply with the approved Design Consultant Terms of Reference;

ii) are technically sound, realistic, and implementable;

iii) are aligned with international best practice and Zambian operational, legal, and institutional realities;

iv) support value-for-money, scalability, long-term sustainability, and procurement readiness; and

v) provide a sound basis for general technical advice on various aspects of the SMART Corridor, as may be requested by the Client.

The Technical Advisor shall not duplicate the work of the Design Consultant. Its role is explicitly independent, non-executive, and advisory in nature, with no responsibility for design production or for implementation of future works, systems, or services.

The Technical Advisor shall additionally certify the Design Consultant's design deliverables, as set out under Review, Acceptance and Performance. The Employer's approval of designs prior to implementation is conditional upon that certification.

The Design Consultant Terms of Reference are the governing statement of what the Design Consultant is required to produce and to what standard. The version current at the date of issue is provided as an attachment to the Request for Proposals for this assignment, and all references in these Terms of Reference to the Design Consultant's deliverables, scope, and design standards are references to that document.

The Technical Advisor shall have particular regard to the distinction maintained in the Design Consultant Terms of Reference between the design of the system and the scope of its funded deployment. System architecture, data model, interface definitions, data governance, and institutional arrangements are developed for the corridor as a whole. Site design, the phased implementation plan, and the cost estimate are developed against the funded implementation scope, which differs by pillar, with site design taken to concept level across that scope and to tender-ready level only for the sites comprising Phase 1. The Technical Advisor shall review each deliverable against that distinction as it is set out in the Design Consultant Terms of Reference, and shall neither treat concept-level site design across the funded scope as incomplete, nor accept concept-level site design for the Phase 1 sites as sufficient.

# 4. Scope of Work

The Technical Advisor's scope of work shall include, but not be limited to, the following components.

Annex 1 to the Design Consultant Terms of Reference, System Design Principles, is indicative. It describes the system and does not define the scope of funded deployment or the level of design detail required, and it is superseded by the procurement-ready technical specifications prepared under the Design Consultant's Deliverable 5. The Technical Advisor shall review departures from that Annex for the adequacy of the Design Consultant's reasoning and documentation, and not for conformity with it.

## 4.1 Review and Quality Assurance of Design Consultant Deliverables

The Technical Advisor shall systematically review all key deliverables produced by the Design Consultant, including:

i) Inception Report and Design Phase Work Plan;
ii) Corridor Analysis and Baseline Assessment Report;
iii) Functional, Technical and Institutional Design Report;
iv) Phased Implementation Strategy and Cost Estimate;
v) Procurement Strategy and Tender Documentation for Implementation; and
vi) Final Design Consolidation and Handover Report.

The Design Consultant is additionally required to provide, continuously and on a light-touch basis, On-the-Job Knowledge Transfer and Capacity Building Recommendations. This is not a payable deliverable of the Design Consultant and is not subject to formal review. The Technical Advisor shall nonetheless have regard to it in planning the knowledge sessions delivered under Deliverable 4 of this assignment, so that the two are complementary and not duplicative.

For each deliverable, the Technical Advisor shall:

i) assess compliance with the Design Consultant ToR;
ii) verify technical consistency, completeness, and clarity;
iii) examine the extent to which the Design Consultant assessed the feasibility of proposals within Zambian operational, legal, and institutional constraints;
iv) verify that the level of design detail presented conforms to the two-tier standard set out in the Design Consultant Terms of Reference, and that site design, phasing, and cost have been developed against the funded implementation scope applicable to each pillar;

v) identify gaps, risks, unclear assumptions, or unrealistic proposals;

vi) provide written comments, recommendations, and corrective guidance in a structured and solution-oriented manner; and

vii) review each final submission made by the Design Consultant following its response to consolidated comments, and confirm in writing whether the review comments have been adequately addressed; this confirmation review is a standing obligation at every deliverable submitted in draft and final form, and is not conditional upon a request from RTSA.

## 4.2 Technical Soundness and Best Practice Assessment

The Technical Advisor shall assess whether the proposed solutions:

i) reflect international best practice;

ii) are appropriate for the corridor context, including traffic volumes, single carriageway sections, settlements, logistics movements, and border operations;

iii) are modular, interoperable, scalable, and maintainable;

iv) avoid unnecessary technological complexity; and

v) are appropriately balanced in relation to the Project's operational objectives, digital systems, supporting infrastructure, and long-term institutional capacity.

This includes, for example, but is not limited to, review of:

i) corridor monitoring concepts;

ii) WIM, enforcement, and compliance systems;

iii) OSBP and border digitalisation approaches;

iv) data integration and central management architecture;

v) cybersecurity and data governance principles; and

vi) the robustness of equipment, communications, and supporting arrangements in the context of field operating conditions.

The review shall place particular emphasis on operational simplicity, maintainability, interoperability, and the institutional capacity required to operate the proposed systems over the long term.

## 4.3 Institutional and Governance Review

The Technical Advisor shall review and advise on:

i) clarity of institutional roles and responsibilities;

ii) alignment with the existing mandates of RTSA, RDA, ZRA, NRFA, Zambia Police, and other relevant agencies;

iii) feasibility of the proposed inter-agency coordination mechanisms;

iv) data-sharing frameworks, access rights, and accountability arrangements; and

v) operational sustainability, ownership, and governance of systems and data.

The Technical Advisor shall assess whether the proposed arrangements are realistic within the applicable legal and institutional framework and shall recommend transitional or phased governance models where required.

## 4.4 Review of Phased Implementation Strategy and Cost Estimates

The Technical Advisor shall review:

i) the proposed phased implementation strategy, including geographical lots or packages;

ii) the prioritisation logic for corridor segments and functional modules;

iii) cost estimates and their underlying assumptions;

iv) consistency between functional scope, architecture, phasing, and costs; and

v) whether the phasing has been tested for deliverability against the time available and not against funding alone, and whether the implementation programme demonstrates, for each phase and lot, the procurement lead time, contract duration, installation sequence, and commissioning period against the Project closing date of 27 February 2030;

vi) whether the cost estimate and the phased implementation plan have been developed against the funded implementation scope applicable to each pillar, and against the corridor length basis stated in the Design Consultant Terms of Reference;

vii) the delivery model stated and justified by the Design Consultant for the detailed design of each phase beyond Phase 1, whether the cost of that design work has genuinely been included wherever it is to sit, and whether the implementation programme reflects any procurement required to secure it;

viii) risks related to sequencing, budget, procurement packaging, and institutional readiness.

In addition, the Technical Advisor shall review the extent to which cross-cutting considerations, including environmental sustainability, social impacts, road safety, vulnerable road users, climate resilience, energy reliability, resistance to vandalism, and maintenance practicality, have been appropriately reflected in the design, in line with the Design Consultant's Terms of Reference and applicable National and World Bank requirements.

## 4.5 Review of Procurement Strategy and Implementation Bidding Documents

A critical task of the Technical Advisor shall be to review the procurement-ready Bidding Documents for corridor implementation, ensuring that they:

i) are clear, coherent, and unambiguous;

ii) correctly translate the design into implementable requirements;

iii) cover the entire funded implementation scope and not Phase 1 alone, and follow, in their structure and packaging, from the design delivery model determined under the Design Consultant's Deliverable 4;

iv) avoid over-specification or vendor bias;

v) support competitive and transparent procurement;

vi) clearly define implementation responsibilities, deliverables, milestones, and acceptance expectations; and

vii) are compliant with World Bank procurement rules and procedures.

The Technical Advisor shall advise on improvements required to strengthen procurement robustness and reduce implementation risks.

### 4.6 Advisory Support to RTSA and Stakeholders

Throughout the assignment, the Technical Advisor shall:

i) provide on-demand technical advice to RTSA on matters relating to the SMART Corridor design and planning process;

ii) attend the technical validation session convened by the Design Consultant with the Employer and the participating institutions at each major deliverable, and for the procurement-ready tender package for Phase 1 at the end of Month 9; attendance at these sessions is mandatory and is not conditional upon a request from RTSA;

iii) participate in other coordination and technical meetings with the Design Consultant and stakeholders where required;

iv) support clarification of technical issues raised by stakeholders and development partners;

v) attend key discussions where the Client requires independent technical advice; and

vi) prepare and deliver not less than ten (10) short technical sessions for RTSA and Government stakeholders to help bridge knowledge gaps on SMART Corridor concepts, examples, and design implications. The sessions shall be linked to the Design Consultant's deliverables, with at least one session accompanying each of Deliverables 2 to 6, one accompanying the procurement-ready tender package for Phase 1 at the end of Month 9, and one introductory session on the SMART Corridor concept and examples of application delivered during the inception period.

Such advisory support shall be provided without compromising the independence of the Technical Advisor's review function.

Where the Technical Advisor has given advice to RTSA on a particular matter under this workstream, that advice shall be recorded and shall be disclosed in the Technical Advisor's review of the deliverable covering that matter, so that the Employer is able to identify where a review conclusion touches advice the Technical Advisor has itself previously given.

## 5. Deliverables and Timeline

The Technical Advisor assignment shall be aligned with the Design Consultant's deliverable schedule and review cycles, with variable intensity depending on submission windows, comment resolution cycles, and stakeholder coordination needs. The duration of the assignment and the duty station are set out under Assignment Duration and Duty Station below. All references to months in these Terms of Reference are references to months of the Design Consultant's assignment, counted from its mobilisation.

The Technical Advisor shall prepare and submit the following deliverables:

*Table 1: Schedule of Deliverables*

| Period | Deliverable / Workstream | Scope | Milestone / Notes |
|---|---|---|---|
| Month 1 | Deliverable 1 (D1): Inception Report and Work Plan | This report shall confirm the Technical Advisor's understanding of the assignment and present the proposed review methodology, quality assurance approach, coordination arrangements with | Final at end of Month 1 |

| Period | Deliverable / Workstream | Scope | Milestone / Notes |
|---|---|---|---|
| | | RTSA and the Design Consultant, schedule of review activities aligned with the Design Consultant's deliverables, meeting participation approach, and reporting arrangements. | |
| Months 2-13 | Deliverable 2 (D2): Consolidated Technical Review Report(s) | This output shall consist of structured and consolidated technical review reports on each major submission provided by the Design Consultant. The reports shall identify key technical, functional, organisational, financial, procurement, and implementation-related risks and deficiencies and shall provide clear and actionable recommendations to address them. Review reports shall be issued against each review event named in Table 2, and shall include the confirmation review of each final submission required under Review and Quality Assurance of Design Consultant Deliverables. | Review reports issued against each review event named in Table 2, each report being a discrete submission subject to the Employer's acceptance, including a dedicated review of the procurement-ready tender package for Phase 1 at the end of Month 9; consolidated final issue at the end of Month 13 |
| Months 13-14 | Deliverable 3 (D3): Final Technical Advisory and Readiness Report | This deliverable shall provide a consolidated technical advisory report synthesising the findings of all reviews conducted during the assignment. It shall assess the overall robustness, feasibility, and readiness of the SMART Corridor design outputs for procurement and implementation, including the readiness of the Bidding Documents, the adequacy of the delivery model determined for the detailed design of phases beyond Phase 1, and recommended next steps for RTSA. It shall be prepared following the Employer's acceptance of the Design Consultant's final deliverable. | Final at the end of Month 14 |
| Mobilisation to Month 14 | Deliverable 4 (D4): On-Demand Technical Advice and Knowledge Sessions | This workstream shall cover the provision of ad hoc technical advice requested by RTSA, mandatory attendance at the technical validation sessions convened at each major deliverable and for the Phase 1 tender package at Month 9, attendance at other key technical and stakeholder meetings, and delivery of not less than ten (10) short technical sessions for RTSA and Government stakeholders, linked to the Design | Continuous throughout the assignment; completion note included with Deliverable 3 at the end of Month 14 |

| Period | Deliverable / Workstream | Scope | Milestone / Notes |
|---|---|---|---|
| | | Consultant's deliverables as set out under Advisory Support to RTSA and Stakeholders. | |

## 5.1 Working Mode and Response Times

For each Design Consultant submission, the Technical Advisor shall provide written feedback in a structured comment matrix format within ten (10) to fifteen (15) working days, or as otherwise agreed during inception. For the procurement-ready tender package for Phase 1 at the end of Month 9, written feedback shall be provided within ten (10) working days. The period applicable to the Phase 1 package is a firm obligation and is not subject to variation during inception. The Technical Advisor is advised that the Employer's acceptance of that package is a condition of payment to the Design Consultant, and that late delivery of the Technical Advisor's review would expose the Employer to claims from the Design Consultant.

After each formal review, RTSA shall communicate the Technical Advisor's comments to the Design Consultant. Where the Design Consultant submits a final version of a deliverable following consolidated comments, the Technical Advisor shall undertake a confirmation review to establish whether the comments have been adequately resolved, and shall record its conclusion in writing before the next stage proceeds.

## 5.2 Indicative Schedule Aligned to Design Consultant Deliverables

*Table 2: Indicative Schedule*

| Design phase / timing (indicative) | Design Consultant deliverables to be reviewed | TA inputs (scope of review and support) |
|---|---|---|
| Month 1 | Deliverable 1 (D1): Inception Report and Design Phase Work Plan. Single stage; final at the end of Month 1. | Confirm review methodology, quality assurance approach, coordination protocol, and acceptance criteria. Review the assumptions stated in the Design Consultant's proposal as to assumed site count, expected Phase 1 scope, and expected delivery model for phases beyond Phase 1, and advise the Employer where any of them would materially affect the design or its cost. No certification required. |
| Months 2-3 | Deliverable 2 (D2): Corridor Analysis and Baseline Assessment Report. Draft at the end of Month 2; final at the end of Month 3. | Review the draft. Validate baseline data, assumptions, corridor constraints, operating conditions, and the adequacy of diagnostic conclusions. Confirmation review of the final submission. No certification required. |
| Months 4-6 | Deliverable 3 (D3): Functional, Technical and Institutional Design Report. Draft at the end of Month 5; final at the end of Month 6. | Review the draft. Assess completeness of functional scope, architecture, interoperability, operational practicality, institutional feasibility, and avoidance of vendor bias. Verify that the level of design detail conforms to the two-tier standard in the Design Consultant Terms of Reference, and that site design has been developed against |

| Design phase / timing (indicative) | Design Consultant deliverables to be reviewed | TA inputs (scope of review and support) |
|---|---|---|
| | | the funded implementation scope applicable to each pillar. Review the confirmation of Phase 1 scope. Confirmation review of the final submission, followed by certification. |
| Months 7-9 | Deliverable 4 (D4): Phased Implementation Strategy and Cost Estimate. Draft at the end of Month 8; final at the end of Month 9. | Review the draft. Test phasing logic and prioritisation; review cost assumptions, packaging logic, sequencing, and consistency between scope, architecture, and budget. Verify that the strategy has been tested for deliverability against the Project closing date of 27 February 2030 and not against funding alone. Assess the delivery model stated and justified for the detailed design of phases beyond Phase 1, whether its cost has been included wherever it is to sit, and whether the implementation programme reflects the procurement it implies. Confirmation review of the final submission, followed by certification. |
| Month 9 | Procurement-ready tender package for Phase 1, prepared under the Design Consultant's Deliverable 5. | Review as a discrete submission and as a named review event for the purposes of the Technical Advisor's Deliverable 2. Confirm that the package correctly translates the Phase 1 scope confirmed under the Design Consultant's Deliverable 3 into implementable and compliant requirements, is procurement-ready, and is free of over-specification or vendor bias. Written feedback within ten (10) working days, which is a firm obligation. Certification required. |
| Months 6-12 | Deliverable 5 (D5): Procurement Strategy and Tender Documentation for Implementation. Progressive drafting from Month 6; draft package at the end of Month 11; final at the end of Month 12. | Review clarity, completeness, procurement robustness, and whether the documents correctly translate design intent into implementable and compliant requirements. Verify that the documentation covers the entire funded implementation scope and not Phase 1 alone, and that its structure follows from the delivery model determined under the Design Consultant's Deliverable 4. Confirmation review of the final submission, followed by certification. |
| Months 10-12 | Deliverable 6 (D6): Final Design Consolidation and Handover Report. Draft at the end of Month 11; final at the end of Month 12. | Review the draft. Verify internal consistency across all outputs and confirm the extent to which previous comments have been addressed. Confirmation review of the final submission, followed by certification. |
| Months 1-12 | On-the-Job Knowledge Transfer and Capacity Building Recommendations. Continuous; not a payable deliverable of the Design Consultant. | Not subject to formal review. Have regard to the Design Consultant's knowledge transfer activity when planning the Technical Advisor's own knowledge sessions, so that the two are complementary and not duplicative. |

| Design phase / timing (indicative) | Design Consultant deliverables to be reviewed | TA inputs (scope of review and support) |
|---|---|---|
| Mobilisation to Month 14 | On-demand technical advice, validation sessions, and knowledge sessions. | Attend the technical validation session convened at each major deliverable and for the Phase 1 tender package at Month 9; provide requested advice to RTSA; attend other key meetings; and deliver the knowledge sessions. |
| Months 13-14 | No Design Consultant deliverable falls in this period. | Issue the consolidated final of Deliverable 2 at the end of Month 13. Prepare and issue the Final Technical Advisory and Readiness Report at the end of Month 14, following the Employer's acceptance of the Design Consultant's final deliverable. |

# 6. Reporting and Coordination

The Technical Advisor shall report to the Employer, namely the Road Transport and Safety Agency (RTSA), and to any other client representative or project management structure as the Employer may formally designate.

The Technical Advisor's dealings with the Design Consultant shall be conducted through the Employer. The Technical Advisor shall not agree, waive, or settle review comments directly with the Design Consultant, so that the Employer retains a complete record of the review and of how each comment was resolved.

The Technical Advisor shall provide short monthly progress updates summarising reviews conducted, key risks identified, outstanding issues, key meetings attended, and any urgent matters requiring the Employer's attention.

Where a Steering Committee, Technical Working Group, or equivalent coordination body is established, the Technical Advisor shall attend its meetings and present its findings where the Employer so requires.

# 7. Assignment Duration and Duty Station

The assignment shall commence not later than one (1) month before mobilisation of the Design Consultant, shall cover the full duration of the Design Consultant's design phase, and shall extend two (2) months beyond it. It shall run until two (2) months after the Employer's acceptance of the Design Consultant's final deliverable. On the Design Consultant's indicative twelve (12) month design phase, the resulting duration of this assignment is fifteen (15) months. Month references in these Terms of Reference are months of the Design Consultant's assignment counted from its mobilisation, and the Technical Advisor's mobilisation month precedes Month 1.

The two additional months are provided so that the Final Technical Advisory and Readiness Report can be prepared after, and not concurrently with, the Design Consultant's final tender documentation and final design consolidation.

Where the Design Consultant's assignment is extended, the Technical Advisor's assignment shall be extended correspondingly, in accordance with the contract.

The primary duty station shall be Lusaka, with field missions along the Dar es Salaam Corridor (Lusaka-Nakonde section) and to relevant stakeholder locations as required. Not less than 70% of the total input of the Experts listed in these Terms of Reference shall be delivered in Zambia. This requirement may be met by experts based internationally, regionally, or in Zambia. The Consultant shall state in its proposal the assumed distribution of input between internationally based experts and nationally or regionally based experts, and shall show in-country presence by position and by month in its staffing schedule.

The workload under this assignment is not evenly distributed across the assignment period. A substantial proportion falls in the months in which the Design Consultant's major deliverables and the Phase 1 tender package are submitted. The in-country requirement is accordingly expressed against total expert input rather than against calendar time.

## 8. Client Responsibilities and Data

The Employer shall provide the Technical Advisor with the Design Consultant's draft and final deliverables in parallel with their submission to the Employer, together with the Design Consultant Terms of Reference and such parts of the Design Consultant's contract as are necessary for the Technical Advisor to perform its obligations.

The Employer shall facilitate access to relevant RTSA data, records, and staff, and shall facilitate introductions to the other participating institutions, including the Road Development Agency, the Zambia Revenue Authority, the National Road Fund Agency, the Zambia Police Service, and border-related agencies. The Employer shall not be responsible for the provision of data held by those institutions.

The Employer shall convene the meetings at which the Technical Advisor is required to attend and shall give reasonable notice of them.

The Technical Advisor shall provide its own office accommodation, transport, equipment, communications, and software for the duration of the assignment. No office space, vehicle, equipment, or other facility shall be provided by the Employer, and no such cost shall be reimbursable.

## 9. Review, Acceptance and Performance

Each review report issued under Deliverable 2 shall be a discrete submission and shall be subject to the Employer's acceptance. Acceptance shall be determined against the review events named in Table 2.

The Technical Advisor shall certify, in respect of the Design Consultant's Deliverables 3, 4, 5, and 6 and in respect of the procurement-ready tender package for Phase 1, whether the deliverable is technically sound, complete against the Design Consultant Terms of Reference, and fit for the purpose for which it is to be used. Certification shall be given in writing, shall be signed by the Team Leader, and shall state the basis on which it is given together with any qualification to which it is subject. Certification shall be issued within the response times set out under Working Mode and Response Times. The Employer's approval of designs prior to implementation is conditional upon that certification.

Where the Technical Advisor is not able to certify a deliverable, it shall state the reasons and shall identify what is required in order to enable certification to be given.

The Technical Advisor's own deliverables shall be accepted by the Employer where they are complete, internally consistent, responsive to the scope set out in these Terms of Reference, and delivered within the applicable response times. The Employer may request reasonable clarifications and revisions necessary to achieve an acceptable submission.

The Technical Advisor's performance shall be assessed against the timeliness of its reviews and certifications, the quality, specificity, and usability of its comments, its responsiveness to the Employer's requests, the consistency of its positions across successive reviews, and the extent to which its conclusions withstand scrutiny at subsequent stages of the Project.

# 10. Required Expertise

The Technical Advisor shall mobilise a compact but sufficiently multidisciplinary team with proven experience in independent review and quality assurance of complex multi-agency corridor, transport technology, enforcement, and trade facilitation programmes. The expertise should, to the extent practical, mirror the competencies mobilised by the Design Consultant, but with a leaner structure appropriate to a review-and-advisory assignment.

In addition to core technical review capacity, the team shall be able to support short technical knowledge sessions for RTSA and Government stakeholders. The Consultant may propose additional supporting experts or sub-consultants where justified by its proposed methodology, provided that clear responsibility and coordination arrangements are demonstrated.

## 10.1 Key Experts

The roles set out below represent the minimum core competencies required. All of them are designated Key. Each shall be proposed by name and supported by an individual curriculum vitae. There is no Non-Key category under this assignment. On a review and advisory assignment the individual reviewer is the substance of what is procured, and each named expert is accordingly subject to the substitution provisions applicable to Key Experts.

The person-months stated are minimum requirements. The Consultant shall propose the level of effort its methodology requires and shall justify any position proposed above the stated minimum. All Experts shall be proficient in written and spoken English, which is the working language of the assignment. Evaluation arrangements shall be as set out in the Request for Proposals.

The Consultant shall state in its proposal the number of review events it has assumed for the purposes of this assignment, together with the basis for that assumption, and shall describe the comment matrix format and review workflow it proposes to use. The Consultant shall not treat the assumed figure as a limit on the work required.

The Team Leader shall be responsible for the judgement required under these Terms of Reference as to whether the level of design detail presented by the Design Consultant conforms to the two-tier standard, including in respect of roadside and corridor civil works, and shall sign each certification issued under Review, Acceptance and Performance.

*Table 3: Key Experts*

| # | Position | Qualification Requirements | Minimum Person-Months |
|---|---|---|---|
| 1 | Team Leader / Senior Corridor Management and Systems Expert | Master's degree in engineering, transport, ICT, or a related field; at least 15 years of relevant professional experience in transport systems, corridor management, intelligent transport systems, or similar multi-agency infrastructure/digital programmes; demonstrated experience leading design review or technical advisory assignments. | 7 |
| 2 | Traffic Engineering / Mobility Modelling Expert | Master's degree in engineering or a related field; at least 10 years of relevant professional experience in traffic engineering, corridor analysis, modelling, and mobility planning. | 2 |
| 3 | Systems Architecture / Interoperability and Data Integration Expert | Master's degree in software engineering, ICT, or a related field; at least 10 years of relevant professional experience in systems architecture, interoperability, data platforms, or large-scale transport technology systems. | 3 |
| 4 | Enforcement, Compliance and WIM Systems Expert | Master's degree in engineering, ICT, transport, or a related technical discipline; at least 10 years of relevant professional experience in enforcement, compliance systems, weighbridge/WIM concepts, or back-office control systems. | 3 |
| 5 | Border Operations / Trade Facilitation Digitalisation Expert | Master's degree in transport, logistics, engineering, economics, public administration, or a related field; at least 10 years of relevant professional experience in border operations, trade facilitation, or digital corridor processes. | 2 |
| 6 | Institutional Capacity Building and Stakeholder Training Expert | University degree in a relevant field; at least 8 years of relevant professional experience in institutional strengthening, training delivery, stakeholder facilitation, or change management in public-sector or infrastructure programmes. | 2 |

## 10.2 Consulting Firm Qualification Requirements

The Consultant shall be a reputable firm, or a joint venture of firms, meeting the following minimum requirements:

i) The firm shall have a minimum of 10 years of proven experience in the planning, design, implementation, or independent technical review of intelligent transport systems, corridor modernisation, or comparable multi-agency technology programmes.

ii) The firm shall have completed, within the last 7 years, at least 3 assignments of a similar nature and comparable complexity. Assignments of an independent technical review, design oversight, owner's engineer, or technical advisory nature shall qualify equally with design assignments for this purpose.

iii) Experience in Sub-Saharan Africa is not mandatory but is an advantage.

iv) Where the Consultant is a joint venture, these requirements shall be met by the joint venture taken as a whole, and the lead member shall itself meet the minimum of 10 years of experience and demonstrate at least 2 of the 3 required assignments.

v) The firm may sub-consult specialised areas of expertise, provided that the arrangement is disclosed in the proposal.

vi) A firm, joint venture member, or sub-consultant participating in the selection of the Design Consultant for the SMART Corridor Project shall not participate in the selection of the Technical Advisor, whether as a firm, as a joint venture member, or as a sub-consultant, and the reverse shall apply equally. This restriction is necessary in order to preserve the independence of the review function established by these Terms of Reference.

In addition, the Consultant shall demonstrate, through project references and Key Expert curricula vitae, relevant experience that matches the design oversight nature of this assignment, including, but not limited to:

i) design and/or independent review of smart corridor, transport technology, or intelligent motorway projects in multi-agency environments;

ii) system architecture and interoperability experience, including multi-vendor integration design or review, APIs/ICDs, and data platforms;

iii) enforcement and compliance systems design or review experience, including ANPR, speed enforcement, and WIM/weighbridge concepts where applicable;

iv) OSBP, border process digitalisation, and trade facilitation design or review experience;

v) experience integrating environmental, social, road safety, cybersecurity, resilience, and energy reliability considerations into design review conclusions; and

vi) experience producing structured review deliverables suitable for public-sector and IFI-financed environments.

For JV submissions, references shall clearly indicate the contribution of each JV partner and how the combined references satisfy the above requirements.

## 11. Payment Schedule

Payments shall be tied to the satisfactory completion and formal acceptance of deliverables by the Employer.

Disbursements shall be made on a lump-sum basis per deliverable, in accordance with the agreed share of the total contract value allocated to each task, as presented in Table 4.

The share allocated to Deliverable 2 shall be paid in stages. It shall be apportioned across the review events named in Table 2 on a basis agreed with the Employer at contract negotiation and recorded in the contract, and the portion attributable to each event shall become payable upon the Employer's acceptance of the review report for that event. The review of the procurement-ready tender package for Phase 1 at the end of Month 9 is a named review event for this purpose, and the portion attributable to it shall not be less than one tenth of the share allocated to Deliverable 2. The consolidated final issue of Deliverable 2 at the end of Month 13 shall carry the balance.

Payment in respect of a review event shall not become due until any certification required at that event under Review, Acceptance and Performance has been issued.

*Table 4: Payment Schedule*

| Deliverable | Share of Total |
|---|---|
| D1 - Inception Report and Work Plan | 10% |
| D2 - Consolidated Technical Review Report(s) | 40% |
| D3 - Final Technical Advisory and Readiness Report | 35% |
| D4 - On-Demand Technical Advice and Knowledge Sessions | 15% |
| Total | 100% |