



ROAD DEVELOPMENT AGENCY REQUEST FOR EXPRESSION OF INTEREST

Date: September 12, 2025

The Road Development Agency hereby invites expressions of interest (EOIs) from eligible and qualified consulting *firms* to undertake the services summarized below and described in the attached *Terms of Reference (TOR)*:

The Deadline for Submission¹ of any EOIs is on or before: 31st October, 2025 at 10:30 Hours, Zambia Local Time at the submission address below. EOIs submission to be submitted through a hard copy of documents, regardless of whether the firm is local or non-local. **ONLY** hard copy submissions will be accepted.

Further details on submissions can be obtained from <https://www.rda.org.zm/> or the address below.

Submission Address:	Road Development Agency (RDA) Head Office
Attention:	The Chief Procurement Manager
Street Address:	Plot No.33, Corner of Government and Fairley Roads, Ridgeway, Lusaka / Zambia
Mail Address:	P.O. Box 50003, Lusaka / Zambia

Nature of Engagement: Consulting Services

Consultant Type: Firm	<input checked="" type="checkbox"/>	Individual	<input type="checkbox"/>
Eligibility of Consultant:	<input checked="" type="checkbox"/> International	<input type="checkbox"/> Regional	<input type="checkbox"/> National
Engagement Period:	<input type="checkbox"/> under 3 months	<input type="checkbox"/> >3months but <12 months	<input checked="" type="checkbox"/> > 12 months
Language for EOI Submission:	<input checked="" type="checkbox"/> English	<input type="checkbox"/> Arabic	<input type="checkbox"/> French
	<input type="checkbox"/> Other [specify as applicable]		

Assignment Profile: Transport Sector:

Project Name: CONSTRUCTION OF THE “KALABO – SIKONGO – ANGOLA BORDER”
ROAD PROJECT: SECTION “KALABO – SIKONGO”

Assignment Name: Consultancy services for design review and update of tender documents and preparation of environmental and social impact assessment for the Kalabo–Sikongo–Angola Border Road, Preparation of detailed design and environmental and social impact assessment for the Tapo-Kalabo road, Preparation of detailed designs for border post, health post, and truck parking, Supervision of the construction of the Kalabo to Sikongo road in the Western Province of Zambia.

Notice Number:

Issuer Name: Road Development Agency

Background

The Government of the Republic of Zambia (GRZ) has received financing for a loan towards the cost of the Project for the Construction of the Kalabo–Sikongo–Angola Border Road Project, Kalabo–Sikongo Section. It is intended that part of the proceeds of this Loan shall be applied to cover payments due under this Contract. The financing is from the Arab Bank for Economic Development in Africa (BADEA). The funds are intended to be applied under the contracts for works (Kalabo–Sikongo Section), and design review and construction supervision services for the Project. The Project will be implemented through the Road Development Agency as an ‘implementing agency’.

Scope of Works

It is envisaged that the scope of works would predominantly be full construction and upgrading to bituminous standard, including construction of a 75-meter-long bridge, culverts, and rainwater drainage facilities. The Consultant is required to undertake a design review and update of the tender documents for approximately 89km of the Kalabo – Sikongo - road and a 75m long Bridge. Further, the Consultant is required to undertake the detailed design and tender document preparation for the rehabilitation of the Tapo-Kalabo road and upgrading to bituminous standard of the Sikongo to Angola Border including the Border Post infrastructure and a weighbridge in Sikongo.

The full scope of the assignment as follows:

1. Tapo Kalabo section: preparation of detailed design.
2. Kalabo - Sikongo – Angola Border sections:
 - Preparation of environmental and social impact study.
 - Detailed design review.
 - Preparation of tender documents.
 - Preparation of detailed designs for the border post, health post, and truck parking,
 - Supervision of work implementation for Kalabo – Sikongo section.

Specific Expected Deliverables or Outputs

Design Review (Kalabo Sikongo Angola Border)

The Employer shall provide the Consultant with a standardized report structure for each of the following reports. All reports shall be in English and prepared on metric size paper

- Inception Report;
- Draft Design Review Report including Tender Documents, revised Bill of Quantities and revised drawings; and
- Final Design Review Report including Tender Documents, revised Bill of Quantities and revised drawings.

Detailed Design (Border Post infrastructure, Health Post and Truck Park)

- Preliminary design report;
- Environmental and Social Impact Assessment report;
- Resettlement Action Plan;
- Draft Design Report; and
- Final Design Report including Bidding Documents.
- Assist the implementation agency in issuing the tender evaluation offers and awarding of offers.

Eligibility Criteria:

The eligibility of the Consultant is restricted to Arab, African, or Arab African joint ventures

Shortlisting Criteria

A qualitative method of scoring will be used to evaluate the firms. A “Pass” scores will be given when the firm was responsive to the criteria, while a “Fail” score will be given when a firm was not responsive to the criteria.

No.	EVALUATION CRITERIA	Score
1	Eligibility	Pass/fail
2	Experience in similar assignments - successful preparation of similar contracts (by size and complexity) in the last ten years	Pass/fail
3	Experience in similar conditions	Pass/fail
4	Technical and managerial capability of the firm	Pass/fail

Experience of firms in assignments of similar nature shall be used to shortlist a limited number of firms.

Request for Clarifications

Road Development Agency

Responsible Officer: Mwenya Chilufya

Contact Information:

Street Address: The Road Development Agency, Plot No.33, Corner of Government and Fairley Roads, Ridgeway, Lusaka / Zambia

Mail Address: P.O. Box 50003, Lusaka / Zambia

Telephone number: +260-211-253088 / 253002

Facsimile number: +260-211-253408 / 251420

Electronic mail address: rda_hq@roads.gov.zm copy
mchilufya@roads.gov.zm

All responses to clarification will placed and must be obtained from <https://www.rda.org.zm/>

Closing date for clarifications is seven (7) days before closing deadline

Source of Financing: Arab Bank for Economic Development in Africa (BADEA)

Selection Profile

The Road Development Agency invites eligible consultants to indicate their interest in providing these services. Interested consultants must provide information indicating that they are qualified to perform the services. The interested consultant should demonstrate (i) Experience in successfully carrying out road projects (feasibility studies, detailed design, supervision or contract management, economic analysis of transport related projects); (ii) Experience in similar conditions to the project area; and (iii) Should show availability of appropriate skills among key staff to undertake the services. Consultants may constitute joint-ventures to enhance their chances of qualification.

Firm: *[provide firm]*

Applicable Method: QBS QCBS⁹ FBS LCS
 CQS SSS Other: *[specify]*

An EOI for this Assignment must be submitted in the format attached.

Attachments:

- a. Format for EOI
- b. Format for Terms of Reference
- c. Format for Details on Cost Estimates.

Appendix A—Expression of Interest

Consulting Firms: Non CQS Selection Methods

Basic Information

Request for Expressions of Interest Issuer	
Project Number	
Project Name	
Project Country	

Consulting Firm Information

	Country of Incorporation:
Consultant Name:	Acronym:

Associations (Joint Venture or Sub-consultancy)

	Consultant	Acronym	Country	Joint Venture	EOI Submission Authorized By	Position

Present the rationale for and benefits of working in association with others rather than undertaking the assignment independently (as appropriate).

Describe the proposed management and coordination approach of the association and the role of each firm.

[Specify rationale]

Consultant Confirmation

We confirm that:

- Documentation regarding our corporate structure including beneficial ownership has been attached in our earlier CGR.
- Documentation regarding our Board of Directors has been attached in our earlier CGR.
- A written agreement to associate for the purpose of this EOI has been signed between the consortium partners.¹⁴

Note: The REOI Issuer reserves the right to reject the proposal of an association if member(s) of the association is/are changed/dropped without valid reason after the association has been shortlisted. However, should valid reasons exist (e.g., associate partner was sanctioned by the Fund Member or other members of the CG or other Multilateral Development Banks (MDBs), associate partner went out of business, etc.), satisfactory evidence in support of such reasons should be sent to the REOI Issuer for consideration.

Qualifications and Experience

Assignment Specific Qualifications and Experience

Note: The Consultant should demonstrate technical competence and geographical experience based on project references in this EOI that, if needed, can supplement the project reference information earlier provided in the Consultant's CGR.

The Consultant is encouraged to update Project Information provided in the Consultant's CGR.

[Provide specifics here]

Technical Competence

Highlight the technical qualifications of the Consultant's entity/consortium in undertaking similar assignments.

Provide details of past experience working with similar project authorities.

[Provide specifics here]

¹⁴ A copy of the written agreement is required to be attached to the EOI, listed under *Attachments* in *Eligibility Declaration* on pages 9 and 10 below.

Geographical Experience

Provide details of experience in similar geographic areas.

[Provide specifics here]

Management Competence

- a. Describe standard policies, procedures and practices that the Consultant entity has to assure quality interaction with clients and outputs. Please state if the Consultant entity is International Organization for Standardization (ISO) certified.
- b. How will the Consultant firm/consortium handle complaints that concern the performance of experts or quality of the reports submitted for this assignment? What internal controls are in place to address and resolve complaints?
- c. How will the Consultant ensure the quality of the firm's/consortium's performance over the duration life of this assignment?
- d. Describe standard policies, procedures and practices that the Consultant firm has put in place to avoid changes/replacements of personnel and to ensure the continuity of professional services once the contract is signed.
- e. Describe what social protection practices the Consultant firm has in place to safeguard the well-being of all proposed experts? Specifically describe arrangements the Consultant firm has in place for medical, accident and life insurance coverage during the assignment.

Other Information (maximum of 500 words)

[Provide specifics here]

Project References

Please select most relevant projects from your CGR Profile or otherwise to demonstrate the firm's technical qualifications and geographical experience.

Period	Client	Project	Country	Firm

Comments on Terms of Reference (TOR)

Comments on Budget Adequacy

Additional Questions

Title	Type	Description	Category	Last Updated By	Last Updated

Key Considerations in approaching this assignment
[no more than two-to-three (2-3) paragraphs]

Expressions of Interest Attachments

Eligibility Declaration

We, the undersigned, certify to the best of our knowledge and belief:

- We have read the advertisement, including the terms of reference (TOR), for this assignment.
- Neither the consulting firm nor its associate or any of its experts prepared the TOR for this activity.
- We confirm that the project references submitted as part of this EOI accurately reflect the experience of the specified firm/consortium.
- We further confirm that, if any of our experts is engaged to prepare the TOR for any ensuing assignment resulting from our work product under this assignment, our firm and the expert(s) will be disqualified from short-listing and participation in the assignment.
- All consulting entities and experts proposed in this EOI are eligible to participate in the Fund Member-funded, -supported, and –administered activities.
- The lead entity and associates are not currently sanctioned by the Fund Member or any other CG Member. Neither the consulting firm nor any associate has ever been convicted of an integrity-related offense or crime related to theft, corruption, fraud, collusion or coercion.
- We understand that it is our obligation to notify the REOI Issuer should any member of the consortium become ineligible to work with the Fund Member or any CG Member or be convicted of an integrity-related offense or crime as described above.
- All proposed associate(s) are registered under CGR, and contact information contained in CGR is current.

- Associate(s), including all proposed consultants named in this EOI, have confirmed their interest in this activity in writing.
- Associate(s), including all proposed consultants named in this EOI, have confirmed their eligibility to participate in this activity in writing.
- Associate(s), including all proposed consultants named in this EOI, have authorized us in writing to represent them in expressing interest in this activity.
- None of the proposed consortium are subsidiaries of, and/or dependent on the Executing—or the Implementing—Agency of the Project, or individuals related to them.
- We understand that any misrepresentations that knowingly—or recklessly—mislead, (or attempt to mislead), may lead to the automatic rejection of the proposal, or cancellation of the contract if awarded, and may result in further remedial action, in accordance with the applicable CG *Anticorruption Procedures Including Guidelines on Procurement Integrity* (hereinafter referred to as the “*Anticorruption Procedures*”), as well as *Guidance Note A—Framework for a Sanctions Regime* and *Guidance Note B— Sanctioning Guidelines* (hereinafter referred to as the “*Sanctions Guidelines*”) of the Fund Member and, as relevant, each CG Member.

[Signature of Authorized Representative]

[Full Name of Authorized Representative]

Consulting Firm

[And, as applicable, any JV of Associate firms/consortium]

Appendix B—Expression of Interest for Consulting Firms

Consultants’ Qualification Selection Method

Basic Information

Request for Expressions of Interest Issuer	
Project Number	
Project Name	
Project Country	

Consulting Firm Information

	Country of Incorporation:
Consultant Name:	Acronym:

Associations (Joint Venture or Sub-consultancy)

	Consultant	Acronym	Country	Joint Venture	EOI Submission Authorized By	Position

Present the rationale for and benefits of working in association with others rather than undertaking the assignment independently (as appropriate). Describe the proposed management and coordination approach of the association and the role of each firm.

[Provide specific rationale here]

Consultant Confirmation:

We confirm that:

- Documentation regarding our corporate structure including beneficial ownership is attached.
- Documentation regarding our Board of Directors was attached in our earlier CGR.

- A written agreement to associate for the purpose of this EOI has been signed between the consortium partners.¹⁵

Note: The REOI Issuer reserves the right to reject the proposal of an association if member(s) of the association is changed/dropped without valid reason after the association has been shortlisted. However, should valid reasons exist (e.g., associate partner was sanctioned by the Fund Member or other members of the CG or other MDBs, associate partner went out of business, etc.), satisfactory evidence in support of such reasons should be sent to the REOI Issuer for consideration.

Assignment Specific Qualifications and Experience

Note: The Consultant shall demonstrate technical competence and geographical experience based on project references in this EOI that, if needed, can supplement the project reference information earlier provided in the Consultant's CGR. The Consultant is encouraged to update Project Information provided in the Consultant's CGR.

[Provide specifics here]

Technical Competence

Highlight the technical qualifications of the Consultant's entity/consortium in undertaking similar assignments.

Provide details of past experience working with similar project authorities.

[Provide specifics here]

Geographical Experience

Provide details of experience in similar geographic areas.

[Provide specifics here]

Management Competence

Describe standard policies, procedures and practices that the Consultant entity has to assure quality interaction with clients and outputs. Please state if the Consultant entity is ISO certified.

- a. How will the Consultant firm/consortium handle complaints concerning the performance of experts or quality of the reports submitted for this assignment? What internal controls are in place to address and resolve complaints?

¹⁵ A copy of the written agreement is required to be attached to the EOI, listed under *Attachments* in *Eligibility Declaration* on pages 9 and 10 below.

b. How will the Consultant ensure the quality of your firm's/consortium's performance over the life of this assignment?

c. Describe standard policies, procedures and practices that the Consultant firm has put in place to avoid changes/replacements of personnel and to ensure the continuity of professional services once the contract is signed.

d. Describe what social protection practices the Consultant firm has in place to safeguard the well-being of all proposed experts? Specifically describe arrangements the Consultant firm has in place for medical, accident and life insurance coverage during the assignment.

Other Information [*maximum of 500 words*]

[Provide specifics here]

Project References

Please select most relevant projects from your Profile to demonstrate the firm's technical qualifications and geographical experience.

Period	Client	Project	Country	Firm

Comments on Terms of Reference

Comments on Budget Adequacy

Additional Questions

Key Considerations in approaching this assignment

[no more than five (5) pages summarizing approach and methodology]

Key Experts

List experts that you propose to deploy for this assignment, attach their Curriculum Vitae (CVs) to EOI attachment.

Name	Email	Consultant Status	Affiliation Type	Affiliation Status	Firm

Expressions of Interest Attachments

Title	Type	Description	Category	Last Updated By	Last Updated

Eligibility Declaration

We, the undersigned, certify to the best of our knowledge and belief:

- We have read the advertisement, including the terms of reference (TOR), for this assignment.
- Neither the consulting firm nor its associate or any of its experts prepared the TOR for this activity.
- We confirm that the project references submitted as part of this EOI accurately reflect the experience of the specified firm/consortium.

- We further confirm that, if any of our experts is engaged to prepare the TOR for any ensuing assignment resulting from our work product under this assignment, our firm and the expert(s) will be disqualified from short-listing and participation in the assignment.
- All consulting entities and experts proposed in this EOI are eligible to participate in the Fund Member funded, supported, and administered activities.
- The lead entity and associates are NOT currently sanctioned by the Fund Member or any other CG Member or any MDB. Neither the consulting firm nor the associates has ever been convicted of an integrity-related offense or crime related to theft, corruption, fraud, collusion or coercion.
- We understand that it is our obligation to notify the REOI Issuer should any member of the consortium become ineligible to work with the Fund Member or any CG Member or be convicted of an integrity-related offense or crime as described above.
- All proposed associate(s) are registered under CGR, and contact information contained in CGR is current.
- Associate(s), including all proposed consultants named in this EOI, have confirmed their interest in this activity in writing.
- Associate(s), including all proposed consultants named in this EOI, have confirmed their eligibility to participate in this activity in writing.
- Associate(s), including all proposed consultants named in this EOI, have authorized us in writing to represent them in expressing interest in this activity.
- None of the proposed consortium are subsidiaries of and/or dependent on the Executing or the Implementing Agency or individuals related to them.
- We understand that any misrepresentations that knowingly or recklessly mislead, or attempt to mislead, may lead to the automatic rejection of the proposal or cancellation of the contract, if awarded, and may result in further remedial action, in accordance with the applicable *Anticorruption Procedures* and *Sanctions Guidelines* of the Fund Member and, as relevant, each CG Member.

[Signature of Authorized Representative]

[Full Name of Authorized Representative]

Consulting Firm

[And, as applicable, any JV of Associate firms/consortium]

Appendix C—Expression of Interest

Individual Consultants

Basic Information

Request for Expressions of Interest Issuer	
Project Number	
Project Name	
Project Country	

*Name	
*Country of Nationality/Citizenship	
*Address of consultant	
*E-mail of consultant	
*CG Registration Number	

Assignment Related

<p>* Assignment Specific Qualifications & Experience</p> <p><i>[Provide information demonstrating your ability, skills and experience to undertake the advertised assignment and deliver inputs/outputs required under the TOR]</i></p>
<p>* <i>[If this EOI is filled on the basis of your CGR, please provide a summary of your Qualifications & Experience as provided in your CGR and any update to the extent you need to update your CGR information.]</i></p>
<p>* <i>[Attachment (if necessary): Your signed CV in the required Format ONLY if you wish to update your CV on file under your earlier CGR filing.]</i></p>

Eligibility Declaration

I, the undersigned, certify to the best of my knowledge and belief: My

- CGR filing contains current contact details.
- The CV I attached to my registration correctly describes my qualifications and my experience.
 - an updated CV is attached (*check if applicable*)
- I am not employed by the Executing or the Implementing Agency.
- I am not part of the team who wrote the terms of reference for this consulting services assignment.
- I am not sanctioned (not eligible for engagement) by any CG Fund Member.
- I have not been convicted of an offense or crime related to theft, corruption or fraud. I
- understand that it is my obligation to notify the REOI Issuer should I become ineligible to work with any CG Fund Member, or should I be convicted of an offense related to theft, corruption or fraud.
- I understand that any misrepresentations that knowingly or recklessly mislead, or attempt to mislead, may lead to the automatic rejection of the proposal or cancellation of the contract, if awarded, and may result in further remedial action, in accordance with the *Anticorruption Procedures* and *Sanctions Guidelines* of the Fund Member and, as applicable, each CG Member providing financing for the captioned Project.

*Completed by (Name/Position)	
Date (dd/mm/yyyy)	

Appendix D—Request for Expression of Interest

Indicative Cost Estimates

For: Loans and/or technical assistance grants and issued by either EA or Fund Member

Consulting firms and individual consultants:

Cost Category	Estimated Amount
Competitive Items	
Remuneration & Per Diem	
Other Reimbursables (e.g., Travel, Reports, etc.)	
Non-Competitive Items	
Provisional Sums (e.g., training seminars, etc.) ¹⁶	
Contingency	

¹⁶ Usually the category of “provisional sums” applies for consulting firm contracts and rarely in the case of individual consultants unless the individual consultant, as part of his or her TOR, will be responsible for supervising training workshops or conferences for executing or implementing agency staff or similar activities.

Appendix E—Request for Expression of Interest

Terms Of Reference (TOR)

FOR: Loans and/or technical assistance grants—issued by either EA or Fund Member

Explanatory Note—The TOR will be attached to any issued REOIs. The TOR should generally not exceed five-to-seven (5-7) pages, depending on the nature, complexity and length of the assignment. In the substantial majority of situations, the TOR should be position-based, if involving a team of consultants, and work task activity based if involving an individual consultant.

A typical TOR should contain the following information:

- a. Basic summary about the project background and relevant background information
- b. Objective and purpose of the contemplated consulting services assignment
- c. Duration and location of the contemplated consulting services
- d. Scope and major work tasks of the contemplated services, e.g., indicate if downstream work is required
- e. Details outputs of the Assignment, e.g.:
 - i. Key timelines or milestones for deliverables
 - ii. Format, frequency, and mode of submissions (such as through electronic reports)
 - iii. Dates for submission
- f. Any training or capacity building requirements (e.g., indicate if training is a specific component of the assignment, etc.)
- g. Any procurement or related requirements
- h. Any inputs that will be provided by the executing or implementing agency (e.g., services, facilities, counterpart personnel (professional and support) to be assigned to support the Consultant team, dates of submission and details of recipients, etc.)
- i. Team components and qualification requirement of key experts, and any other requirements to be used in evaluation of key experts, if firm selection; if individual selection, details of individual expert qualification requirements.

Format for Request Expressions of Interest for Consulting Firms

TOR Coverage	Consulting Firms—Provide Narrative Details
General:	
Sectoral Area of Expertise	
Country/Regional Exposure	
Objectives & Purpose of Assignment	
Required Work Tasks and Sequencing <i>[as necessary to amplify Objectives and Purpose]</i>	
Counterpart support	
Experts Needed	
<i>International</i>	<i>[As applicable—detail eligibility]</i>
Expert 1 Expert 2 Etc.	<i>[Provide Position, Indicative Person-Months, Indicative Field Time, Desired Qualifications, and Experience]</i>
	<i>[Include team leadership responsibilities for relevant expert]</i>
<i>Regional</i>	<i>[As applicable—detail eligibility]</i>
Expert 1 Expert 2 Etc.	
<i>National</i>	<i>[As applicable—detail eligibility]</i>
Expert 1 Expert 2 Etc.	
Assignment Timetable	
Commencement	
Inception Mission	
Other Missions	
Deliverables	
Deliverable 1 Deliverable 2 Etc.	<i>[Include indicative timing, and, as applicable, expert(s) primarily responsible]</i>
Completion	

Format for Request Expressions of Interest for Individual Consultants

Terms of Reference Format	Individual Consultants—Provide Narrative Details
General:	
Sectoral Area of Expertise	
Country/Regional Exposure	
Type of Consultant	<input type="checkbox"/> International <input type="checkbox"/> Regional <input type="checkbox"/> National Include any required eligibility considerations: <i>[include detail]</i>
Person Months Required	
Field Time Required	
Objectives & Purpose of Assignment	
Required Work Tasks & Sequencing (as necessary to amplify Objectives & Purpose)	Work Task 1: Work Task 2: Etc.
Counterpart support	
Assignment Timetable	
Commencement Inception Mission Other Missions	
Deliverables	
Deliverable 1 Deliverable 2 Etc.	<i>[Include indicative timing]</i>
Completion	

Appendix F—Standard Registration Form

Consulting Firms

Standard Registration Form—Consulting Firms (part 1)					
Coordination Group Fund Member Name <i>[through which the firm seeks registration]</i>					
1. Firm Name <i>[Firm seeking registration]</i>	Year Established	State or Country	Type of Organization		
			Partnership	Corporation	Other
2. Affiliated Firms <i>[If any shareholding or interest, indicate percent shareholding, or nature of interest, e.g., management agreement, beneficial ownership, etc.]</i>					
3. Home Office(s) Business Address(es) / Telephone Number / Website / Email / FAX Number / Authorized Legal Representative or Offices or Partners to Contact					
4. Former Firm Name(s) / If Any / Year Established			5. Firm Ownership Structure <i>(Major Shareholders and Percentage Ownership of Each)</i>		
6. Present Branch Office(s) / Year(s) Established / Address / Telephone Number / Website / Email / FAX Number / Authorized Representative / Person in Charge					

Social Media Account Details: Facebook LinkedIn Twitter Other

Date

Name of Firm

(Continue on additional pages if necessary)

Standard Registration Form—Consulting Firms (part 2)								
7. Number of Personnel in Your Present Organization(s) Listed in 1 and 2								
Architects	Civil & Structural Engineers	Electrical Engineers	Mechanical Engineers	Construction Management	Economists	Operations & Management Specialists	Others [specify]	Others [specify]
Surveyors	Estimators	Inspectors	Technicians & Draftsmen	Administration & Clerical	Specification Writers	Others [specify]	Others [specify]	Total
8. Annual Volume of Gross Fees in US dollars from Organizations Listed in 1 and 2 [Last five (5) years]						Financial Rating or Bank Reference		
Project	As Prime or Lead Consulting Firm		As Associate and Joint Venture		Total			
	\$		\$		\$			
	\$		\$		\$			
	\$		\$		\$			
	\$		\$		\$			
	\$		\$		\$			
Totals	\$		\$		\$			
9. Largest Projects Handled by Firm as Prime Consultant in Major Fields Only—Show Name of Project / Type of Service / Client Reference / Engineer Level of Effort Classified as:								
<i>Class 1—Fee Less Than US \$100,000 or twenty (20) labor months</i> <i>Class 2—Fee from US \$100,000 to US \$500,000, or from twenty (20) labor months to one hundred (100) labor months</i> <i>Class 3—Fee from US \$500,000 to US \$1,000,000, or from one hundred (100) labor months to two hundred (200) labor months</i> <i>Class 4—Fee over US \$1,000,000, or over two hundred (200) labor months*</i>								

**Note:* These Classes (1–4) are what Arab Fund for Economic and Social Development (AFSED) currently uses—CG Fund Members should review and determine if such Class breakdowns are collectively appropriate before the Class thresholds are finalized.

(Continue on additional pages if necessary)

Date Name of Firm

11. Fields of specialization of permanent full-time staff (<i>Check Appropriate Items</i>)					
A	Agricultural and Natural Resources	C-11 Marina Terminal Facilities	E	Architectural and Related Fields	
		C-12 Mining			
	A-1 Farm Mechanization	C-13 Nuclear Energy			E-1 Conservation
	A-2 Field and Horticultural Crops	C-14 Parking Facilities			E-2 Educational Facilities
	A-3 Fisheries	C-15 Power Stations			E-3 Factories and Buildings
	A-4 Forestry and Forest Products	C-16 Power Transmission and Distribution			E-4 Parks
	A-5 Irrigation and Flood Control				E-5 Social and Low-Cost Housing
	A-6 Land and Water Feasibility Studies	C-17 Solid Waste Management			E-6 Urban Development and City Planning
	A-7 Land Reclamation and Soil Conservation	C-18 Buildings			E-7 Zoos
		C-19 Telecommunications			E-8 (Specify Others)
	A-8 Livestock	C-20 Wastewater Collection, Treatment and Disposal			E-9
	A-9 Marketing and Credit				E-10
	A-10 River Regulation and Control	C-21 (Specify Others)			E-11
	A-11 Storage Facilities	C-22			E-12
	A-12 (Specify Others)	C-23			E-13
A-13	C-24	E-14			
A-14	C-25	E-15			
A-15	D Industry	F	Economic Planning and Related Fields		
B Transport				D-1 Agricultural Products and Food Processing	F-1 Accounting and Auditing
B-1 Airports and Air Transport					F-2 Economic Impact Statements
B-2 Bridges				D-2 Bricks and Tiles	F-3 Economic Policy
B-3 Bus Transport Facilities				D-3 Cement Works	F-4 Energy Conservation
B-4 Highways and Road Transport				D-4 Ceramics	F-5 Finance
B-5 Pipelines				D-5 Chemical Plants (including Petrochemicals, Fertilizers, Plastics)	F-6 Foreign Trade
B-6 Public Transport					F-7 Marketing
B-7 Rapid Transit				D-6 Coal	F-8 Organization and Management of Public and/or Private Enterprises
B-8 Railroads				D-7 Fish Processing	
B-9 River and Sea Transport				D-8 Foundries	
B-10 Rivers, Seaports, and Harbors				D-9 Glass Plants	F-9 Regional Development Planning
B-11 Subways				D-10 Hides and Leather Processing	F-10 (Specify Others)
B-12 Tunnels				D-11 Industrial Estates	G Tourism
B-13 (Specify Others)				D-12 Machinery Plants	
B-14	D-13 Materials Handling				
B-15	D-14 Metallurgical	G-1 Hotel Development			
C Public Utilities and Related Fields	D-15 Mineralogy	G-2 Resort Development			
C-1 Air Pollution Control	D-16 Non-ferrous Processing Plants	G-3 (Specify Others)			
C-2 Cartography	D-17 Oil	G-4			
C-3 Dams	D-18 Pharmaceutical Plants	G-5			
C-4 Drainage	D-19 Pulp and Paper	G-6			
C-5 Electrical Installations	D-20 Rubber	G-7			
C-6 Gas Installations and Transmissions	D-21 Steel and Iron Works	G-8			
	D-22 Textiles	G-9			
C-7 Heating, Ventilating, Air-Conditioning	D-23 Timber Processing	G-10			
C-8 Hospitals	D-24 (Specify Others)				
C-9 Housing	D-25				
C-10 Industrial Utilities					

Date Name of Firm

12. Types of services	
A. Advisory Services	V. Operation and Maintenance
B. Aerial Photography	W. Planning Studies
C. Architectural	X. Project Management
D. Computer Services	Y. Purchasing, Inspection and Testing of Materials and Equipment
E. Construction Management	Z. Resources Surveys
F. Design of Machinery and Equipment	Z-1 Rate Studies and Appraisals
G. Economic Studies	Z-2 Sector Studies
H. Engineering Design, Estimating, Preparation of Contrast Documents, Bid Evaluation	Z-3 Soils Engineering, Foundation Engineering and Design
I. Environmental Studies	Z-4 Supervision of Construction or Equipment Installation Contracts
J. Farm Extension Services	Z-5 Testing and Inspection
K. Geological Surveys	Z-6 Topographical and Soil Surveys
L. Geophysical Surveys	Z-7 Technical Feasibility Studies and Preliminary Engineering
M. Hydro-Geology	Z-8 Traffic Studies
N. Hydrological Surveys	Z-9 Value Analysis
O. Industrial Process Engineering	Others (Specify)
P. Machine Processing of Engineering Data	Z-10
Q. Management Studies	Z-11
R. Market Surveys	Z-12
S. Mineral Surveys, Photo Interpretations	Z-13
T. Mineral Exploration	Z-14
U. Oceanography	Z-15

Date

Name of Firm

13. Countries in which work performed within past ten (10) years (*Check Appropriate Countries*)

Afghanistan		Equatorial Guinea		Lebanon		Saudi Arabia
Albania		Ethiopia		Lesotho		Senegal
Algeria		Fiji		Liberia		Sierra Leone
Argentina		Finland		Libya		Singapore
Australia		France		Liechtenstein		Somalia
Austria		Gabon		Luxembourg		South Africa
Bahamas		Gambia (The)		Madagascar		Spain
Bahrain		Germany (Dem. Rep. Of)		Malawi		Sri Lanka
Bangladesh		Germany (Fed. Rep. Of)		Malaysia		Sudan
Barbados		Ghana		Maldives		Swaziland
Belgium		Greece		Mali		Sweden
Benin (Dahomey)		Grenada		Malta		Switzerland
Bhutan		Guatemala		Mauritania		Syria
Bolivia		Guinea		Mauritius		Tanzania
Botswana		Guinea-Bissau		Mexico		Thailand
Brazil		Guyana		Monaco		Togo
Bulgaria		Haiti		Mongolia		Trinidad and Tobago
Burma		Holy See		Morocco		Tunisia
Burundi		Honduras		Nepal		Turkey
Byelorussian USSR		Hungary		Netherlands		Uganda
Cameroon		Iceland		New Zealand		Ukraine
Canada		India		Nicaragua		USSR
Central African Rep.		Indonesia		Niger		United Arab Emirates
Chad		Iran		Nigeria		United Kingdom
Chile		Iraq		Norway		United States
China		Ireland		Oman		Upper Volta
Colombia		Italy		Pakistan		Uruguay
Congo		Ivory Coast		Panama		Venezuela
Costa Rica		Jamaica		Paraguay		Vietnam
Cuba		Japan		Peru		Western Samoa
Cyprus		Jordan		Philippines		Yemen
Czechoslovakia		Kenya		Poland		Yugoslavia
Denmark		Korea (Rep of)		Portugal		Zaire
Dominican Rep.		Kuwait		Qatar		Zambia
Ecuador		Khmer Republic (Cambodia)		Romania		
Egypt				Rwanda		Others (Specify)
El Salvador		Laos		San Marino		

Date Name of Firm

14. Narrative Description of Firm

(Continue on additional page if necessary)

As of this date

The foregoing is a true statement of facts

Name of firm submitting questionnaire

Typed name and title of person signing

Signature

Date

Name of Firm

<p>15. Typical projects for which consultant services have been furnished during past five (5) years</p> <p><i>(Reference sheets may be submitted for as many projects as desired. Sheets should include at least one project in each field of specialization checked in Item 10 and each type of service checked in Item 11)</i></p>	
<p>Name of overall project:</p> <p>Location of overall project:</p> <p>Engineers level of effort <i>(for classifications see Item 8)</i>:</p> <p>Owner's name and address:</p> <p>Year firm's services completed <i>(indicate if estimated or actual)</i>:</p> <p>Associated firms:</p> <p>Description of project</p> <p><i>(Firm may submit as many pages as necessary)</i></p>	
<p>Description of services firm provided:</p>	
<p>List all fields of experience <i>(by symbols from Item 10)</i> for associated aspects of overall project</p>	
<p>List all types of services <i>(by symbols from Item 11)</i> for associated aspects of overall project</p>	
<p>16. Has the firm or any director, officers, or key personnel been sanctioned at any time by any Fund Member?</p>	
<p><input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes—If “yes” is marked, please provide complete details of such sanction(s), including:</p> <p>a. If such sanction has expired or is continuing b.</p> <p>The year the sanction was imposed</p> <p>c. The reason and scope of such sanction</p> <p>d. Any/all other relevant details <i>(Continue on additional pages if necessary)</i></p>	
<p>Declaration:</p> <p>I, the undersigned, confirm that what I have stated above is true and correct to the best of my knowledge and belief as the authorized representative of the firm identified above.</p> <p>I confirm that I shall provide any and all supporting documentation that may be requested to substantiate any information or affirmation that I have provided herein on behalf of my firm.</p> <p>Signed: _____ Authorized Representative of: _____ <i>[Firm name]</i></p> <p>Dated: _____</p>	

Date Name of Firm

Appendix G—Standard Registration Form

Individuals

CG Fund Member Name <i>(through which the individual consultant is registered)</i> Basic Details Photograph					
1. Individual Name					
Last	First	Middle	Birthdate	Birthplace	
Citizenship <i>(Include all)</i> :					
Sex: <input type="checkbox"/> Male <input type="checkbox"/> Female					
2. Mailing Address(es), Telephone Number, Website, Email, Fax Number:					
3. Permanent address (if different from above):					
4. Social Media Account Details:					
<input type="checkbox"/> Facebook <input type="checkbox"/> Linked In <input type="checkbox"/> Twitter <input type="checkbox"/> Other <i>(List)</i>					
5. Employment status:		<input type="checkbox"/> Self-employed <input type="checkbox"/> Working through a firm			
Provide details: <input type="checkbox"/> If self-employed, I am a full-time consultant within my own practice <input type="checkbox"/> If working through a firm, I am: <input type="checkbox"/> owner of firm <input type="checkbox"/> an employee of firm Further explanation <i>(if necessary)</i> :					

(Continue on additional pages if necessary)

Date Name of Individual Consultant:

Detailed Firm Profile		
6. If working through a firm, provide details of firm:		
Name of Firm:	Date Established:	
Nature of Firm business:	Country of Establishment:	
Registered Office address, email, website, telephone, etc.:		
Principal Office address (if different from registered office):		
Name of Accountants of Firm and Contact:	Address:	Website:
a. Employment status: <input type="checkbox"/> Part-time <input type="checkbox"/> Full Time b. Ownership status of firm (legal and/or beneficial): i. <input type="checkbox"/> 50-100% ii. <input type="checkbox"/> < 50% c. Major shareholders and officers of the firm [<i>name, address, contacts</i>]:		
7. Gross Income for past one-to-three (1–3) years since incorporation:		
[Year 1]. US \$		
[Year 2]. US \$		
[Year 3]. US \$		
8. If engaged, will you be contracting your professional services through this firm?		
<input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, please explain reasons:		

(Continue on additional pages if necessary)

Date Name of Individual Consultant:

9. Your fields of specialization (<i>Check Appropriate Items</i>)						
A	Agricultural and Natural Resources	C-11 Marina Terminal Facilities	E	Architectural and Related Fields		
		C-12 Mining				
	A-1 Farm Mechanization	C-13 Nuclear Energy			E-1 Conservation	
	A-2 Field and Horticultural Crops	C-14 Parking Facilities			E-2 Educational Facilities	
	A-3 Fisheries	C-15 Power Stations			E-3 Factories and Buildings	
	A-4 Forestry and Forest Products	C-16 Power Transmission and Distribution			E-4 Parks	
	A-5 Irrigation and Flood Control				E-5 Social and Low-Cost Housing	
	A-6 Land and Water Feasibility Studies	C-17 Solid Waste Management			E-6 Urban Development and City Planning	
	A-7 Land Reclamation and Soil Conservation	C-18 Buildings			E-7 Zoos	
		C-19 Telecommunications			E-8 (Specify Others)	
	A-8 Livestock	C-20 Wastewater Collection, Treatment and Disposal			E-9	
	A-9 Marketing and Credit				E-10	
	A-10 River Regulation and Control	C-21 (Specify Others)			E-11	
	A-11 Storage Facilities	C-22			E-12	
	A-12 (Specify Others)	C-23			E-13	
A-13	C-24	E-14				
A-14	C-25	E-15				
A-15						
B	Transport	D Industry	F	Economic Planning and Related Fields		
					B-1 Airports and Air Transport	D-1 Agricultural Products and Food Processing
	B-2 Bridges				D-2 Bricks and Tiles	F-2 Economic Impact Statements
	B-3 Bus Transport Facilities				D-3 Cement Works	F-3 Economic Policy
	B-4 Highways and Road Transport				D-4 Ceramics	F-4 Energy Conservation
	B-5 Pipelines				D-5 Chemical Plants (including Petrochemicals, Fertilizers, Plastics)	F-5 Finance
	B-6 Public Transport					F-6 Foreign Trade
	B-7 Rapid Transit				D-6 Coal	F-7 Marketing
	B-8 Railroads				D-7 Fish Processing	
	B-9 River and Sea Transport				D-8 Foundries	
	B-10 Rivers, Seaports, and Harbors				D-9 Glass Plants	F-8 Organization and Management of Public and/or Private Enterprises
	B-11 Subways				D-10 Hides and Leather Processing	
	B-12 Tunnels				D-11 Industrial Estates	F-9 Regional Development Planning
	B-13 (Specify Others)				D-12 Machinery Plants	F-10 (Specify Others)
	B-14				D-13 Materials Handling	G Tourism
B-15	D-14 Metallurgical	G-1 Hotel Development				
C	Public Utilities and Related Fields	D-15 Mineralogy	G-2 Resort Development			
		C-1 Air Pollution Control	D-16 Non-ferrous Processing Plants	G-3 (Specify Others)		
	C-2 Cartography	D-17 Oil	G-4			
	C-3 Dams	D-18 Pharmaceutical Plants	G-5			
	C-4 Drainage	D-19 Pulp and Paper	G-6			
	C-5 Electrical Installations	D-20 Rubber	G-7			
	C-6 Gas Installations and Transmissions	D-21 Steel and Iron Works	G-8			
		D-22 Textiles	G-9			
	C-7 Heating, Ventilating, Air-Conditioning	D-23 Timber Processing	G-10			
	C-8 Hospitals	D-24 (Specify Others)				
C-9 Housing	D-25					
C-10 Industrial Utilities						

Date Name of Individual Consultant:

10. Types of services	
A. Advisory Services	V. Operation and Maintenance
B. Aerial Photography	W. Planning Studies
C. Architectural	X. Project Management
D. Computer Services	Y. Purchasing, Inspection and Testing of Materials and Equipment
E. Construction Management	Z. Resources Surveys
F. Design of Machinery and Equipment	Z-1 Rate Studies and Appraisals
G. Economic Studies	Z-2 Sector Studies
H. Engineering Design, Estimating, Preparation of Contrast Documents, Bid Evaluation	Z-3 Soils Engineering, Foundation Engineering and Design
I. Environmental Studies	Z-4 Supervision of Construction or Equipment Installation Contracts
J. Farm Extension Services	Z-5 Testing and Inspection
K. Geological Surveys	Z-6 Topographical and Soil Surveys
L. Geophysical Surveys	Z-7 Technical Feasibility Studies and Preliminary Engineering
M. Hydro-Geology	Z-8 Traffic Studies
N. Hydrological Surveys	Z-9 Value Analysis
O. Industrial Process Engineering	Others (Specify)
P. Machine Processing of Engineering Data	Z-10
Q. Management Studies	Z-11
R. Market Surveys	Z-12
S. Mineral Surveys, Photo Interpretations	Z-13
T. Mineral Exploration	Z-14
U. Oceanography	Z-15

Date

Name of Individual Consultant:

11. Countries in which work performed within past ten (10) years (*Check Appropriate Countries*)

Afghanistan	Equatorial Guinea	Lebanon	Saudi Arabia
Albania	Ethiopia	Lesotho	Senegal
Algeria	Fiji	Liberia	Sierra Leone
Argentina	Finland	Libya	Singapore
Australia	France	Liechtenstein	Somalia
Austria	Gabon	Luxembourg	South Africa
Bahamas	Gambia (The)	Madagascar	Spain
Bahrain	Germany (Dem. Rep. Of)	Malawi	Sri Lanka
Bangladesh	Germany (Fed. Rep. Of)	Malaysia	Sudan
Barbados	Ghana	Maldives	Swaziland
Belgium	Greece	Mali	Sweden
Benin (Dahomey)	Grenada	Malta	Switzerland
Bhutan	Guatemala	Mauritania	Syria
Bolivia	Guinea	Mauritius	Tanzania
Botswana	Guinea-Bissau	Mexico	Thailand
Brazil	Guyana	Monaco	Togo
Bulgaria	Haiti	Mongolia	Trinidad and Tobago
Burma	Holy See	Morocco	Tunisia
Burundi	Honduras	Nepal	Turkey
Byelorussian USSR	Hungary	Netherlands	Uganda
Cameroon	Iceland	New Zealand	Ukraine
Canada	India	Nicaragua	USSR
Central African Rep.	Indonesia	Niger	United Arab Emirates
Chad	Iran	Nigeria	United Kingdom
Chile	Iraq	Norway	United States
China	Ireland	Oman	Upper Volta
Colombia	Italy	Pakistan	Uruguay
Congo	Ivory Coast	Panama	Venezuela
Costa Rica	Jamaica	Paraguay	Vietnam
Cuba	Japan	Peru	Western Samoa
Cyprus	Jordan	Philippines	Yemen
Czechoslovakia	Kenya	Poland	Yugoslavia
Denmark	Korea (Rep of)	Portugal	Zaire
Dominican Rep.	Kuwait	Qatar	Zambia
Ecuador	Khmer Republic (Cambodia)	Romania	
Egypt		Rwanda	Others (Specify)
El Salvador	Laos	San Marino	

Date Name of Individual Consultant:

<p>12. Describe one-to-three (1-3) typical projects for which consultant services have been furnished by you during past two-to-five (2-5) years <i>(Sheets should include at least one project in a field of specialization checked in Item 9 and one project in the type of service checked in Item 10.)</i> Such projects should be referenced in your C.V. attached to this Registration Form.</p>			
<p>Name of project: Location of project: Cost of project: Employer's name and address: Year services completed (indicate if estimated or actual): Associated team leader (if any) or key other individual consultants working with you (if any): Description of your specific work tasks <i>(you may submit as many pages as necessary)</i>:</p>			
<p>Description of services you provided (if not covered by description of your work tasks above):</p>			
<p>List all fields of experience <i>(by symbols from Item 9)</i> for associated aspects of overall project:</p>			
<p>List all types of services <i>(by symbols from Item 10)</i> for associated aspects of overall project:</p>			
<p>13. Have you, or any director, officers, or key personnel of the firm you are associated with (if applicable) been sanctioned at any time by any Fund Member?</p>			
<p><input type="checkbox"/> No <input type="checkbox"/> Yes—If “yes” is marked, please provide complete details of such sanction(s), including:</p> <p style="padding-left: 40px;">a. If such sanction has expired or is continuing b. The year the sanction was imposed</p> <p style="padding-left: 40px;">c. The reason and scope of such sanction</p> <p>d. Any/all other relevant details <i>(Continue on additional pages if necessary)</i>.</p>			
<p>14. Please identify the professional associations and/or organizations with whom you are or have been affiliated</p>			
1.	2.	3.	4.
<p>15. Education</p>			
University/College:		Years Attended	
Degree Awarded		Year	Main Course of Study

Date Name of Individual Consultant:

16. Other professional training and certifications (if any) and publications (if any):			
17. Language abilities and Skill Level (E=Excellent, C=Conversational, and B=Basic)			
Language 1:	Level:	Language 4:	Level:
Language 2:	Level:	Language 5:	Level:
Language 3:	Level:	Language 6:	Level:
18. References—Please list three (3) individuals—unrelated to you—familiar with your work and qualifications:			
Name	Designation	Address & Contact Information	Nature of Relationship
1.			
2.			
3.			
19. Employment Record—Please provide a detailed C.V. in the format provided in Appendix H.			
<p>Declaration:</p> <p>I, the undersigned, confirm that what I have stated above is true and correct to the best of my knowledge and belief.</p> <p>I confirm that I shall provide any and all supporting documentation that may be requested to substantiate any information or affirmation that I have provided herein.</p> <p>Signed: _____ Dated: _____</p>			

Date Name of Individual Consultant:

Appendix H—Curriculum Vitae for Proposed Consultant Expert

Note: Maximum of five (5) pages.

1. Proposed Position/Field of Specialization:
2. Name of Firm: <i>[Insert name of firm proposing the expert, if applicable]</i>
3. Name of Expert: <i>[Insert full name]</i>
4. Current Residential Address:
Telephone Number:
Fax Number:
E-Mail Address:
5. Date of Birth: Citizenship: <i>[list all if more than one]:</i>
6. Education: <i>[Indicate college/university and other specialized education of expert, with names of institutions, degrees obtained, and dates of obtainment]</i>
7. Membership in Professional Associations:
8. Other Trainings: <i>[Indicate significant training since degrees under Item 6 Education]</i>
9. Countries of Work Experience: <i>[List countries where expert worked in the last ten years]</i>

10. Languages: <i>[For each, indicate proficiency in speaking, reading, and writing—good, fair, or poor]</i>		
11. Employment Record: <i>[Starting with present position, list in reverse order every employment held by expert since graduation, giving for each employment (see format below): dates of employment, name of employing organization, positions held.]</i>		
From	<i>[Year]:</i>	To
<i>[Year]:</i>	Employer:	
Positions held:		
12. Detailed Tasks Assigned:		
<i>[List all tasks to be performed under this assignment]</i>		
13. Work Undertaken that Best Illustrates Capability to Handle the Tasks Assigned: <i>[Among the assignments in which the expert was involved, indicate the following information for those assignments that best illustrate the expert’s capability to handle his or her area of expertise and/or the relevant assignment.]</i>		
Name of assignment or project:		
Year:		
Location:		
Client:		
Main project features:		
Positions	held:	
Activities performed:		
14. Certification:		
I, the undersigned, certify to the best of my knowledge and belief:	Yes	No
a. This CV correctly describes my qualifications and my experience	<input type="checkbox"/>	<input type="checkbox"/>
I am employed by the relevant Executing or the Implementing Agency	<input type="checkbox"/>	<input type="checkbox"/>
c. I am a close relative of a financing CG Fund staff member	<input type="checkbox"/>	<input type="checkbox"/>

d. I am part of the team who wrote the terms of reference for this consulting services assignment.	<input type="checkbox"/>	<input type="checkbox"/>
e. I am sanctioned (not eligible for engagement) by a CG Fund Member.	<input type="checkbox"/>	<input type="checkbox"/>
I understand that any willful misstatement described herein may lead to my disqualification or dismissal, if engaged.		
Signature of Consultant Expert	Date (<i>Day/Month/Year</i>)	

Appendix I—Consultant Registration Templates

Explanatory Note—CG User Guidance

Consultant—Firm Registration

A consulting firm that wishes to submit any Expression of Interest (EOI) for any consulting assignment advertised for consulting firm(s) by an Executing or Implementing Agency for a project financed through loans and/or grants by a CG Fund Member must first complete this registration process.

Any questions or requests for clarification should be addressed to the office identified below:

Name: *[CG to complete]*

Address:

Website:

Email:

Telephone Number: Consultant—

Individual Registration

An individual consultant who wishes to submit any Expression of Interest (EOI) for any consulting assignment advertised for individual consultant(s) by an Executing or Implementing Agency for a project financed by a CG Fund Member through loans or grants must first complete this registration process.

Any questions or requests for clarification should be addressed to the office identified below:

Name: *[CG to complete]*

Address:

Website:

Email:

Telephone Number:



TERMS OF REFERENCE

PROJECT: CONSTRUCTION OF THE “KALABO – SIKONGO – ANGOLA BORDER” ROAD PROJECT SECTION “KALABO – SIKONGO”

- Services:** Consultancy services for design review and update of tender documents and preparation of environmental and social impact assessment for the Kalabo–Sikongo–Angola Border Road, Preparation of detailed design and environmental and social impact assessment for the Tapo-Kalabo road, Preparation of detailed designs for border post, health post, and truck parking, Supervision of the construction of the Kalabo to Sikongo road in the Western Province of Zambia.
- Client:** Road Development Agency
Country: Zambia
- Financer:** Arab Bank for Economic Development in Africa (BADEA).

September, 2025

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e) Preliminary Design Report (Border Post Infrastructure, health Post, Staff Houses, Weighbridge and Truck Park)	65
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a) Inception Report (including Quality Assurance Plan).....	67
b) Environmental Reporting	67
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Section 7. Terms of Reference

Consultancy Services for Design Review and Update of Tender Documents for the Kalabo–Sikongo – Angola Border road, Detailed Design of Border Post Infrastructure and the Tapo-Kalabo Road and Construction Supervision of the Kalabo to Sikongo Road in Western Province of Zambia.

1. BACKGROUND

The Project aims to connect the Tapo Kalabo and Sikongo Districts, both located in the Western Province of Zambia with other Districts in the country, including the capital, Lusaka and to the Border with Angola. The Project also aims to increase accessibility of the Kalabo/Sikongo area, which is currently difficult to reach, especially during the rainy and flood season. Additionally, the Project seeks to revive local and regional transport movement between Zambia and Angola, as well as to integrate the road network in the Republic of Zambia and increase user safety by constructing the road to good specifications.

The Government of the Republic of Zambia (GRZ) has received financing for a loan towards the cost of the Project for the *Construction of the Kalabo–Sikongo–Angola Border Road Project, Kalabo–Sikongo Section*. It is intended that the proceeds of this Loan be applied to cover payments due under this Contract. The financing is from the Arab Bank for Economic Development in Africa (BADEA).

The funds are intended to be applied under the contracts for works (Kalabo–Sikongo Section), and design review and construction supervision services for the Project. The Project will be implemented through the Road Development Agency as an ‘implementing agency’.

Government has strategically identified this Project as a priority infrastructure initiative to catalyse economic growth, human development, and social progress in the western region as well as enhance regional connectivity with Angola.

The Tapo Kalabo to Sikongo Road section is expected to form one of the main links between Zambia and Angola. The route will act as a conduit for the transportation of international cargo and bulk commodities between Angola, Malawi, Zambia and to the DR Congo. The construction of the road would thus lead to reductions in transportation costs and would contribute to an increase in trade between Zambia, its immediate neighbours and those countries that benefit from the Corridor.

The primary economic function of the road section will be long-distance transportation of import and export goods for Zambia, Malawi and the Democratic Republic of Congo. In addition, the road traverses productive agricultural areas and is essential for the local transportation of farm inputs and outputs. The area also has great potential in the livestock industry. Improved transportation along the project road will also lead to benefits in the areas of tourism, education, health services provision and other local socio-economic activities which whilst difficult to quantify are clearly linked to the cost and ease of access to the area.

Zambia is located in Central Africa and the capital is Lusaka. Kalabo District is approximately 665 km from Lusaka and Sikongo is approximately 60km from Kalabo and 725km from Lusaka. Both Kalabo and Sikongo are located on the RD316 road and may be accessed on the Lusaka to Mongu road (M9) via Mongu to other main Town Centers in the Zambia. Mongu is the capital city of Western Province in Zambia where both Kalabo and Sikongo are also located.

The Civil Works and Services will be procured in accordance with BADEA guidelines for the Procurement of Goods and Contracting for the Execution of Works - First Edition, 2001.

The consultancy services will be provided through separate phases as follows:

- Phase 1: Design review for Kalabo Sikongo Angola border, and detailed design for border post, health post, and truck parking;
- Phase 2: Detailed design for Tapo Kalabo; and
- Phase 3: Construction supervision for Kalabo Sikongo.

The Designs and Design Review Period is expected to be carried out in 30 weeks after commencement of the services. The works are expected to be undertaken within 18 to 24 months for the Kalabo to Sikongo 60 Km Section , after procurement of works contracts with a Defects Notification Period of 36 months).

2. OBJECTIVES

The overall objective of these consultancy services is to undertake Consultancy Services for Design Review and Update of Tender Documents for the Kalabo–Sikongo – Angola Border road, Detailed Design of Border Post Infrastructure, a Health Post, a truck park and the Tapo-Kalabo Road, and Construction Supervision of the Kalabo to Sikongo Road in Western Province of Zambia. This will also include preparation of Environmental and Social impact Studies-Environmental and Social Impact Assessment.

The Project's significance extends beyond its physical infrastructure, as it is anticipated to stimulate economic activity, create employment opportunities, and improve access to essential services.

The construction of the Kalabo to Sikongo to Angola Border road will improve the safety of the road for all users, reduce transportation costs, facilitate trade and the transportation of goods, and provide improved access to health education, and other commercial facilities to the communities who reside along the road. The envisaged intervention is full construction as a long-term measure.

Through the construction of the Border Post, the project further aims to provide a vital transport infrastructure on the corridor that will:

- facilitates easy access for intra and inter-regional trade;
- facilitates easy access to international markets through connectivity with major sea ports;
- contributes to maximizing the operational efficiency of the corridor; and
- promotes social and economic integration of the two countries.

3. PROJECT DESCRIPTION

The Project generally aims to contribute to achieving Goal No. (9) of the Sustainable Development Goals, which concerns industry, innovation, and infrastructure, and Goal No. (8), which concerns decent work and economic growth, in addition to Goal No. (1) of the Africa Agenda 2063, which is a high standard of living, quality life and prosperity for all citizens. This will be achieved through improving the road network which in turn will result in the creation of new job opportunities and the reduction of poverty in that region.

The Project aims in particular to connect the region with the various regions in the Republic of Zambia and the capital, Lusaka. Additionally, the Project will revive local and regional transport movement between Zambia and Angola.

The road starts from the town of Tapo to Kalabo towards the south-west, crossing flat agricultural areas, passing through a number of small villages until it reaches the village of Sikongo, which is 59 kilometers away from Kalabo, further, the road stretches approximately 32 km to the Angola Border.

It is considered a section of the road project linking the town of Kalabo and the Angolan border, passing through "Sikongo" village.

The road works will involve upgrading and construction improvements of the existing gravel road including: improvement of the road geometry, structural improvements and road safety enhancement, improvement of the standard cross section of the new road, drainage improvements and construction of a Bridge(s). The pavement design life shall be 20 years.

The Project consists of the following main components:

1. Civil works and ancillaries and accessories: Kalabo to Sikongo - to construct an asphalt road approximately 59 kilometers long and one lane in each direction with two shoulders in accordance with the required standards and specifications.
2. Construction of a 75-meter-long bridge and related drainage infrastructure.
3. Civil works and ancillaries and accessories: Sikongo to Angola Border - to construct an asphalt road approximately 32 kilometers long and one lane in each direction with two shoulders in accordance with the required standards and specifications.
4. Construction of the Border Post and other Ancillaries at the Zambia/Angola Boarder.
5. Construction of a health post and a truck park.
6. These Consultancy services: include preparing an environmental and social impact study, reviewing detailed designs, preparing tender documents, assisting the implementing agency in issuing the tender, evaluating offers, awarding contracts, designing of border post infrastructure and supervising the implementation of works for the sections from Kalabo to Sikongo and Sikongo to Angola Border and Border and Ancillaries, and preparing the project completion report.
7. Land acquisition: This includes compensation for the owners of the land and facilities that will be removed from the road. The Consultant will assess the land requirements and make necessary recommendations to the Client.

The rainy season in Zambia is from November to March and the wettest areas are the northern ones, namely, the North-Western Province, the Copperbelt Province, the Northern Province and the Muchinga Province, where precipitation exceeds 1,000 millimeters (40 inches) per year, and in some areas, it can reach 1,400 mm (55 in).

Below are geographical maps showing the location of Zambia in Central Africa, the location of Kalabo and Sikongo in relation to Lusaka, and the Project Road from Kalabo to Sikongo.



Figure 1: Central Africa and Zambia

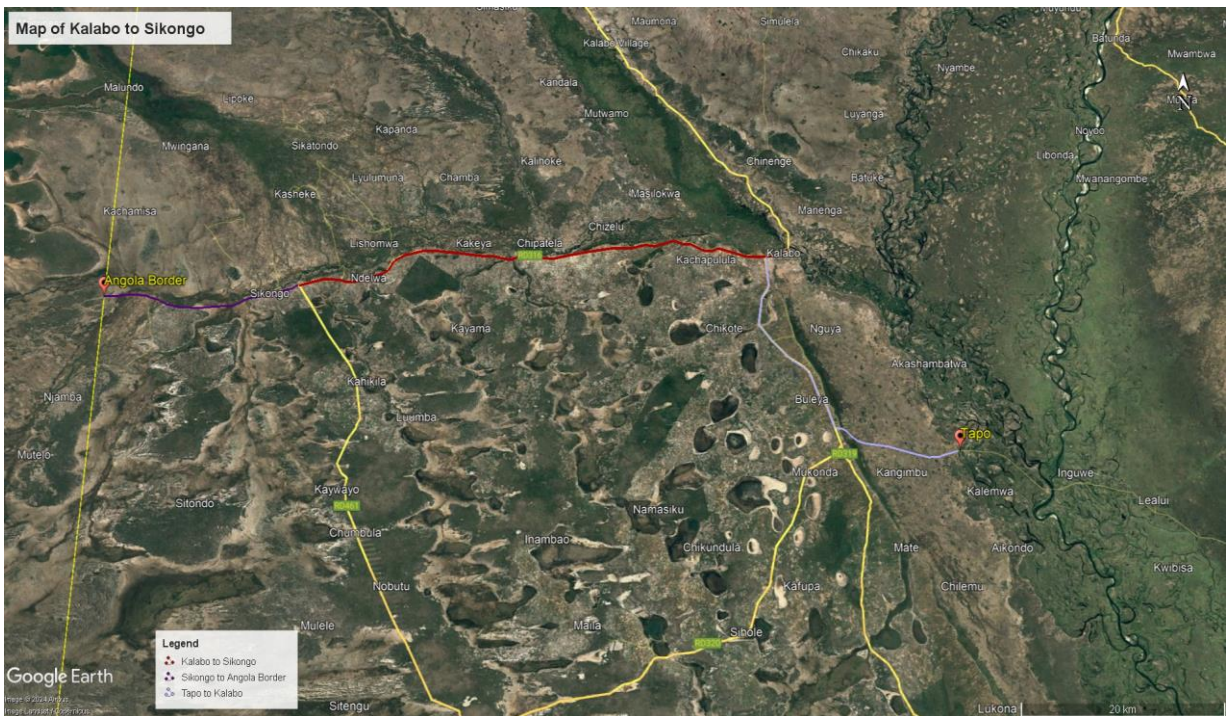




Figure 1: Kalabo-Sikongo-Angola Border Road section in Zambia – Construction Supervision

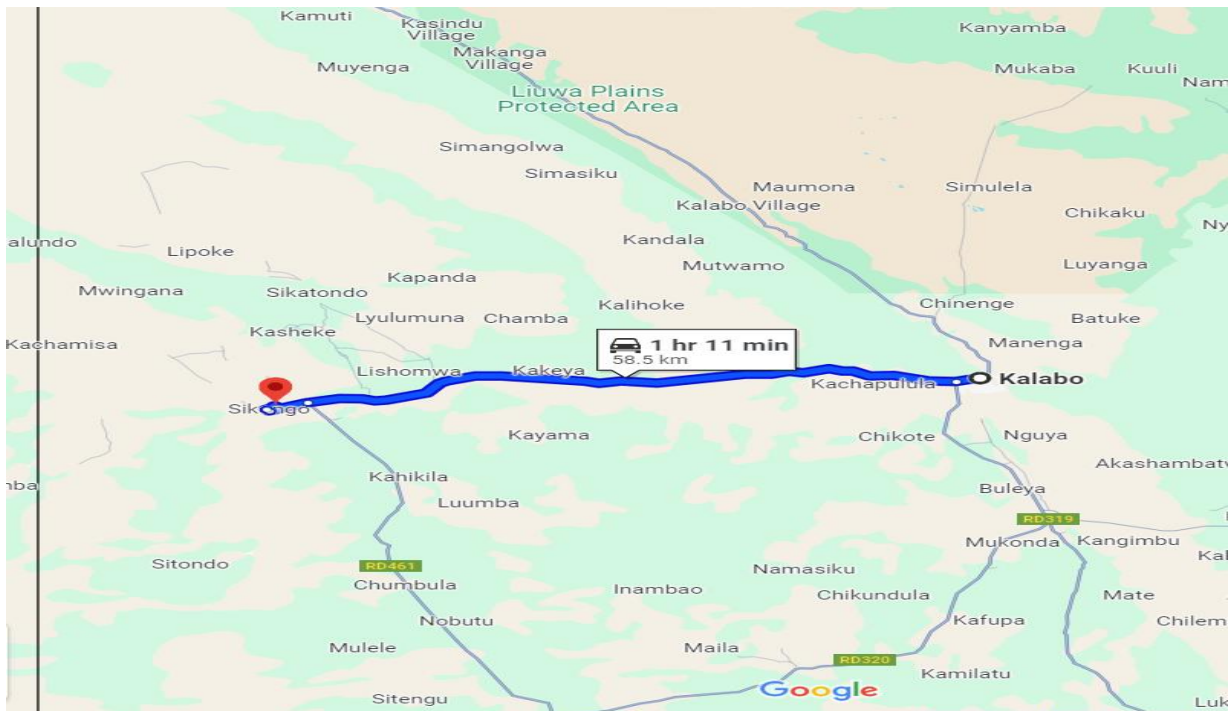


Figure 3: Map showing current alignment for the Kalabo to Sikongo Road (RD316)

The Tapo Kalabo to Sikongo and Sikongo to Angola Border Road on its current alignment is one of the older rural district routes (RD316) in Zambia and has undergone several phases of minor maintenance since its establishment. The existing road is gravel/earth road and runs westerly through the highland crossing a number of small streams and passing through a plain after the Sikongo, reaching Angola. The road has gravelly and sandy surfacing in selected sections with a varying width of 6m to 8m. Only a few sections can be considered as trafficable. Significant deterioration has taken

place in past years and in recent years emergency maintenance temporarily works were carried through the RDA Regional Office to keep the road motorable.

The road section between Tapo - Kalabo - Sikongo and Angola Border stretches approximately 126 Km, refer to the table below:

No.	Section	Distance (Km)	Condition	Comments
1.	Mongu to Tapo (34Km)	34	Good only requires Routine Maintenance	Not part of the services
2.	Tapo to Kalabo (40Km)	40	Potholes, longitudinal cracks, block cracks and edge breaking and Requires Rehabilitation	Part of these services for detailed design and tender document preparation
3.	Kalabo to Sikongo	59	Spot gravelled and earth road requires Upgrade to bituminous	Part of these services for a design review and studies as well as construction supervision
4.	Sikongo to Angola Border	32	Sandy, passes through plains and requires Upgrade to bituminous	Part of these services for a design review and studies
5.	Situlu /Angola Border Post		No border infrastructure and requires Construction of Border facilities	Part of these services for detailed design and tender document preparation
6.	Civil works and its Ancillallies		New Designs to include: 1. No Weigh -in Motion-Type 2 Weigh bridge near the Border Post, 1. No. Health Post, 1No. Truck Park in Sikongo and 12No. Border post Houses	Part of these services for detailed design and tender document preparation
7.	Environmental and Social Impact Assessment for the Project - Tapo to Angola Border	131	No ESIA studies available	Part of these services for ESIA studies and document preparation

4. SCOPE OF SERVICES

The services are split into the three (3) phases, as follows:

- Phase 1: Design review for Kalabo Sikongo Angola border road section, and detailed design for border post, health post, and truck parking and other facilities;
- Phase 2: Detailed design for Tapo Kalabo road section; and
- Phase 3: Construction supervision for Kalabo Sikongo road section.

Phase 1 and 2 may be undertaken concurrently depending on the circumstances, and thus different experts must be provided for these phases.

4.1 GENERAL

The full scope of the assignment is as follows:

1. Tapo Kalabo section: preparation of detailed design/tender documents.
2. Kalabo - Sikongo – Angola Border sections:
 - Preparation of environmental and social impact study.
 - Detailed design review.
 - Preparation of tender documents.
 - Preparation of detailed designs for the border post, health post, and truck parking and other facilities as per these TORs
 - Supervision of work implementation for Kalabo – Sikongo section.

It is envisaged that the civil works will predominantly involve upgrading to bituminous standard, including construction of a 75-meter-long bridge, culverts, and rainwater drainage facilities.

a) Appreciation of the ToRs

It is noteworthy that any project is unique, and hence has its own specific terms of reference. The start point is for the Consultant to have a thorough review, understanding of these guiding ToRs. It is expected that the Consultant would carry out a comparative analysis between these “**guiding ToRs**” against the actual services required on the ground to derive a cost-effective solution to the problem/need of this assignment.

Thereafter, based on the foregoing comparative analysis findings - Consultant is expected to detail all the shortfalls, with proposals or options (each with pros and cons), and related risks for each option, all which should prove a thorough understanding of the project ToRs by the Consultant. The main purpose of this exercise is to determine the scope of work clearly and accurately to be performed (and its anticipated outcomes), fees and terms and conditions of the work prior to engaging in the consulting service.

The recommended option with changes (if any), shall be included at pre-proposal stage with recommendations on “inclusion” and/or “exclusions” to be considered to form part of the final Project Charter (ToRs), which should attain the project objectives as per RDA’s expectations.

The Consultant should clearly show the logical reasoning in arriving at the final selected option using either analogical, causal, inductive, and deductive thinking process or a combination at pre-proposal stage.

The information to be unveiled to the Consultant will be for a project with the following scenario:

- The project which has been previously designed by another Consultant with all inputs for the implementation phase available (working drawings, BoQs, specifications and other documents required for a successful project execution);

The appreciation of these terms of reference in terms of “assignment inclusions” against “assignment exclusions” at pre-proposal shall be one of the key success factors (KSFs) on the evaluation of the Consultant’s technical proposals. These pre-proposal clarification requirements by the Consultant are meant to clearly determine the “actual final assignment’s scope of services” and avoid aftermath ideas, which could result into planning and design related variation orders (VOs).

4.2 PHASE 1: DESIGN REVIEW FOR KALABO - SIKONGO - ANGOLA BORDER ROAD, AND DETAILED DESIGN FOR BORDER POST, HEALTH POST, AND TRUCK PARKING

For the prescribed scenario in these TORs, the Consultant will be required to undertake a design review/design update (including field investigations), identify, evaluate, and recommend appropriate interventions for design enhancements and prepare/update tender documentation (Working Drawings, Bill of Quantities, Specifications and other documents) as an output for the Kalabo -Sikongo – Angola Boarder road which also include the Lueti bridge. The design review shall consider climate resilience and adaption of the road infrastructure. Further, the consultant will undertake detailed designs for border post, health post, and truck parking and other facilities.

a) Selection of the Road width

The Consultant shall review and confirm the roadway width (width of lanes and shoulder) based on type of road, its intended function design vehicles (derived from 85-%tile distribution of the main traffic composition for both existing and expected on the road (generally, the existing natural/gravelly road has no defined road width only in some sections where the width is 5.1m – 6.2m with no shoulders). The carriageway width of 6.8 meters (one 3.4 meters lane in each direction) and shoulders of 2 meters each on both sides. Alternatively the design standard cross section is 2 x 3.5m lanes plus 2 x 1.60m shoulders with a roadbed width of 12m or as per SATCC standards and as agreed prior to commencement of design. If based on the review findings, a change is necessary - a clear motivation should be presented on the sizing of each lane width, shoulder with (either surfaced or not) and the side drain invert width based on an optimum balance of functionality factors (as at “now” fit-for-intended-use approach), safety factors, construction-ability/maintain-ability factors and economic factors, which could have changed and overtaken by events since the last design.

Unless otherwise given as instructions to stick to standards – review and confirm if the existing lanes and shoulder widths are still adequate and suit the latest fit-for-purpose design requirements and in accordance with SATCC Code of Practice for Geometric Design of Trunk Roads Figure 5.1 for definitions.

In special case like in built-up locations or potentially dangerous areas, the Consultant shall review and confirm that the typical cross-section minimizes conflicts amongst road-users. Similarly, revised recommendations on the proposed design cross sections of these specific sections shall adhere to strict road safety regulation and enhancing intervention measures.

b) Pavement Lifespan

The pavement design life shall be 20-years in accordance with the design and based on world practice of routine and periodic maintenance frequency, which up-hold the pavement condition within acceptability serviceability limits. It will be acceptable for the Consultant to recommend the design-life less or more than 20-years depending on the use and type of the road, provided there is clear and concise motivation based upon cost/benefit factors from the pavement’s life-cycle-cost-analysis (LCCA).

c) Standards

i. Design Standards

The design standards listed below are those considered appropriate by the RDA for use in road design works in attaining the main tasks and deliverables as required in the ToRs.

Geometric Design	<ul style="list-style-type: none"> • SATCC Code of Practice for the Geometric Design of Trunk Roads – September 1998 (Reprinted July 2001) • Addendum to SATCC Code of Practice for the Geometric Design of Trunk Roads (Roads Authority, 2014) • The Overseas Road Note 6, A Guide to Geometric Design
Pavement Rehabilitation	<ul style="list-style-type: none"> • SATCC Code of Practice for the Rehabilitation of Road Pavements – September 1998 (Reprinted July 2001)
Road Pavement Design	<ul style="list-style-type: none"> • SATCC Code of Practice for the Design of Road Pavements – September 1998 (Reprinted July 2001)
Road Signs	<ul style="list-style-type: none"> • SATCC Road Traffic Signs Manual -1997
Bridge and Culvert Design	SATCC Draft Code of Practice for the Design of Road Bridges and Culverts– September 1998 (Reprinted July 2001)
Specifications and Method of Measurement	<ul style="list-style-type: none"> • SATCC Draft Standard Specifications for Road and Bridge Works - September 1998 (Reprinted July 2001)
Traffic studies and surveys	<ul style="list-style-type: none"> • Transport and Road Research Laboratory Overseas Road Note No. 40The Overseas Road Note 40, A Guide to Axle load surveys and traffic counts for determining traffic loading on pavements
Climate Adaptation	<ul style="list-style-type: none"> • Climate Resilient Road Guidelines and Codes – Climate Resilient Road Adaptation Guidelines (Accessible from RDA)

Where the design proposed by the Consultant deviates from the recommendations or requirements of the above Codes of Practice, the design Consultant shall clearly highlight the deviations and give reasons and Value Engineering motivation for the changes. Such deviations shall require the approval of the RDA.

Where aspects of the design are not covered by the above standards, the Consultant shall select and propose alternative standards for the approval of the RDA with justification for a cost-effective and suit for purpose intended outcome.

ii. Environmental Standards and Legislation

Environmental Legislation	<p><i>Environmental Management Act No 12 of 2011 as amended by Act No.8 of 2023.</i></p> <p><i>Statutory Instrument No. 28 of 1997 (The Environmental Protection and Pollution Control (Environmental Impact Assessment) Regulations, 1997).</i></p> <ul style="list-style-type: none"> • <i>Solid Waste Regulation and Management Act No. 20 of 2018</i>
Other applicable legislation	<i>Lands Act Cap 184</i>

	<i>Local Government Act Cap 281</i>
	<i>Public Health Act Cap 295</i>
	<i>Town and Country Planning Act Cap 283</i>
	<i>Water Act Cap 198</i>
	<i>Road and Traffic Control Act Cap 464</i>
	<i>The Public Roads Act, No. 12 of 2002 as amended by Act No. 9 of 2022</i>
	<i>Factories Act Cap 441</i>
	<i>National Heritage and Conservation Commission Act</i>
	<i>Forest Act Cap 311</i>
	<i>Petroleum Act Cap 439</i>
	<i>Energy regulation Act Cap 436</i>
	<i>Occupational Health and Safety ACT, No. 36 of 2010</i>
	<i>Employment Code Act No.2 of 2019</i>
International Best Practice	<p>For example;</p> <p>BADEA E&S guidelines</p> <p>The World Bank Environmental and Social Framework (ESF);</p> <p>Environmental Health and Safety Guidelines (EHSG)</p> <ul style="list-style-type: none"> • EHSB for Construction Materials Extraction • EHSB for Toll Roads

The Consultant will be expected to fully acquaint and familiarize himself with the Environmental Management Act No 12 of 2011 and the Statutory Instrument (SI) No. 28 of 1997 - The Environmental Impact Assessment Regulations, 1997 as well as international best practice such as the World Bank Environmental and Social Framework and Environmental Health and Safety Guidelines. In case where the stated regulation and guidelines are in conflict with the requirements of the ToRs, the discrepancies shall be brought to the attention of RDA for further guidance.

d) Summarized Scope of Services

The Consultancy services: include the design review of the Kalabo Sikongo Angola border road and the detailed design for the Border Post, Health Post and Truck Park, preparing tender documents and assist the implementing agency during respond to tender queries.

The specific assignment under these terms of reference is to carry out the necessary investigation, surveys review/update the designs and prepare/update tender documents (Construction Drawings, Bill of Quantities, Specifications etc) and provide supervision services during implementation of the project.

In general, the anticipated services would comprise but not limited to the following aspects:

- i. To review these ToRs and ensure that the processes, data, application and technology will fully deliver a successful fit-for-purpose project.

- ii. Carry out design review/design update and confirm adequacy in terms of fit-for-purpose cost-effective design and where necessary undertake a redesign.
- iii. Prepare Drawings, specifications, bill of quantities, including cost estimates).
- iv. Conduct a climate vulnerability assessment using appropriate Guidelines on Climate Adaptation for the Road Sector and confirm relevant robustness and resilience measures, especially design specification for drainage structures, river crossings, slope and erosion protection.
- v. Present cost implications for climate proofing under the review/update and clearly show the impact of climate proofing and the extra measures/interventions where warranted.
- vi. Prepare Tender Documents for the Project.
- vii. Design junction connecting the road way including access roads in vicinity of the road.
- viii. Carry out confirmatory or extra field tests for the updating of the design.
- ix. Carry out a proactive Risk Management during the project implementation and give early warnings on project's risk triggers and issues.

e) Review and Confirmation of Design Input Data

The Consultant is expected to thoroughly review and confirm for adequacy, accuracy, reliability, validity, and trustworthiness all the data or information used in the design process. This shall include but not limited to the following:

f) Collection and Review of Existing Data and Documents

The Consultant shall collect and review all relevant existing data relating to the Project and whatever information which can aid in the design review process. Maximum use will be made of original reports, documents, and data collected to review and update the design.

Collection of information and data will be continuous and may extend beyond the Inception Phase of the assignment. Some of the data to be collected/reviewed for use during the design review process shall be but not limited to:

- i. Topographic maps (including 1:50 000 OS mapping) and aerial photographs at appropriate scale from the Ministry of Lands.
- ii. List of National Survey Control Beacons with UTM ARC-1950 co-ordinates from Survey Department, under Ministry of Lands.
- iii. Geological mapping from Geological Surveys Department, Ministry of Mines
- iv. Previous survey raw data or relevant physical planning information from authorities.
- v. Previous traffic surveys and historical axle loading data including Traffic data from the Highway Management System (HMS) of the Road Development Agency;
- vi. Land use information and geological data within the route coverage;
- vii. Hydrological, rainfall and other climatic data and statistic;
- viii. Sources of water, and other existing sources with quality and quantity of potentially extended borrow pits along the route;
- ix. History of construction rates and pricing with related consumer price indices (CPIs) from RDA;
- x. Road Development Agency standard drawings for drainage structures, drains and embankments, intersections, guard-rails, rest places, bus stops etc.;
- xi. Reporting formats, road network maps (if available);
- xii. Locations of any updated existing and proposed utilities at their specific positions of crossing from utilities companies (consultative and stakeholders meeting with utilities service provided like Zamtel, Water Authorities, ZESCO, and cellular firms is required),
- xiii. Existing right-of-way details (if available).
- xiv. Development plans for the region by various government agencies/local bodies

- xv. Location of environmental, tourist, important heritage sites, national parks and monuments, and
- xvi. Identifies plans for economic activities and social facilities.
- xvii. Other relevant data in pertinent categories namely: technical (engineering), economic environmental, and socio-economic.

All data collected shall be reviewed and collated into pertinent categories for completeness and relevance such as:

- Technical (Engineering);
- Economic and Financial;
- Environmental; and
- Socio-Economic.

NB: This collection of the above existing data is intended for literature review and desk study purposes only, and shall not be misconstrued as detailed field surveys. Additionally, the above data's availability and accuracy shall not be guaranteed by the Client. If any of the above data will be used or referenced during design reports compilation, its source shall be fully and accurately quoted and acknowledged.

g) Site Visit and Confirmation of Existing Alignment

The Consultant shall visually assess and confirm to the "present" time the following:

- i. There are not conflicts between the existing alignment and new developments along the road corridor which can warrant land expropriations i.e. property encroachment.
- ii. Visual road condition surveys, and
- iii. Road inventory of important road furniture.

In the unlikely event that the initial road alignment has now be overtaken by latest developments, the Consultant is expected to identify the conflict areas, recommend possible adjustments and impact (both negative and positive) resulting from these unforeseen changes.

The Consultant shall also focus on the main features with regards road conditions i.e. state of pavement, surfacing, accessibility, and maintenance. The inventory of the existing main traffic safety appurtenances shall be detailed in the design review report.

NB: If the Consultant was to make adjustment to the existing alignment or road links, a motivation for this shall be in line with Government's drive for positive developmental growth, to promote local social, local environmental and local economic dimension along the belt, which the alignment transverse (proposed route alignment changes or additional links should suit the people/community, planet/environment and businesses/opportunities).

h) Climate, Geological, and Land Use studies

The Consultant shall report on baseline information on the Climate, Geological and Land use patterns This should be well presented in reports and linked to the input data for the design review.

i) Stakeholder Sensitization and Management

The Consultant is expected to check and confirm that no conflict is anticipated between the proposed project with the community. The road project should stimulate sustainable community development in the area.

The Consultant is supposed to flag-off (in the Preliminary Design Review Report), potential sources or areas of conflict/problems with the stakeholders, which might hinder the implementation of the

project e.g., possible expropriation of land due to proposed alignment. Mitigation measures resulting to Win-Win solutions shall be included in the reports.

j) Confirmatory Control (Reference) Points Checks

The activities below shall form the basis from which all the survey tasks shall be checked and confirmed for adequacy.

The alignment, levels and other critical points of reference shall be check and confirmed as accurate and with the closure errors and link to the National Grid acceptable. Care shall be take to check and confirm that the alignment was not surveyed in isolation (using a datum) but is linked to the National Survey Grid and will the project tie-in at start and end points will within tolerance limits. The coordinates of all points of interest along the alignment (i.e. curve intersections, beginning/end of curves, curves' mid-points, tangent points) shall be checked and verified for perfect tie-in to the National Survey Grid, with levels correlated to the National Bench Marks.

Survey points relating to control surveys, topo-surveys, longitudinal and cross-sections (concrete beacons) shall be check, located, and confirmed for: Availability, acceptable closure error, reliability/stability, and accessibility.

NB: All the above checking, verification and validation process together with finding – shall be presented and reported in deliverable reports.

k) Pavement Investigations

Visual Pavement Condition surveys to assess pavement width and condition shall be carried out in accordance with the requirements of the SATCC Code of Practice for Pavement Rehabilitation - Appendix A: Condition Assessment: Performance Criteria for the Evaluation of Road Pavements.

Based on the results of visual assessment and or DCP testing, trial pits shall be located at points of obvious distress that may be linked to subgrade conditions such as dambo crossings or wherever the Pavement Engineer may recommend. Samples from each trial pit shall be returned to an approved laboratory for testing and characterization of the material in all layers. (All trial pits shall be properly reinstated, and the surfacing replaced with accordingly).

l) Construction Materials Investigations

Confirm sources of construction materials for pavements and structures, and sites of suitable materials surveyed.

The criteria for the choice of gravel and borrow material sources shall be check for evidence and motivation for all or some of the following considerations:

- Existing material locations/sources (old dis-used borrow pit sites).
- Ease of extraction of useful material (seam) to be harvested.
- Sufficient quantities i.e., the coverage of anticipated material within economic haul-distances.
- Overburden thickness (the depth and degree of accessibility to the seam).
- Impact of the location of borrow pit to the environment.
- Impact pf the location of borrow pit to the surrounding community.

The methodology of verifying the expected useful material shall be based on accurate 25m by 25m grid logging (trial pits) field investigation and results analysis, and geometry volume calculations i.e. areas of circles, rectangles, end-areas methods, etc.

Where availability or quality is deemed to be insufficient or haul distances are considered to be excessive and uneconomic, check and verify whether additional sources will be identified. The

checking shall also cover the analyses of options to improve locally available materials by mixing them, and/or by stabilization with lime or cement.

Construction material suitability, availability and adequacy shall be checked and confirmed against the project specifications and any revised changes recommended during this design/review. All these shortfalls and deficiencies identified shall be highlighted as issues in the design/review report together with recommended solutions.

Material to be utilized during the construction phase shall be reviewed and confirmed as investigated under field investigation and surveys of the original design. The review exercise on the road building material shall verify for, but not limited to the following:

- Suitability and availability of gravel material for layer works.
- Suitability and availability of fill material for roadbed formation.
- Suitability and availability of aggregates for surfacing and concrete works.
- Suitability and availability of water for all civil works including concreting.
- Suitability and availability of bitumen as binder for surfacing.
- Suitability and availability of paint for road markings.
- Signs and steel poles for road signage.
- Material which might be recommended during construction phase.

All the above-mentioned material to be used during construction shall be presented in terms of:

- identified probable/potential sources comprising suitable material,
- required quantities (demand volumes) in comparison to available quantities (supply volumes), and
- comparison of materials quality (available supply) against minimum specifications (project demand).
- Rehearse with all stakeholders along the Project Road and beyond to allocate possible sources of materials with minimal costs during construction.

Although detailed investigation of materials availability and suitability for use will be done during construction. However, the Design Consultant is expected to check and confirm at this stage and prove that the proposed roadworks are feasible within the planned costs and will be successfully implemented.

With regards to gravel and fill material, the Consultant shall check and confirm for motivation on the choice of material type and source shall include preference of local material and the following:

- Material availability extent of sustainability, suitability of intended use.
- Adequate quantity, superior quality, and ease of accessibility.
- Utilization of local inferior material e.g. cladding of fill-slopes using expansive material;
- Experience on use, technology applied and user friendliness to relating to HSE.
- Blending and re-cycling principles.
- Unit cost, economic of scale and other related materials costing factors.

m) Confirmation of Drainage studies

The Consultant shall check and confirm general hydrology of the proposed route, the number and nature of inventory of the natural streams, and natural flow direction of the run-off water. Pertinent data and historic rainfall data shall be reviewed to determine various risk scenarios based on relevant aspects such as overall risk of failure for drainage structures. Waterway requirements for cross drainage structures and the spacing of cross drainage structures shall be checked and verified for adequacy. In areas susceptible to flooding, the road embankment will be checked to confirm availability of freeboard above high flood level.

n) Road Safety

Conduct a baseline road safety star rating in line with the International Road Assessment Programme (iRAP) protocol on the existing road (pre-construction), and conduct a road safety star rating in line with the iRAP protocol on the final design.

The iRAP is a registered charity dedicated to saving lives by eliminating high risk roads throughout the world. Like many life-saving charities working in the public health arena, we use a robust, evidence-based approach to prevent unnecessary deaths and suffering. iRAP works in partnership with governments, road authorities, mobility clubs, development banks, NGOs and research organisations to:

- Inspect high-risk roads and develop Star Ratings, Risk Maps and Safer Roads Investment Plans
- Provide training, technology and support that will build and sustain national, regional and local capability
- Track road safety performance so that funding agencies can assess the benefits of their investments.

iRAP has released its Plan for the Second Decade of Action for Road Safety to save 2,000,000+ people from death or injury, make 200,000+km of roads safer and influence USD\$200 billion of road infrastructure investment to save lives in the next 10 years. iRAP's Plan is aligned to the Global Plan for the Decade of Action launched in October 2021, of which achieving 3-star or better journeys is one of 5 key areas for action.

The Consultant shall as its first activity be expected to carry out a road safety star rating for the road corridor with the intention to recommend and suggest changes in the Works Contract to prevent unnecessary deaths and suffering on the road corridor in accordance with the Plan for the Second Decade of Action for Road Safety.

The Consultant is expected to conduct a Road Safety Audit for approximately for the entire road section which shall be aimed at identifying potential safety problems. The audit shall examine the existing road and detect and identify defects or features that may contribute to any crashes and design solutions for their mitigation or elimination.

The Road Safety Audit will also look at the following aspect issues:

- Adequacy of the cross section, alignment and layout of intersection.
- Arrangements for traffic control and road furniture.
- Traffic Management Schemes.
- Specific needs of all likely road users.
- Access to property.
- Safe accommodation of local traffic.

o) Powerpoint Presentation of Preliminary Review Design/Assessment Findings

The results of the preliminary finding and recommendations for additional field investigations (if any) shall be presented to RDA in form of a detailed Power Point presentation. The Consultant is expected to justify, motivate, and present:

In line with the timeline of the Consultant's deliverables, the proposed date of the Ppt presentation shall be formally communicated to RDA's Project Implementation Unit under and the Planning and Design Department well in advance, at least two (2) weeks before the due date. The presentation shall be presented to a panel of RDA team, with all motivational evidence for the selected intervention.

The Consultant is expected to review, motivate, and justify the field surveys and investigations necessary for the successful production of the tender documents for rehabilitation.

p) Review of Traffic Safety Appurtenances and Road Furniture Requirements

As part of the Consultant's responsibilities, the expected minimum design provision, and details for the road furniture for required adequate safety on the proposed road project during implementation are:

- Possible accident black spots, including rail crossing
- Ensure forgiving roadsides free from permanent and temporary structures.
- Adequate shoulder coverage and road side bays.
- Suitable road cross-sections for both rural and urban sections of the route.
- Pedestrian crossings, particularly on the sections traversing urban areas, with particular attention to the most vulnerable road users
- Adequacy of road signs, road markings schedules in design report and drawings with all their respective quantities shown and costed in the BoQ.
- Locations and details of speed humps, rumble strips, busy bays, parking areas, lay-bys, guard-rails, barriers, marker posts, chevrons reflectors.
- Speed Control and calming measures.
- Ensure all junctions are properly designed and that they are safe
- Clear and efficient traffic control.
- Protection of Workers.
- Design should support Safe System speeds.
- Safe access and egress for construction.
- Adequacy of sight distance to provide drivers with enough reaction and maneuvering time to adapt to the road features and to other road users.

All the traffic safety design and provision shall comply with the SATCC Sign Manual and as per RTSA safety audit requirements, otherwise any deficiencies and deviations from the requirements shall be reported in the review design report with way-forward to address the respective shortfalls.

q) Border Post Infrastructure, Weigh bridge, Health Post, Truck Park and Border Post Staff Houses

The Border Post Infrastructure is expected to comprise the following:

- Approach and Circulation roads;
- Weighbridge and scanning equipment area;
- Passenger and Freight Terminals;
- Physical Inspection Bays;
- Public Health, Security and Safety facilities;
- Agriculture and Vet facilities;
- Parking and resting facilities;
- Office space for other border agencies; and
- Banking facilities;
- Twelve Border Post Staff Houses and
- Other relevant OSBP facilities.

The specific assignment under these terms of reference will include:

- Undertake the initial feasibility and detailed studies for the Border Post;
- prepare the Architectural and detailed Engineering designs;

- prepare Environmental and Social Impact Assessment (ESIA) and Resettlement Action Plan (RAP) for the OSBP as per these TORs; and
- preparation of the bidding documents as per these TORs. ; and
- development of a legal and institutional framework; and

The assignment under this activity shall entail , carrying out the Feasibility Studies; prepare the Architectural and Engineering Designs, Environmental and Social Impact Assessment (ESIA), Resettlement Action Plan (RAP) for the OSBP; preparation of the Bidding Documents, Development of a Legal and Institutional framework. The framework will be used later as a reference document for further engagements with the Angolan Government.

Undertake and Finalization of the feasibility study for the OSBP; undertake a pre-feasibility study of the Inter-Country Trade Centers (ICTC) in other words Cross Border Markets, and carry out a feasibility study on the establishment of the ICTC; Develop a framework for the inclusion of the ICTC in the OSBP; Undertake Environmental and Social Impact Assessment; Develop and implement Environmental and Social Management Plan and Develop the Resettlement Action Plan; Review and prepare appropriate operational legal and institutional framework for the OSBP.

The consolidation of the studies shall be carried out in a manner that the requirements of the facility being a multi-purpose facility are met.

The detailed design shall be carried out in a manner that assures that the buildings are of structural integrity and meet all the functionality requirements. The designs are generally expected to comprise analytical work with due professional skill and care in accordance with international standards and good engineering practice. The standards to be used shall generally be consistent with the design standard used in the design of such public structures in accordance with BSA306 or as per other internationally accepted standards.

The detailed design shall be carried with due consideration on the following design aspects:

- Sustainability – regards to the life span of the structure;
- Environment – regards for natural and build environment;
- Buildability – ease of construction, most efficient and economic use of resources;
- Structural - robustness of buildings to support designed loads;
- Durability – consideration on quality, materials & workmanship to withstand the design life period; and

Maintenance and operational requirements – access for inspections inclusive of whole life cost analysis.

The consultant shall process the data gathered considering the best construction of an OSBP facility including associated external works location, type, size and capacity of the structure (with a design life of ≤ 50 years). The analysis of possible solutions and their costs should consider annual maintenance implications and should include, but not necessarily be limited to, alternative proposals for:

- Type of construction materials for construction of an OSBP facility including associated external works and its ancillary structures, and whether it is locally available.
- Remedial drainage measures of flooding problems. Provisional estimates of requirements should be confirmed using hydrological studies.

As noted above, the detailed architectural and engineering studies to be conducted on the project shall address aspects on trade facilitation procedures as one of the main components. Trade facilitation involves several factors which can be classified in two (2) categories:

"Physical (hard) aspects" or physical infrastructure, which includes: -

- Cross-border facilities including One Stop Border Post;
- Corridor facilities including roads, logistics services and on road control facilities: warehouses (bonded or free), transit hubs, logistic centers, parking areas, weighbridges, rest areas etc.

"Soft aspects", which involves modernization, harmonization and standardization of procedures and documentation associated with cross-border trade. This in turn includes: -

- Customs Procedures: for cargo that is transported under the control of customs, either throughout the corridor (transit), or only part of the way (import/export procedures);
- Immigration Procedures: concerning trucks drivers and their assistants, bus taxis or private cars passengers and drivers;
- Safety and health (dangerous goods, sanitary controls, phytosanitary controls, livestock controls, wild life controls, protection of threatened species from extinction);
- Axle loads regulation and control;
- Institutional mechanisms and development of human resources;
- Border control arrangements;
- Use of ICT; and
- Etc.

Non-Tariff Barriers (NTBs) with high impact on trade are highly prevalent in the region and may exist along the Corridor. Hence, they should be eliminated. These include: cumbersome customs procedures and documentation; transit charges; and, restrictive charges other than import/export duties. The Zambia/Angola Border Project is anticipated to implement trade facilitation and OSBP procedures to ensure operations at the border are synchronized to ensure maximum efficiency and will comprise four critical measures, namely, (i) operational principles and standard operating procedures, (ii) harmonized and legal frameworks, (iii) stakeholder institutional framework; (iv) equipment and ICT infrastructure and information sharing networks. This will provide an opportunity for customs and immigration procedures to be harmonized and simplified, according to the needs of the two (2) countries.

The Zambia/Angola Sikongo OSBP trade facilitation is desired to have the following components:

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- The physical aspects involving OSBP facilities;
- The soft aspects involving: -
 - Regulatory Policies (Compliance Management, Bi-lateral Agreements, Operational Agreement, Trusted Partnerships);
 - People (Number, Skills & Knowledge, Capability Assessment);
 - ICT (Information Sharing, Hardware/Software, Information Sharing, Interoperability);
 - Processes (Centralized Information, Standardized Processes, Intelligent Data analysis);

Infrastructure (Equipment, Modern Technology, Traffic Management, Border Post facility, Shared Service Environment).

The Consultant shall be expected to design the weigh bridge and buildings and its appropriate Configurations. As a minimal the following shall be considered for the design:

- weighbridge categories
- weighbridge and building Elements
- Traffic Demand and the driver expectations for the weighbridge
- Type of weighbridge and other systems
- Methods of weighbridge fee Collections
- Lane Capacity,
- Communication
- Staffing
- weighbridge and other building locations
- Congestion Management
- Operation and Maintenance
- Environmental Issues
- Lighting
- Security, Accessibility, Lane Configuration
- Environmental Issues-Remedial Practices,
- In-Lane Equipment,

Lane Capacity, weighbridge access, Traffic Control Devices, Signing, Lane Configuration, Reversible Lanes (if necessary), and Accessibility

The anticipated services would comprise the following:

- I. Detailed traffic investigations and analysis;
- II. Investigation and testing of construction materials on the proposed site for both suitability and quantity;
- III. Prepare detailed design of weighbridge including all aspects of geometric design of road, pavement, culverts, access design (junction design) and associated structures. The design shall comply with the standard design specifications for Weighbridges as recommended through the Technical Assistance report for the Tripartite Transit Transport Facilitation Programme (TTTFP) under the tripartite (EAC, COMESA, SADC) Vehicle Load Management Agreement (VLMA).
- IV. Provision of adequate, as well as improved safety features including improved road marking, weighbridge information and warning signs and traffic signs etc,
- V. An environmental impact assessment/Environmental Project Brief to identify those characteristics likely to have a significant impact on the environment for the proposed site. This shall be part of the main ESIA report.
- VI. A complete economic analysis (cost – benefit analysis). This will include Ranking of the proposed Weighbridge locations at implementation stage.
- VII. A socio-economic analysis resulting from the proposed Weighbridge project and identification of the Project Affected People. The Consultant will liaise with the RDA Environmental and Social Management Unit, Western Regional Office and the Axle Load Control Unit in ensuring that the stake holders are enlightened of the proposed development and to facilitate/initiate the process for smooth acquisition and securing of the proposed parcel of land. The consultant will also be expected to provide a detailed topographical survey and coordinates of the parcel of land in question, for the Weigh Bridge.
- VIII. Estimating the appropriate level of financial and economic investment for the proposed weighbridge and

- IX. Estimating the financial viability of the various investment options in terms of EIRR and IRR.

The anticipated services will also include the design of twelve (12) Boarder Post Staff Houses and a Truck Park. The staff houses shall be design as per the Clients requirement, which shall be availed to the consultant.

The Truck Park shall have a capacity of 400 trucks, and complete with complimentary facilities.

Legal Framework Development

The output under this component of the assignment shall include but not limited to;

- (i) Reviewing and evaluating the current legal and regulatory framework for border operations including regional protocols, bilateral agreements and corridor agreements;
- (ii) The drafting of a position paper concerning legal, policy, regulatory and institutional changes required to accommodate the proposed OSBP system;
- (iii) Assessing Regional and International experience with regard to best practices. Bilateral Agreements shall be drafted for the Mwami/Mchinji One Stop Border Post (OSBP) between Malawi and Zambia. The timeframes for approving the bilateral agreements in each country as well as modifying existing legal and regulatory provisions shall be clearly outlined; and
- (iv) Drafting of the position paper and Draft Legislation on mutual recognition of weighbridge certificates and acceptance of electronic weighbridge results by respective agencies in the corridor member states and;

Stakeholder Workshop

- r) During the period of the study, one workshop shall be held in Kalabo/ Mongu , Zambia, with all concerned Stakeholders from the two (2) countries of Zambia and Angola to be involved in the operation of the OSBP. The workshop shall assist with the drafting of bilateral agreements and other related documents needed in the development of a Legal Framework for the OSBP. This item shall adequately be budgeted for by the Consultant.

Bridges

The Consultant shall note that this section shall include a design of one minor bridge and review the designs for a 75m long bridge along the Project road. There may be no designs for these crossings and the Consultant will be expected to undertake a full design of the minor bridge crossings.

The general scope under this assignment is to carry out the required engineering, as well as the related economic and environmental studies, corresponding to satisfactory project design and implementation of bridge construction along the Project road.

The anticipated tasks under the assignment shall include, but not be limited to, the following:

- (i) a geotechnical investigation at the site;
- (ii) an analysis of bridge options;
- (iii) the determination of hydrological and hydraulic characteristics;
- (iv) the investigation and testing of locally available bridge and road construction materials for both suitability and quantity;
- (v) the preparation of a detailed engineering design for the bridge and approach roads including working drawings;

- (vi) the estimation of cost for construction of the bridge and approach roads;
- (vii) the preparation of tender documents. The Consultant shall ensure the inclusion of the 20% Sub-contracting Policy for Zambian Local Contractors in the Bidding Documents as well as the Bill of Quantities in such a way that the scope of works for the subcontracting works are clearly indicated, as maybe agreed with BADEA and in accordance with BADEA guidelines;
- (viii) the provision of adequate, as well as improved safety features including road marking, traffic signs and guardrails;
- (ix) an environmental impact assessment to identify those characteristics likely to have a significant impact on the environment.

Geotechnical Investigation at Bridge Site

Rotary core drilling shall be carried out at the bridge site to conclusively establish the foundation conditions.

At least one bore hole shall be drilled where each anticipated substructure footing is likely to be positioned, but where the terrain at the site is steeply sloping or very changeable, two bore holes must be drilled – one at each end (i.e. upstream and downstream) of every anticipated foundation position.

Boreholes shall be drilled to proven bedrock levels and in-situ bearing tests (Standard Penetration Tests) as well as split-barrel and thin-walled sampling (Shelby) of bored materials and laboratory testing of materials shall be carried out. Standard Penetration tests shall be conducted out at appropriate intervals and the results shall be included on each borehole logging sheet.

Each extracted core sample shall be stored in individually labeled wooden boxes – typically 2,0m long and 0,5m wide, each fitted with thin wooden dividing walls spaced crosswise at 100mm centres to keep the core lengths apart from each other. The box label shall include such information as the borehole number, its position co-ordinates, the natural ground level at the top of the hole and the date it was completed.

The depths of the cores taken shall be indicated at regular intervals against the samples in the core box and especially at the interfaces of one stratum to another. For reporting purposes, a photograph shall be taken of each full core box with its label and depth indicators clearly visible.

Laboratory tests on selected samples shall include:

- Triaxial Shear Tests
- UCS tests

The data obtained from this geotechnical investigation shall be used to create a soil profile of the bridge site to proven bedrock levels and the results shall be included in the geotechnical report.

A fully qualified and competent Geological Engineer shall be engaged to study the cores, organise tests and produce a comprehensive geological report on the founding conditions of the site. His report shall fully describe the geology of the site and give recommendations for the most suitable founding method for the bridge. The permissible ground bearing pressure at the anticipated founding depths must also be given as well as the likely extent of settlement to be expected under the anticipated foundation loads.

Bridge Type Selection

The Consultant shall undertake a desk study to determine the most feasible bridge design for the site. The appraisal shall include an analysis of costs (construction and maintenance), ease and time required for construction, availability of materials and skills.

Road and Bridge Setting out

The consultant shall carry out a detailed topographic mapping of the bridge site using the established reference benchmarks to establish the centreline of the approach roads and proposed new road alignment over the river. Reference pegs in concrete shall be established at 250 metre intervals and at points of intersection for setting out curves. To set out the bridge, four additional reference pegs placed in concrete at positions that are unlikely to be disturbed by construction activities, shall be established on both banks of the river upstream and downstream of the bridge. They shall be labeled BPA, BPB, BPC and BPD.

Hydrological Investigation

The Consultant shall undertake hydrological and hydraulic studies and conduct additional investigations as necessary to establish the Design Flood Level and Design Flow to determine an optimum bridge overall span opening. Particular attention shall be paid to the design of flood relief culverts in the approach roads and scour evaluation at the bridge pier(s) and embankment positions. The need for bank protection measures must be considered in cases where flood flow velocities greater than 2,5m/s occur.

Materials investigation

A detailed materials investigation shall be carried out to determine the properties of materials found in the vicinity of the project site, as well as to identify any materials that may be suitable for constructing the bridge. If any materials deemed suitable for concrete construction are found, they shall be quantified and tested for quality and specifications of particle sizes clearly spelt out in the Technical Specifications in the Bidding Document.

Subgrade materials for the approach road shall be sampled at 100-metre intervals or any other interval determined from the variation of soils along the route. Tests to be carried out shall include:

- Atterberg limits
- CBR
- UCS
- Road Indicator
- Permeability
- Moisture content
- Consolidation
- DCP

Materials for construction of road pavement layers and surfacing shall also be identified, sampled and tested in a laboratory to ensure their compliance with the SATCC Standards.

Structural Design

The bridge is required to carry NA + NB36 loading as specified in the SATCC bridge design code.

The recommended structural design shall be developed to determine the optimal form and layout of the structural elements, the design of pre-stressed and/or normally reinforced concrete and the determination of resultant stress distributions under all loading conditions. Size, form and reinforcement layout of all structural elements, as well as details of concrete finishes and non-structural elements shall be presented on appropriately scaled construction drawings to enable quantification in the bill of quantities.

Design of bridge approach roads

Geometric and structural design of the bridge approach roads shall be carried out based on the design traffic loading and the material properties determined from the materials investigation. All design

work shall be carried out in conformance with the SATCC standards, and presented on appropriately scaled drawings.

Cost Estimation

The consultant shall prepare a confidential cost estimate for all of the works. This must include the provisional costs of access and any required temporary deviations including minor drainage structures and protection measures, in addition to the costs of mobilization and contractor's overheads (indirect costs).

Environmental and Social (E&S) Management Studies – Bridges

The Environmental and Social Management studies such as the ESIA and RAP/ARAP for the construction of the bridge crossing shall be undertaken by the consultant as outlined in these ToRs.

(i) Plans and Drawings

Road Plans: The following road drawings are required:

- A Site Plan(s) showing the full extent of the proposed road works and bridge placed over the existing terrain. The road setting out coordinates, north point, all natural features and right of way boundaries should be presented at a scale of 1: 2000.
- The road Longitudinal Section drawn at scales of 1:2000 (longitudinally) and 1:1000 (vertically)
- Standard road cross sections drawn at twenty metre intervals at a scale of 1:100

Bridge Plans: The following drawings are typically required:

- A Site Plan showing the bridge positioned within the road works placed over the existing terrain. The pegged road centerline, shoulders, and embankment fill and cut lines. The bridge setting out pegs, coordinates, north point, borehole positions and all existing natural or man-made features. A scale of 1:100 to 1:200 may be used depending on the extent of the works
- General Arrangement
- Foundation Layout and Miscellaneous Details (including borehole logs)
- Abutment Concrete Details
- Abutment Reinforcement Details
- Pier Concrete and Reinforcement Details
- Deck Concrete Details
- Deck Reinforcement Details
- Parapet or Handrail Concrete and Reinforcement Details
- Steel Bending Schedules

All drawings shall be completed on A0 sheets. Details must be drawn to appropriate scales to ensure the information shown is perfectly clear. The consultants shall make all necessary revisions required before producing the final plans for approval. Depending on the bridge type selected/ proposed, more drawings may be required.

Soils and river bed rock strata:

- Boreholes, test pits, depth sounding information, soil samples and laboratory results should be presented and keyed to the drawings.

s) Engineering and Standard Drawings Preparation

To ensure the proposed and intended project is accurately transferred on the ground in accordance with the project objective, scope and to required quality, the Consultant shall review and update (if required) the following documents, to the required specifications:

- i. **Typical geometric cross sections** drawings showing the cut scenario and the fill scenario 1:25 at A1 size reduced to A3 size for submission.
- ii. Typical pavement construction drawings including embankment and cuts and curve widening details 1:25 at A1 size reduced to A3 size for submission.
- iii. **Standard detail drawings** for specific works:
 - Typical drawings for structures, 75m long Bridge, culverts, and drains, containing at least the following:
 - Plan and section
 - Reinforcement
 - Construction details
 - Protection works
 - Head-walls, wing-walls, aprons and headwalls, including standard bedding details for various soil foundations
 - Schedule of materials
 - The drawings will be accompanied by schedules of proposed culverts, lined drains, retaining walls, stone pitching and other protection works describing chainages, dimensions and levels.
 - Standard drainage details chutes, lined drains, subsoil drains including termination details.
 - Standard lay byes, bus bays including schedules of locations.
 - Road furniture including guard rails, road-signs, road markings, road studs, culvert marker posts and kilometer posts with schedules of locations for installation of each.
 - Project signboard as approved by RDA.
 - Typical details for detours/diversions at both exit and entrance with schedules of locations.

(the actual detailed strip map showing the chainages of exit at start of diversion, entry at end of diversion, width, number of travel ways whether one-way or two-ways, signs, drainage ancillaries and other features shall be clearly indicated on the temporary road's lay-out plan. All details on this strip-map shall translate to the quantities and the cost added to the final cost estimate).
 - Typical schedule of other material rather than gravel i.e. aggregates, water, etc.
 - Erosion protection works (scour checks, rip-rap, stone-pitching, gabions, etc.)
 - Typical for other ancillary works (chutes, L-channels, mitre-drains, drifts, spillways, catch-water, edge-beams)
 - Typical details of cast insitu and precast kerbs (continuous or non-continuous for mountable, semi-mountable or non-mountable)
 - Traffic appurtenances (humps with bollards, rubble strips) with location and schedules
- iv. **Structural Details** including location plan and setting out information, general arrangement drawings, reinforcement drawings and bar bending schedules with steel quantities describing any maintenance, repair or construction works required for:

- all major and minor drainage structures;
 - surface and sub-surface drainage structures;
 - the 75m long bridge
- v. **Schedules of culverts** and structures, in tabular format with all the requested data preceding section and required works
- vi. **Soil Plan**-Test pits, soil samples results should be presented and keyed to their locations. Separately, map locations of borrow pits as well as larger scale maps of each needed pit and quarry, showing location, material classification against Specifications, and anticipated harvest/useful quantities, should be shown.
- vii. **Schedules of utilities** crossing or parallel to the road where works may disturb the utility or require its relocation.
- viii. **Materials Availability Drawings**. These shall include borrow pit and quarry location maps and extent plans together with materials test results and classification for each pit and expected materials reserves.

t) Preparation of Bidding Documentation

This shall include but not restricted to generation of bidding documents compete with adequate technical specifications and bills of quantities and Cost estimates. The bidding documents shall be in accordance with the BADEA's requirements. In carrying out this assignment the Consultant shall take into account the requirements of the Client. In particular, the tender documents shall comply with BADEA Procurement Guidelines. Detailed drawings for each building shall be produced. Tender drawings shall be produced in A2 size whereas all the other documents shall be of A4 size (these to be submitted in six (6) sets of soft copies as well). Both soft copies (Autocad and PDF) documents shall be provided and shall be owned by the client.

Note: To ensure quality deliverables, the Consultant should itemize on deviations or shortfalls from the above stated requirements, with proposed adjustments which shall constitutes part of the final and revised design output.

u) Assistance during the civil works tender

The Consultant shall assist the RDA in the tendering process, information relating to design queries, evaluation of tenders (if required but the actual bid evaluation process and reporting will be confidential and RDA's responsibility), contract negotiations and the award of contract. At all times the Consultant shall seek to advise the Client on the BADEA and Zambia Public Procurement Authority Procurement guidelines. The advertisement for the works contract is scheduled to take place as soon as the final bidding documents have been approved by the RDA in consultation with the BADEA. Therefore, an additional 3 months, following the approval of the bidding documents, will be provided to cater for the tendering processes of the civil works contract. Among the items that the Consultant will assist the client in the tendering process include but are not limited to the following:

- Conducting a site visit with the bidders.
- Chairing the Pre-bid meeting, clarifying and addressing the queries.
- Post-Qualification during physical inspection
- Contract Document formulation; and
- Contract negotiations.
- Arrange for site hand-over and project kick-off meeting.

NB: The evaluation process and reporting is a very confidential process performed in-house by RDA, and the Consultant will be required to assist with design related queries. Although the evaluation process is strictly RDA's responsibility, the Consultant may be requested to assist under the evaluation committee appointed by the Client.

v) Quality Assurance and Performance

The consultant shall show the internal quality assurance system that will ensure both completeness and the quality of the work is of good standard as specified.

w) Scope of work for the ESIA

The Consultant shall consider in an integrated manner, all relevant direct, indirect, and cumulative environmental and social risks and impacts that could result from the proposed road construction, including its associated facilities. The consultant shall undertake the ESIA studies in parallel with the design study works, in consultation with the requirements of the *Zambian Environmental and Social frameworks as stipulated in the Environmental Management Act No 12 of 2011 as amended by Act No.8 of 2023* with special reference to the 1997 Environmental Impact Assessment Regulations and International Best Practices such as BADEA E&S guidelines, the World Bank Environmental Framework and the World Bank Environment, Health and Safety Guidelines, as well with the relevant Good Practice Notes such as: Road Safety (2019), Gender (2019), Addressing Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) in Investment Project Financing involving Major Civil Works (2020).

Specifically, the consultant will undertake, but will not be limited to the following tasks:

- a) Provide an accurate and concise description and delineation of the proposed project that includes the geographic, environmental, social, and temporal context of the project and any associated aspects factoring variations in the country conditions and project context, including any offsite investments that may be required (e.g., dedicated pipelines, access roads, quarry sites, borrow pits, camp site, bitumen storage areas, workshop and garages facilities, asphalt plant and crusher sites, power supply, water supply, housing, and raw material and product storage facilities), as well as the project's primary suppliers. The Consultant should present a detailed map showing the project area of impact and the specific areas along the corridor that could be receptors of the project's direct, indirect, and cumulative impacts e.g schools, hospitals, sensitive biodiversity areas, cultural/heritage resources.
- b) Present environmental and social baseline data on aspects such as the physical, biological, socio-economic, and cultural resources, that is based on current information, including any changes anticipated before the project commences, that will adequately inform the characterization and identification of potential environmental and social risks and impacts and mitigation, while taking into account the current and proposed development activities in the project area that are not necessarily directly connected to the project. Further, discuss the accuracy, reliability, and data sources, as well as information about dates surrounding the different project cycles;
- c) Undertake public consultation with the project affected persons (PAPs). Ensure that the opinions, suggestions and proposals from the community are included in the design of the road by liaising with the design contractors. Include documentation of the feedback from the community in the ESIA report.
- d) Assess the existing Grievance Redress Mechanism, if any, and ensure that a project level GRM is established as part of project implementation. The GRM is to be described in the ESIA report.

Further, the consultant shall undertake the following:

- i. Assess the existing physical, biological and social environments of the project area;

- ii. Review the country's applicable policy framework, national laws, and regulations, and institutional capabilities (including implementation) studies, action plans and the country's commitments directly applicable to the project under international treaties and agreements relating to the environment and social issues;
- iii. Systematically evaluate the project alternatives in terms of the potential environmental and social impacts with regard to the project location, technology option, design and operation, including the without project option, and the most environmentally, socially and economically feasible option after assessing the capital and recurrent costs of each alternative, their suitability under local conditions; the institutional, training, and monitoring requirements for mitigating the environmental and social impacts
- iv. Identify and carry out analysis of stakeholders, undertake inclusive and meaningful consultation as an integral part of the assessment and design, and propose grievance redress mechanism to be established and implemented throughout the project, in accordance with the requirements set out in Stakeholder Engagement Plan
- v. Undertake a socio-economic study to understand the characteristics and dynamics of the project area, to establish the socio-economic conditions of the potential project-affected persons including cultural heritage, to identify events, including potential for conflict, that could affect the project implementation and to identify opportunities for enhancing project benefits.
- vi. Identify and evaluate the possible labour demands and resources, including primary suppliers required for the project workers, as well as the services required for this labor, such as lodging facilities. Additionally, identify specific measures to mitigate child and forced labor, as well as and health and safety risks to workers and the surrounding community
- vii. Provide a brief overview of the impact of the project on people's land, property and livelihood, resettlement risks and impacts and suggest appropriate mitigation measures such as the preparation of the Abbreviated Resettlement Action Plan and livelihood restoration plan that will help to mitigate possible social risks and impacts to the project-affected persons relating to involuntary land take
- viii. Scope the project using as appropriate, a combination of tools and methods, to identify E&S risks and impacts specific to the proposed project
- ix. Evaluate the project's potential environmental and social risks and impacts and categorize them into direct, indirect, cumulative impacts and apply the mitigation hierarchy for adverse impacts, and opportunities for the enhancement of positive environmental and social risks and impacts;
- x. Outline the basis for selecting the proposed project design and specify the applicable regulations, standards or guidelines
- xi. Devise differentiated measures where specific disadvantaged and vulnerable groups are identified, so that adverse impacts do not fall disproportionately on the already disadvantaged or vulnerable groups in the community, and ensure that these groups are not disadvantaged in sharing project benefits and opportunities.
- xii. Prepare an Environmental and Social Management and Monitoring Plan including monitoring indicators, frequency of monitoring, institutional roles and responsibilities, estimated budget for the measures, and timeline for the implementation of the measures.
- xiii. Assess existing implementation arrangements, and propose any further improvements, if there are gaps.

The Consultant shall pay particular focus to environmental, social, Health and gender impacts/issues which include the following:

- Air pollution related to Project site excavation work and transportation of materials,
- Soil and Water sources pollution due to wastewater, oil and grease discharge from the proposed project activities,
- Impacts of Labor Influx on the community. (Is there a risk of Gender Based

Violence and Sexual Exploitation; HIV/AIDS)

- Solid and liquid waste generation.
- Soil erosion and land stability,
- Flooding concerns and alteration of the drainage features.
- Involuntary Resettlement of PAPs.
- Loss of access to resources, livelihood, and income due to temporal and permanent land acquisition
- Traffic congestion during construction works.
- Community/workers' safety and health-related issues also from a gender perspective and potential GBV risks,
- Effect on available vegetation/trees;
- Loss of access to services due to construction works and detours
- Construction traffic management
- Risks related to sensitive sites along the roads such as schools, health centers

As appropriate, the combination or elements of the tools and methods to be employed for the ESIA study are:

- a) **Environmental Project Brief:** The Consultant will assess and identify the potential environmental and social risks and impacts of the proposed project, evaluate alternatives, and design appropriate mitigation, management, and monitoring measures.
- a) **Environmental and Social Management Plan (ESMP):** The Consultant will prepare an Environmental and Social Management Plan (ESMP) as part of the ESIA detailing the mitigation measures to eliminate or offset the identified adverse environmental and social risks and impacts or to reduce them to acceptable levels, and devise enhancement measures for the positive impacts to be implemented during the implementation of the project, and the specific actions to implement these measures.

The consultant shall prepare the following ESIA annexes:

- i. Public Consultations conducted (with pictures and attendance sheet and minutes of the consultations)
- ii. Occupational Health and Safety (OHS) plan
- iii. Community Health and Safety Plan
- iv. Traffic Safety Management Plan
- v. Chance Find Procedures
- vi. Waste Management Plan
- vii. Gender Action Plan
- viii. SEA/SH Action Plan
- ix. Stakeholder Engagement Plan (SEP)

x) **Scope of the Assignment for the RAP**

The consultant will develop a comprehensive Resettlement Action Plan (RAP) based on a door-to-door survey, for all expropriation operations and displacements. This will be done through a participatory approach in which displaced and expropriated persons should be consulted and compensated for their losses at full replacement costs before the actual move. Assistance should also be provided for their efforts to improve their former living standards.

The RAP will be produced after full and regular consultation and discussion with interested and affected parties (IAPs) and should focus on agreed-upon proposals and measures. It should include the full estimated cost of the proposed mitigation measures, including costs incurred for land expropriation, institutional strengthening, training, supervision, and monitoring. Additionally, the

RAP should include costs for measures such as planting screens, fencing in sensitive areas, closed drainage systems, sound barriers, and livelihood investment. Furthermore, the RAP should also include contingencies to the budget for involuntary damages caused to properties/assets. All these costs should be integrated into the overall project cost.

The key tasks will include the following:

- i. **Conduct meaningful stakeholder consultations** with key interested and affected parties including from government, Civil Society Organizations, private sector and the traditional leadership at provincial, district level and sub-district levels.
- ii. **Cut-off date:** In conjunction with the local authorities, establish a cut-off date for eligibility for compensation. Information regarding the cut-off date should be well documented and disseminated throughout the project area at regular intervals in written and, as appropriate, non-written forms and in relevant local languages.
- iii. **Project Impact identification:** The Consultant is expected to accurately determine the project's impact area and should work hand in hand with the Road Development Agency (RDA) and other Stakeholders as all assets located within the road reserve area need relocation to identify all impacts including restrictions to land use and access.
- iv. **Conduct actual field surveys:** Identification of impacts to be done through field surveys and **NOT** drive throughs. To achieve this task, the Consultant shall carry out thorough baseline studies of the affected population, understand and document the existence of long-standing legacy issues (if any). Additionally, the consultant is expected to derive the socio-economic survey data collected for the ESIA to provide information on the informal activities in the road corridor.
- v. **Review the existing RDA Grievance Redress Mechanisms (GRM)** which is in practice and recommend any improvements (if any/if necessary) and ensure full compliance with RDA guidelines as well as other Good International Industry Practice (GIIP).
- vi. The Consultant is also expected to **conduct an inventory of all assets** within the road reserve area, prepare a registry of impacts and a full valuation report to be attached to the main RAP report. The asset values to be prepared and signed for by a registered Valuation Surveyor.
- vii. Make special provision for gender and **identified vulnerable groups**.

The RAP document to be developed shall conform to both the ZEMA guidelines and the GIIP.

NOTE: The details of the prepared Environmental and Social Management Documents shall be incorporated in the main tender documents.

4.3 PHASE 2 – DETAILED DESIGN FOR THE REHABILITATION OF APPROXIMATELY 40KM OF THE TAPO TO KALABO ROAD (RD316) IN WESTERN PROVINCE

For the prescribed scenario in these TORs, the Consultant will be required to undertake a design review/design update (including field investigations), identify, evaluate, and recommend appropriate interventions for design enhancements and prepare/update tender documentation (Working Drawings, Bill of Quantities, Specifications and other documents) as an output. The design review shall consider climate resilience and adaption of the road infrastructure.

a) Selection of the Road width

The Consultant shall review and confirm the roadway width (width of lanes and shoulder) based on type of road, its intended function design vehicles (derived from 85-%tile distribution of the main traffic composition for both existing and expected on the road (generally, the existing natural/gravelly road has no defined road width only in some sections where the width is 5.1m – 6.2m with no shoulders). The carriageway width of 6.8 meters (one 3.4 meters lane in each direction) and shoulders of 2 meters each on both sides. Alternatively the design standard cross section is 2 x 3.5m lanes plus 2 x 1.60m shoulders with a roadbed width of 12m or as per SATCC standards and as agreed prior to commencement of design. If based on the review findings, a change is necessary - a clear motivation should be presented on the sizing of each lane width, shoulder with (either surfaced or not) and the side drain invert width based on an optimum balance of functionality factors (as at “now” fit-for-intended-use approach), safety factors, construction-ability/maintain-ability factors and economic factors, which could have changed and overtaken by events since the last design.

Unless otherwise given as instructions to stick to standards – review and confirm if the existing lanes and shoulder widths are still adequate and suit the latest fit-for-purpose design requirements and in accordance with SATCC Code of Practice for Geometric Design of Trunk Roads Figure 5.1 for definitions.

In special case like in built-up locations or potentially dangerous areas, the Consultant shall review and confirm that the typical cross-section minimizes conflicts amongst road-users. Similarly, revised recommendations on the proposed design cross sections of these specific sections shall adhere to strict road safety regulation and enhancing intervention measures.

b) Pavement Lifespan

The pavement design life shall be 20-years in accordance with the design and based on world practice of routine and periodic maintenance frequency, which up-hold the pavement condition within acceptability serviceability limits. It will be acceptable for the Consultant to recommend the design-life less or more than 20-years depending on the use and type of the road, provided there is clear and concise motivation based upon cost/benefit factors from the pavement’s life-cycle-cost-analysis (LCCA).

c) Standards

iii. Design Standards

The design standards listed below are those considered appropriate by the RDA for use in road design works in attaining the main tasks and deliverables as required in the ToRs.

Geometric Design	<ul style="list-style-type: none"> • SATCC Code of Practice for the Geometric Design of Trunk Roads – September 1998 (Reprinted July 2001) • Addendum to SATCC Code of Practice for the Geometric Design of Trunk Roads (Roads Authority, 2014) • The Overseas Road Note 6, A Guide to Geometric Design
Pavement Rehabilitation	<ul style="list-style-type: none"> • SATCC Code of Practice for the Rehabilitation of Road Pavements – September 1998 (Reprinted July 2001)
Road Pavement Design	<ul style="list-style-type: none"> • SATCC Code of Practice for the Design of Road Pavements – September 1998 (Reprinted July 2001)
Road Signs	<ul style="list-style-type: none"> • SATCC Road Traffic Signs Manual -1997
Bridge and Culvert Design	SATCC Draft Code of Practice for the Design of Road Bridges and Culverts– September 1998 (Reprinted July 2001)
Specifications and Method of Measurement	<ul style="list-style-type: none"> • SATCC Draft Standard Specifications for Road and Bridge Works - September 1998 (Reprinted July 2001)
Traffic studies and surveys	<ul style="list-style-type: none"> • Transport and Road Research Laboratory Overseas Road Note No. 40The Overseas Road Note 40, A Guide to Axle load surveys and traffic counts for determining traffic loading on pavements
Climate Adaptation	<ul style="list-style-type: none"> • Climate Resilient Road Guidelines and Codes – Climate Resilient Road Adaptation Guidelines (Accessible from RDA)

Where the design proposed by the Consultant deviates from the recommendations or requirements of the above Codes of Practice, the design Consultant shall clearly highlight the deviations and give reasons and Value Engineering motivation for the changes. Such deviations shall require the approval of the RDA.

Where aspects of the design are not covered by the above standards, the Consultant shall select and propose alternative standards for the approval of the RDA with justification for a cost-effective and suit for purpose intended outcome.

iv. Environmental Standards and Legislation

Environmental Legislation	<p><i>Environmental Management Act No 12 of 2011 as amended by Act No.8 of 2023.</i></p> <p><i>Statutory Instrument No. 28 of 1997 (The Environmental Protection and Pollution Control (Environmental Impact Assessment) Regulations, 1997).</i></p> <ul style="list-style-type: none"> • <i>Solid Waste Regulation and Management Act No. 20 of 2018</i>
Other applicable legislation	<i>Lands Act Cap 184</i>

	<i>Local Government Act Cap 281</i>
	<i>Public Health Act Cap 295</i>
	<i>Town and Country Planning Act Cap 283</i>
	<i>Water Act Cap 198</i>
	<i>Road and Traffic Control Act Cap 464</i>
	<i>The Public Roads Act, No. 12 of 2002 as amended by Act No. 9 of 2022</i>
	<i>Factories Act Cap 441</i>
	<i>National Heritage and Conservation Commission Act</i>
	<i>Forest Act Cap 311</i>
	<i>Petroleum Act Cap 439</i>
	<i>Energy regulation Act Cap 436</i>
	<i>Occupational Health and Safety ACT, No. 36 of 2010</i>
	<i>Employment Code Act No.2 of 2019</i>
International Best Practice	<p>For example;</p> <p>BADEA E&S guidelines</p> <p>The World Bank Environmental and Social Framework (ESF);</p> <p>Environmental Health and Safety Guidelines (EHSG)</p> <ul style="list-style-type: none"> • EHS for Construction Materials Extraction • EHS for Toll Roads

The Consultant will be expected to fully acquaint and familiarize himself with the Environmental Management Act No 12 of 2011 and the Statutory Instrument (SI) No. 28 of 1997 - The Environmental Impact Assessment Regulations, 1997 as well as international best practice such as the World Bank Environmental and Social Framework and Environmental Health and Safety Guidelines. In case where the stated regulation and guidelines are in conflict with the requirements of the ToRs, the discrepancies shall be brought to the attention of RDA for further guidance.

d) Summarized Scope of Services

In general, the anticipated services would comprise but not limited to the following aspects:

- i. Desk study (review of the ToRs, data collection, review of existing information);
- ii. Carry out control and topographical surveys;
- iii. The field investigations and testing of road construction materials for availability, suitability and quantity;
- iv. Detailed traffic studies and investigations
- v. Provision of adequate pavement structure and geometric design including adequate drainage structures;
- vi. Propose the road geometry (both horizontal and vertical alignments) to ensure optimum and cost-effective engineered road;
- vii. Stakeholder management to ensure that the community gets a buy-in and accepts ownership of the proposed developmental road project;

- viii. Carry out a Detailed Engineering designs for the construction of the road (geometric design, access/junction design, pavement design; drainage design and traffic safety provision);
- ix. Provision of adequate, as well as safety features including road marking and traffic signs;
- x. An environmental impact assessment to identify those characteristics likely to have a significant impact on the environment;
- xi. A complete economic analysis (cost – benefit analysis) for the selection of options e.g. proposed pavement structures;
- xii. Study the socio-economic growth for rural areas in terms of improved mobility and accessibility to markets, business areas, schools, clinics and other socio-economic centres with the provision of public and non-motorized transport opportunities;
- xiii. Estimate the regional economic growth as a result of increased socioeconomic development opportunities;
- xiv. Estimating the appropriate level of financial and economic investment;
- xv. Estimating the financial viability of the various investment options in terms of NPV and IRR (NB: The NPV versus the IRR shall be presented graphically with the required IRR (discounted rate clearly indicated);
- xvi. Prepare tender documents with detailed cost estimates; and
- xvii. Assist RDA with tendering and final evaluation process until award, NB: if required and necessary.

e) Preliminary Engineering Studies

1. Collection and Review of Existing Data and Documents

The Consultant shall collect and review all relevant existing data (if available), relating to the Project and whatever information which can aid in the generation of a credible and adequate design. Maximum use will be made of existing reports, documents, and data collected previously. These will be gathered and studied carefully to plan subsequent investigations and analysis to make most efficient use of the available time for the assignment. Particular attention will be paid to roads, materials and geotechnical data, traffic data and environmental information which may be available from previous studies and/or the Road Development Agency records.

Collection of information and data will be continuous and may extend beyond the Inception Phase of the assignment.

Data to be collected and reviewed that will be of particular importance includes but is not necessarily limited to the following:

- i. Topographic maps (including 1:50 000 OS mapping) and aerial photographs at appropriate scale from the Ministry of Lands;
- ii. List of National Survey Control Beacons with UTM ARC-1950 co-ordinates from Survey Department, under Ministry of Lands;
- iii. Geological mapping from Geological Surveys Department, Ministry of Mines
- iv. Previous survey raw data or relevant physical planning information from authorities;
- v. Previous traffic surveys and historical axle loading data including Traffic data from the Highway Management System (HMS) of the Road Development Agency;
- vi. Land use information and geological data within the route coverage;
- vii. Hydrological, rainfall and other climatic data and statistic;
- viii. Sources of water, and other existing sources with quality and quantity of potentially extended borrow pits along the route;
- ix. History of construction rates and pricing with related consumer price indices (CPIs) from RDA;
- x. Road Development Agency standard drawings for drainage structures, drains and embankments, intersections, guard-rails, rest places, bus stops etc;
- xi. Reporting formats, road network maps (if available);

- xii. Locations of any updated existing and proposed utilities at their specific positions of crossing from utilities companies (consultative and stakeholders meeting with utilities service provided like Zamtel, Water Authorities, Zesco, and cellular firms is required),
- xiii. Existing right-of-way details (if available)
- xiv. Development plans for the region by various government agencies/local bodies
- xv. Location of environmental, tourist, important heritage sites, national parks and monuments, and
- xvi. Identifies plans for economic activities and social facilities.
- xvii. Other relevant data in pertinent categories namely : technical (engineering), economical, environmental, and socio-economical.

All data collected shall be reviewed and collated into pertinent categories for completeness and relevance such as:

- Technical (Engineering);
- Economic and Financial;
- Environmental; and
- Socio-Economic.

NB: This collection of the above existing data is intended for literature review and desk study purposes only, and shall not be misconstrued as detailed field surveys. Additionally, the above data's availability and accuracy shall not be guaranteed by the Client. If any of the above data will be used or referenced during design reports compilation, its source shall be fully and accurately quoted and acknowledged.

2. Site and Road Alignment Reconnaissance Surveys

- i. Consultant shall “*walk-along*” the possible route of the possible alignment having in mind the need to select the possible optimum alignments which will serve the intended purpose.;
- ii. Carry-out visual assessment of soils variability along the probable alignments, and quick demarcation of homogenous/uniform sections for the purpose of detailed soil investigations,
- iii. Determine the shortest route practical possible between two points i.e. project start point and end point identified in these ToRs or as confirmed by RDA;
- iv. Determine the likely negative impact on non-motorized road users and collect relevant details to assist as input data to the provision of traffic safety appurtenances;
- v. Recommend the most functional route which will give the best connectivity to socio-economic activities of the communities along the proposed road corridor;
- vi. Identify and propose optimum and most economic routes in terms of build ability, for consideration during the preliminary design stage (options/alternatives proposal)
- vii. Identify and proposed the most economic and optimum routes in terms of serviceability and maintainability.
- viii. Take many photographic images set to date and time mode for selected locations along the proposed route(s) showing intersections, natural streams, natural and man-made features of interest, vegetation, which shall form part of the preliminary design ppt presentation.

3. Route Determination and Alignment Option

The exercise from above under “Site and Road Alignment Reconnaissance survey” shall culminate into the best route alignment options (up to a maximum of three of the best alternative, if more than this exist) to be reported in the Preliminary Report and presented to RDA through Ppt.

The route's Critical Success Factors (CSFs) shall be itemized, weighted and agreed during the preliminary route determination and selection phase. The Consultant can be asked to submit this motivation list in the event that the Client needs further motivation or justification during the presentation of the best and finally selected route alignment.

NB: In line with Government's drive for positive developmental growth, the final alignment and related design solutions should promote local social, local environmental and local economic dimension along the belt, which the alignment transverse (proposed route alignment shall suit the people/community, planet/environment and businesses/opportunities).

4. Climate, Geological, and Land Use studies

The Consultant is required to collect, study, collate and analyze for reporting the baseline information on the Climate, Geological and Land use patterns. The information to be collected include:

- Rainfall (monthly distribution and intensity, including rain days per month)
- Temperature (minimum, maximum and monthly ranges throughout the year)
- Any other climatic features of importance

This should be well presented in reports and linked to the input data with other relevant design information of the proposed route(s).

5. Stakeholder Sensitization and Management

The Consultant is expected to carry out all the necessary stakeholder management to ensure that there is no conflict between the proposed project with the community. The aim of this stakeholder management is to fully engage all stakeholders including people affected by the project (PAPs), sensitize them on the project charter and get their buy-in of the project from inception/idea phase. Focus should be to include the community from project inception so that their ideas/needs are brought to the fore for the road project to stimulate sustainable community development in the area.

To avoid unnecessary variation orders (VOs) and scope creeps resulting from extra works (additional road link, etc.) or "aftermath thoughts" - the following project stakeholder management measures shall be followed and reported in the Preliminary report:

- i. **Stakeholder Identification** – the Consultant shall identify people, groups and/or organization that will impact or be impacted by the project (reaching out at important contacts, stakeholder meetings, etc.). Some of the sensitive community stakeholders are: local politician/political leaders, chiefs, headman, community development specialists, elders, civic society, etc.
- ii. **Stakeholder Analysis and Prioritization** – analysis shall focus on expectations of stakeholders and their impact on the road project (i.e. grouping stakeholders in terms of project influence i.e. high or low power influence; and project interest e.g. using low or high ranking on the Power/Interest Grid).
- iii. **Stakeholders' Needs Management** – the Consultant should be able to develop an effective management strategy to engage the stakeholders in the road project decisions and execution (Communication, and action plan to ensure satisfactions of stakeholder needs and project success). The stakeholder management strategy shall be presented during preliminary design and also reported in the Final Design report

NB: Proof for people's input and support for the project should be appended at the end of the Preliminary report i.e. meeting photos, meeting minutes, interviews or testimonies of Chiefs and requests submission by community leaders within the project area.

The Consultant is supposed to flag-off (in the Preliminary Report), potential sources or areas of conflict/problems with the stakeholders, which might hinder the implementation of the project e.g. possible expropriation of land due to proposed alignment, encroachments on aligned sections, temporary land expropriation to facilitate diversions . Mitigation measures resulting to Win-Win solutions shall be included in the reports.

6. Compensation for Existing Utilities and Cost Estimation

As part of the route determination process, the probable alignment(s) shall be evaluated for the existing structures, utilities or any other features which can be either underground, on-ground or overhead (houses, power lines, water lines, telephone lines, optical fibers, etc.) which might result into compensation, both in cash or in material value.

The above data collection shall include the extent of the existing structure, the cost of its removal or relocation and the schedule of removal. This information shall be compiled in close liaison with the affected stakeholders in order to generate accurate relocation cost and relocation schedule or timeline for presentation design reports and for planning purposes. The location of these existing utilities shall be clearly indicated with an inventory on the drawings for use during implementation phase.

f) Detailed Field surveys and Studies

Control (Reference) Surveys

On the basis of the final or selected option of the route alignment, the Consultant shall carry out the necessary surveys in order to establish the specific characteristics of alignment and to determine the accurate center-line. It can be appreciated that the survey technology has evolved and tremendously developed over recent past, and Consultant is free to use other survey methodologies in consultation for approval by the Client. However, the activities below shall form the basis of all the survey tasks.

The center-line shall then be set out, leveled, cross-sectioned and bench marks established. No major deviation from the agreed specific alignment shall be made without the approval of the Road Development Agency. The co-ordinates of all points of interest along the alignment (i.e. curve intersections, beginning/end of curves, curves' mid-points, tangent points) shall be tied to the National Survey Grid, with levels correlated to the National Bench Marks.

Surveys shall use the UTM co-ordinate system and the ARC-1950 datum consistent with the Zambia National Grid System.

- i. Control Survey.
 - The control survey shall be carried out ahead of the topographical survey. The collection of topographic survey data shall not commence until the relevant section of the control survey has been established, completed, checked and closure errors redistributed according to normal survey practice. The closure error or tolerance figure, shall be in accordance with survey best practice or as given by the RDA.
 - Control surveys may be conducted using GPS or other appropriated and acceptable methods.
 - The control survey shall originate and terminate at a National Survey Beacon and shall take the form of an open or closed traverse.
 - All surveys of the alignment shall be based on the determined best-fit center-line of the selected alignment option. The center-line survey shall be tied to the Zambian National Grid, from which the PIs and all curves critical points (Beginning of curve, end of curve, mid-point, and critical points of super-elevation) are computed to define the final horizontal alignment.
 - The control survey shall consist of a) Primary beacons spaced at every 5km staggered at left and right edge of type of particular road's servitude b) Secondary beacon (steel pegs in concrete) spaced at every 1km or establish maximum inter-visible distance of 300m intervals along the entire length of the project road. Secondary beacons shall be located at 15m or 20m left and right perpendicular at each center chainage or beyond the expected limit of road and drainage works (which ever is further).
 - Each beacon shall consist a steel peg of 500mm in length set in a concrete monument 300mm diameter top surface x300mm imbedded depth. The reference number of the beacon shall be scored indelibly into the concrete (KM+m and the side e.g. 5+240L, meaning staked kilometer distance peg is 5km, 240meters and to the left hand side) see Exhibit 4 .

- The beacons which form the basis of establishing the vertical alignment, shall be well leveled by the accurate double run spirit leveling with a closure error of $5\sqrt{K}$ mm, where K will be length of distance leveled in kilometers. Ellipsoidal levels from GPS shall not be acceptable.
- ii. Topographic (detail) Survey
The Consultant shall undertake a topographical study to enable the accurate placement control points, center-lines, and drainage structures and to aid in computation of earthworks quantities

The topographic survey shall include:

- Marking of the road centerline shall be at 25m intervals and perpendicular to the line tracing through the established road centre-line. Chainage marks shall be a steel nail driven into the road centerline and marked with paint. The centerline chainage shall be indicated at 100m intervals.
- Cross sections.

The interval for cross sections shall be extracted at every 25m intervals or less on sections of rolling or steep terrain, within deep cuts or high fills and on horizontal curves cross sections. Additional cross sections shall be added wherever necessary. At every cross culvert an additional cross section shall be taken aligned with the culvert barrel and along the centerline of the structure, with extra off-set levels taken up and down stream. For each cross-section, survey points shall be picked

The minimum width of any cross section shall be either (i) 15m from the road centerline either side or (ii) in deep cuts or on high fills - the survey shall extend at least 5m beyond the daylight point if this is greater than 15m from the centerline. Coding shall define at least:

- i. Road centerline
 - ii. Road edge
 - iii. Shoulder breakpoint
 - iv. Drain invert (multiple if the drain is trapezoidal)
 - v. Cut daylight point or outside top of drain
 - vi. Embankment toe
 - vii. Spot heights as required
- Centerline, edge lines and where applicable kerb lines and lane lines for all junctions attached to the project road i.e. at tie-in points shall have their details picked during the surveys. Survey of attached roads shall continue either to the edge of the road reserve or to the point where the attached road attains its normal cross sectional geometry, whichever is greater.
 - Spot heights at other locations as necessary to define the terrain and extraction of digital terrain model (DTM) from the design software.
 - Sufficient points to define top and inverts of drains. Outfall drains shall be followed at least to the edge of the road reserve.
 - Inlet and outlet levels on all culverts whether access or crossing. The chainage of the centerline of all cross culverts shall be marked onto the road surface or culvert headwall.
 - All crossing or parallel services within 15m of the road centerline (above or below ground).
 - All electrical or telephone poles, fences and related lines within the road reserve
 - All trees within 15m of the centerline with a diameter at 0.750m and 1.0m height, or girth as specified in the SATCC specifications.
 - All buildings and temporary structures within the road reserve
 - Any other item details that may be required for the design of the road, cost estimate or planning during construction

- iii. Preparation of Digital Terrain Model (DTM) and Survey Drawings

The detail survey shall be used to prepare a digital terrain model for the road corridor and survey drawings of the existing road. The DTM and drawings will be used throughout the design process and during construction and so should be prepared to high standards. As a minimum:

- Sufficient manual break-lines shall be used in the creation of the DTM to ensure that linear features such as the road centerline, road edge line, edge of shoulder are properly represented in the model.
- Care shall be taken to ensure break-lines from culvert invert points, intermediate spot heights etc. do not cross the road centerline.
- Erroneous points (e.g. points with 0 level or obviously incorrect level) shall be removed from the DTM.
- Bridge sites should be clearly defined in terms of alignment centre-line, bridge skewness, bottom bank line, top bank line and river width as should the number of waterways or streams that across the proposed route alignment.

NB: All the above shall include be presented and reported in the deliverable reports in terms of the methods of establish benchmarks, all resources used (human and equipment), and accuracy of survey closure. The raw data in software format shall accompany the report submission.

Traffic Studies

1. Vehicular Traffic Studies

The Consultant shall execute the following traffic studies on the project road:

- An assessment of the number of traffic count locations along the road (minimum of two) shall be agreed with the Client. Proposed locations should therefore be indicated in the inception report or otherwise formally transmitted to the Road Development Agency for approval.
 - Where necessary turning count locations shall be carried out at heavily trafficked intersections, to allow design of such intersections.
 - 7 day 24 hour classified traffic count using automatic traffic counters capable of classifying the vehicle stream shall be conducted on the existing road.
 - Other count locations may be for shorter periods, but. all counts shall be at least 12 hours (06:00 to 18:00)
 - Traffic counting vehicle categories and traffic count form format shall be obtained from the RDA or any other agreed categories.
- i. 3 day 12 hour (minimum) Origin and Destination Survey shall be executed at a locations to be agreed with the Client, which shall be associated with one of the traffic count stations. The O&D survey shall collect at least the following data:
- Time at instant of interview;
 - Vehicle Registration Number;
 - Trip Origin and Destination;
 - Trip type and purpose (i.e. local, regional, international)
 - Vehicle type (per RDA, or agreed categories)
 - Vehicle's recommended maximum load limit
 - No. of Passengers and whether it is overload
 - For goods vehicles, the type of cargo carried, its total weight, and whether it is overloaded?

Count and O&D raw data, its analysis and presentation shall form part of the Preliminary Design Report Deliverable.

2. Non-motorized Traffic Studies

The Consultant shall divide the road into sections of high, medium and low levels of Non-Motorized traffic. The method for sectioning shall be devised by the Consultant but will consist of observation coupled with a number of short duration (1-2hour), fixed location counts. Built-up and busy areas like small towns/villages shall be treated separately as isolated sections, where points of conflicts with motorized traffic have to be identified, and mitigation measure derived and reported as part of the reporting deliverables. On these busy locations, special care should be taken to cater for accessibility of the disabled persons and related conflicts with other road users.

3. Axle Loading Surveys

The Consultant shall establish a portable weigh bridge at a suitable location on the project road and shall conduct a three day, 24 hour axle weighing programme. Equipment used shall weigh axles individually. On lightly trafficked roads, all trucks above 10T gross weight passing the survey locations shall be weighed, whether loaded or empty for axle loading analysis, but where this is not possible a target sample rate (%) shall be agreed with RDA

The axle load survey may be located at the same point as one of the traffic count stations. Its location shall therefore be given in the inception report to allow for Client approval. If it cannot for any reason be located at a traffic count location, then a parallel traffic count must be run to determine sample size.

The Consultant shall be responsible for providing all equipment and survey personnel required to carry out the axle loading survey and all costs related to this survey. He shall also make arrangements for the Police to provide such officers as are necessary to stop trucks for survey purposes. The Consultant shall be responsible for paying the allowances and costs associated with the police presence.

The set up and conduct of the axle loading survey shall be as set-up and illustrated in Transport and Road Research Laboratory Overseas Road Note No. 40 or as approved by RDA. The Consultant shall provide full details of his proposed set up and survey methodology with the inception report. Clear signage and the safety of road users and survey personnel shall be paramount considerations to ensure road traffic safety at the axle loading survey points. The traffic analysis results shall be clearly shown in all relevant reports with a sample of important raw data appended as appendices.

Detailed Soil Surveys and Construction Materials Investigations

For soil field investigations, a clear and concise method statement shall be presented in the inception report. The approach should be based on investigations using statistical sampling and engineering judgment in order to get accurate parameters of investigated factors or metrics. The methodology of the Consultant shall ensure adequate investigations, accurate data collection, and statistical analysis of sample results so that there can be generalized to tested parameters with a fairly reasonable reliability.

The Consultant shall accurately investigate and determine the insitu bearing strength along the center-line of the proposed alignment (or option likely to be selected, if alternatives are available) up to a design depth of at least 800m from the finished road level (FRL). Therefore, in order to maintain the 800m design depth, the investigation extent from the natural ground surface should be adjusted accordingly for areas of anticipated big cuts and high fills.

All possible sources of construction materials for pavements and structures, and sites of suitable materials surveyed and shown in the engineering plans and also present as a strip map. Analysis and testing shall be carried out as required on the construction materials, in accordance best practice for Materials Analysis and Testing stipulated in major standards under Design Standard.

Where availability or quality is deemed to be insufficient or haul distances are considered to be excessive and uneconomic, additional sources will be identified. The investigation will also cover

the analyses of options to improve locally available materials by mixing them, and/or by stabilization with lime or cement.

Field and laboratory tests are to include but not limited to the following:

- i. Dynamic Cone Penetration (DCPs up to a depth of 1.0m at every 100m interval or at least 6 test points per uniform section – which ever has more points) along the alignment center-line and next to coinciding trial-pit point;
- ii. Trial-pitting at every 500m interval or at least 6 test points per uniform section (whichever has more tests points), to a depth of 1.0m along the center-line of the alignment. The interval shall be reduced if DCP indicators tests show high variability in bearing strength. The following shall apply on each trial hole:
well recorded in a typical logging format,
depth measured by a leveling staff and clearly indicated, and
accurately photographed.

The nature and sample size should be sufficient for the laboratory testing to provide, road Indicators (grading and Atterberg Limits), maximum dry density and CBR strengths for the gravel and in-situ material. Allowance should be for appropriate testing in the classification of the materials into strength classes, and Soil moisture/density relationships in form of MDD graphs;

- iii. CBR values of proposed sub-grade for selected or insitu soils;
- iv. Unconfined Compression Strength (UCS) vs. cement dosage graphs for every borrow-pit shown on the strip-map and proposed for stabilization;
- v. All aggregates chemical and mechanical tests (ACV, AIV, 10% FACT, flakiness –ALD, bitumen adhesion, striping test, LAA, aggregates reaction tests, etc.);
- vi. Water chemical analysis;
- vii. Soil sensitivity and Activity determination tests including Linear Shrinkage; and
- viii. All other Atterberg Limits or material classification tests (e.g. grading, plasticity characteristics, etc.)

In addition to the stated tests and if deemed necessary to enhance the final design output, the Consultant shall make adequate tests to prepare alternative designs for sub-base, base and wearing courses with different materials, such as naturally occurring gravel, gravel stabilized with cement, foam bitumen or crushed stone. Undisturbed samples will be tested for the determination of the main mechanical characteristics (classification, shear strength, compressibility, etc.)

All the field investigation results shall be well presented as analysis results with raw data included in the Materials Report.

Detailed Special Geotechnical Investigations

Special detailed tests shall be carried out on problematic sections of the alignment including dambo/swampy areas. For anticipated high embankments and big cut stretches, slope stability and shear strength tests and analysis shall be undertaken and presented in the design reports.

It should be noted that the test points of the two methods of insitu soil strength determination i.e. Trial Pits and DCP should be well synchronized and closely positioned at locations of same multiple chainage. This double testing of same test point using two different methods is meant for correlation and comparison purposes during analysis of results from the two sources.

The DCP investigation shall be done in two stratified layers i.e. the top layer which shall include the first 500mm from the anticipated FRL, and the bottom layer underneath the top layer but not more than the specified maximum test depth or design depth.

Each trial pit shall have its layer variations/thicknesses, colour variations, natural soil moisture content, natural density, natural drainage (recorded as G for good, AV for average and P for poor) and other geotechnical information all recorded. Soil samples extracted from each trial pit shall be done statistically to ensure a true representation of material characteristics and of adequate in quantity to cater for all the required mechanical, physical and Atterberg limits tests.

All the field investigation results shall be well presented as analysis results with raw data included in the Materials Report.

Hydrological Surveys and Drainage studies

The Consultant shall survey the corridor of the proposed route in order to determine its general hydrology, the list and compile the inventory of the natural streams, and the natural flow direction of the run-off water. Pertinent data and historic rainfall data shall be reviewed to determine various risk scenarios based on relevant aspects such as overall risk of failure for drainage structures. Necessary hydrological studies will be carried out to assess the waterway requirement for cross drainage structures and the spacing of cross drainage structures. In areas susceptible to flooding, the road embankment will be checked to confirm availability of adequate freeboard above high flood level and evaluated against susceptible scouring. Hydrological studies will be carried out to estimate the design discharge, required waterway, and design flood level. A Consultant shall use any preferred methodology (to be reported in design reports) to demarcate the catchment area, and assess the run-off characteristics.

Information on past floods and their effects on the culverts and project road will also be collected from records, and by interviewing the local officials and longest staying residents along the route corridor. Freeboards above high flood level and run-off coefficients will be decided on the basis of available data, and in consultation with the drainage department/authority. Peak flood flows for the prescribed return periods will be determined. All this information will lead to decisions on road/bridge levels, adequacy of existing waterways and additional waterway requirements.

The drainage survey shall include both information to enable provision of both surface and sub-surface drainage design. The main crossing drainage surveys shall include but not limited to the following parameters:

- i. Length of most remotest place of the catchment area upstream to the proposed inlet point (road alignment drainage structure location);
- ii. Difference in height between the remotest point upstream and the inlet point;
- iii. Drainage coefficient factors (terrain, vegetation cover and soil filtration behavior/permeability, etc.);
- iv. Signs of erosions, ponding, and poor sub-surface drainage or permeability;
- v. Catchment area (and shape) as visually appreciated on site for comparison with the area as determined from maps or aerial photographs;
- vi. Storm-water surveys which shall aid during computation of peak flows for selected return period.

The Consultant shall investigate channel stability/scour depth and bank stability, maximum flood level and hydraulic opening of the structures to accommodate maximum flow anticipated with a provision for adequate free board. Longitudinal drainage shall be provided to attain integrity of the road ensuring water is carried away to be dispersed into the surrounding area and water-courses. Attention must be drawn to the dangers of the road embankment becoming saturated by either surface water run-off or groundwater rising by capillary action in the road embankment intensified by its bituminous surfacing.

g) Scope of work for the ESIA

The Consultant shall consider in an integrated manner, all relevant direct, indirect, and cumulative environmental and social risks and impacts that could result from the proposed road construction, including its associated facilities. The consultant shall undertake the ESIA studies in parallel with the design study works, in consultation with the requirements of the *Zambian Environmental and Social frameworks as stipulated in the Environmental Management Act No 12 of 2011 as amended by Act No.8 of 2023* with special reference to the 1997 Environmental Impact Assessment Regulations and International Best Practices such as BADEA E&S guidelines, the World Bank Environmental Framework and the World Bank Environment, Health and Safety Guidelines, as well with the relevant Good Practice Notes such as: Road Safety (2019), Gender (2019), Addressing Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) in Investment Project Financing involving Major Civil Works (2020).

Specifically, the consultant will undertake, but will not be limited to the following tasks:

- e) Provide an accurate and concise description and delineation of the proposed project that includes the geographic, environmental, social, and temporal context of the project and any associated aspects factoring variations in the country conditions and project context, including any offsite investments that may be required (e.g., dedicated pipelines, access roads, quarry sites, borrow pits, camp site, bitumen storage areas, workshop and garages facilities, asphalt plant and crusher sites, power supply, water supply, housing, and raw material and product storage facilities), as well as the project's primary suppliers. The Consultant should present a detailed map showing the project area of impact and the specific areas along the corridor that could be receptors of the project's direct, indirect, and cumulative impacts e.g schools, hospitals, sensitive biodiversity areas, cultural/heritage resources.
- f) Present environmental and social baseline data on aspects such as the physical, biological, socio-economic, and cultural resources, that is based on current information, including any changes anticipated before the project commences, that will adequately inform the characterization and identification of potential environmental and social risks and impacts and mitigation, while taking into account the current and proposed development activities in the project area that are not necessarily directly connected to the project. Further, discuss the accuracy, reliability, and data sources, as well as information about dates surrounding the different project cycles;
- g) Undertake public consultation with the project affected persons (PAPs). Ensure that the opinions, suggestions and proposals from the community are included in the design of the road by liaising with the design contractors. Include documentation of the feedback from the community in the ESIA report.
- h) Assess the existing Grievance Redress Mechanism, if any, and ensure that a project level GRM is established as part of project implementation. The GRM is to be described in the ESIA report.

Further, the consultant shall undertake the following:

- xiv. Assess the existing physical, biological and social environments of the project area;
- xv. Review the country's applicable policy framework, national laws, and regulations, and institutional capabilities (including implementation) studies, action plans and the country's commitments directly applicable to the project under international treaties and agreements relating to the environment and social issues;
- xvi. Systematically evaluate the project alternatives in terms of the potential environmental and social impacts with regard to the project location, technology option, design and operation, including the without project option, and the most environmentally, socially and economically feasible option after assessing the capital and recurrent costs of each alternative, their suitability under local conditions; the institutional, training, and monitoring requirements for mitigating the environmental and social impacts

- xvii. Identify and carry out analysis of stakeholders, undertake inclusive and meaningful consultation as an integral part of the assessment and design, and propose grievance redress mechanism to be established and implemented throughout the project, in accordance with the requirements set out in Stakeholder Engagement Plan
- xviii. Undertake a socio-economic study to understand the characteristics and dynamics of the project area, to establish the socio-economic conditions of the potential project-affected persons including cultural heritage, to identify events, including potential for conflict, that could affect the project implementation and to identify opportunities for enhancing project benefits.
- xix. Identify and evaluate the possible labour demands and resources, including primary suppliers required for the project workers, as well as the services required for this labor, such as lodging facilities. Additionally, identify specific measures to mitigate child and forced labor, as well as and health and safety risks to workers and the surrounding community
- xx. Provide a brief overview of the impact of the project on people's land, property and livelihood, resettlement risks and impacts and suggest appropriate mitigation measures such as the preparation of the Abbreviated Resettlement Action Plan and livelihood restoration plan that will help to mitigate possible social risks and impacts to the project-affected persons relating to involuntary land take
- xxi. Scope the project using as appropriate, a combination of tools and methods, to identify E&S risks and impacts specific to the proposed project
- xxii. Evaluate the project's potential environmental and social risks and impacts and categorize them into direct, indirect, cumulative impacts and apply the mitigation hierarchy for adverse impacts, and opportunities for the enhancement of positive environmental and social risks and impacts;
- xxiii. Outline the basis for selecting the proposed project design and specify the applicable regulations, standards or guidelines
- xxiv. Devise differentiated measures where specific disadvantaged and vulnerable groups are identified, so that adverse impacts do not fall disproportionately on the already disadvantaged or vulnerable groups in the community, and ensure that these groups are not disadvantaged in sharing project benefits and opportunities.
- xxv. Prepare an Environmental and Social Management and Monitoring Plan including monitoring indicators, frequency of monitoring, institutional roles and responsibilities, estimated budget for the measures, and timeline for the implementation of the measures.
- xxvi. Assess existing implementation arrangements, and propose any further improvements, if there are gaps.

The Consultant shall pay particular focus to environmental, social, Health and gender impacts/issues which include the following:

- Air pollution related to Project site excavation work and transportation of materials,
- Soil and Water sources pollution due to wastewater, oil and grease discharge from the proposed project activities,
- Impacts of Labor Influx on the community. (Is there a risk of Gender Based Violence and Sexual Exploitation; HIV/AIDS)
- Solid and liquid waste generation.
- Soil erosion and land stability,
- Flooding concerns and alteration of the drainage features.
- Involuntary Resettlement of PAPs.
- Loss of access to resources, livelihood, and income due to temporal and permanent land acquisition
- Traffic congestion during construction works.
- Community/workers' safety and health-related issues also from a gender perspective and potential GBV risks,

- Effect on available vegetation/trees;
- Loss of access to services due to construction works and detours
- Construction traffic management
- Risks related to sensitive sites along the roads such as schools, health centers

As appropriate, the combination or elements of the tools and methods to be employed for the ESIA study are:

- b) **Environmental Project Brief:** The Consultant will assess and identify the potential environmental and social risks and impacts of the proposed project, evaluate alternatives, and design appropriate mitigation, management, and monitoring measures.
- b) **Environmental and Social Management Plan (ESMP):** The Consultant will prepare an Environmental and Social Management Plan (ESMP) as part of the ESIA detailing the mitigation measures to eliminate or offset the identified adverse environmental and social risks and impacts or to reduce them to acceptable levels, and devise enhancement measures for the positive impacts to be implemented during the implementation of the project, and the specific actions to implement these measures.

The consultant shall prepare the following ESIA annexes:

- x. Public Consultations conducted (with pictures and attendance sheet and minutes of the consultations)
- xi. Occupational Health and Safety (OHS) plan
- xii. Community Health and Safety Plan
- xiii. Traffic Safety Management Plan
- xiv. Chance Find Procedures
- xv. Waste Management Plan
- xvi. Gender Action Plan
- xvii. SEA/SH Action Plan
- xviii. Stakeholder Engagement Plan (SEP)

h) Scope of the Assignment for the RAP

The consultant will develop a comprehensive Resettlement Action Plan (RAP) based on a door-to-door survey, for all expropriation operations and displacements. This will be done through a participatory approach in which displaced and expropriated persons should be consulted and compensated for their losses at full replacement costs before the actual move. Assistance should also be provided for their efforts to improve their former living standards.

The RAP will be produced after full and regular consultation and discussion with interested and affected parties (IAPs) and should focus on agreed-upon proposals and measures. It should include the full estimated cost of the proposed mitigation measures, including costs incurred for land expropriation, institutional strengthening, training, supervision, and monitoring. Additionally, the RAP should include costs for measures such as planting screens, fencing in sensitive areas, closed drainage systems, sound barriers, and livelihood investment. Furthermore, the RAP should also include contingencies to the budget for involuntary damages caused to properties/assets. All these costs should be integrated into the overall project cost.

The key tasks will include the following:

- viii. **Conduct meaningful stakeholder consultations** with key interested and affected parties including from government, Civil Society Organizations, private sector and the traditional leadership at provincial, district level and sub-district levels.
- ix. **Cut-off date:** In conjunction with the local authorities, establish a cut-off date for eligibility for compensation. Information regarding the cut-off date should be well documented and

- disseminated throughout the project area at regular intervals in written and, as appropriate, non-written forms and in relevant local languages.
- x. **Project Impact identification:** The Consultant is expected to accurately determine the project's impact area and should work hand in hand with the Road Development Agency (RDA) and other Stakeholders as all assets located within the road reserve area need relocation to identify all impacts including restrictions to land use and access.
 - xi. **Conduct actual field surveys:** Identification of impacts to be done through field surveys and **NOT** drive throughs. To achieve this task, the Consultant shall carry out thorough baseline studies of the affected population, understand and document the existence of long-standing legacy issues (if any). Additionally, the consultant is expected to derive the socio-economic survey data collected for the ESIA to provide information on the informal activities in the road corridor.
 - xii. **Review the existing RDA Grievance Redress Mechanisms (GRM)** which is in practice and recommend any improvements (if any/if necessary) and ensure full compliance with RDA guidelines as well as other Good International Industry Practice (GIIP).
 - xiii. The Consultant is also expected to **conduct an inventory of all assets** within the road reserve area, prepare a registry of impacts and a full valuation report to be attached to the main RAP report. The asset values to be prepared and signed for by a registered Valuation Surveyor.
 - xiv. Make special provision for gender and **identified vulnerable groups**.

The RAP document to be developed shall conform to both the ZEMA guidelines and the GIIP.

NOTE: The details of the prepared Environmental and Social Management Documents shall be incorporated in the main tender documents.

4.4 PHASE 3 – CONSTRUCTION SUPERVISION FOR THE UPGRADING OF THE 60KM OF THE KALABO SIKONGO ROAD

Under this Phase the consultant shall provide technical and financial supervision in order to ensure that the construction works are carried out in accordance with the contract and to the satisfaction of the Executing Agency.

The Consultant shall conscientiously fulfill, to the highest professional standards, the role of the Engineer to supervise the construction of the works throughout the entire performance period of the works contract, including the maintenance period. It will be the Consultant's responsibility to ensure that the Works are constructed:

- i. in accordance with the Conditions of Contract or any amendments thereto;
- ii. so far as is reasonably possible, within the Contract Price and Period of Performance allowed under the Contract or any agreed amendments thereto;
- iii. by optimizing the use of available material resources to minimize costs to the Contracting Authority and/or to maximize the quality of the Works and/or to expedite construction.

The responsibilities delegated to the Consultant will call for the services listed below, without, however, being necessarily and strictly restricted to the items identified:

- Check and establish that the Contractor mobilises and supplies to the contract all plant, equipment and machinery that have been committed in the tender and ensure that all such items of plant remain on the Site in accordance with the works contract until their release has been authorised. In addition the Engineer will maintain records of utilisation, breakdown and general condition of the plant, equipment and machinery being utilised on the works.
- At all times take necessary measures and provide appropriate advice to the Employer to enable the construction contract to be completed in a timely and cost effective manner, in conformity with the contract conditions and specifications.
- Satisfy himself thoroughly as to the nature and scope of the works, of all information available and of documents and materials to be used by the Contractor in executing the works so as to enable him to perform his duties satisfactorily, study and check all documents associated with the project, foresee possible problems and advise the Employer appropriately during the Construction and Defects Liability Periods. The Engineer shall report to the Employer on any inadequacy of information in the inception and other subsequent reports.
- Identify and mark all utilities in conjunction with the responsible utility authorities and assist the Employer in effecting the removal/relocation (where necessary) of utilities within the right of way.
- Liaise with the Contractor in the preparation of its Environmental Project Briefs so as to ensure that the requirements of the Environmental Management Plan and the Resettlement Action Plan are complied with.
- Liaise with the Employer's Environmental Unit to ensure that the assessment and compensation of crops and buildings, if any, within the right of way which is affected by the particular works is carried out before the contractor is given possession of the Site
- Assist the Contractor to identify and locate all beacons and benchmarks to enable the Contractor to set out and construct the Works.
- Participate with the Contractor to confirm the accuracy of the provided cross-sections which have been prepared at 50m intervals; to agree with the Contractor that these are acceptable

- on which to base measurement of earthworks for payment purposes and to affect such corrections to these as may prove necessary.
- Inspect, test and approve all materials and completed works to ensure compliance with technical specification requirements. Any non-compliance with the specification shall be promptly reported to the Employer with proposed corrective and mitigation measures. The Engineer shall supervise the corrective measures undertaken by the Contractor.
 - Keep updated all records including reports, photographs, works diaries, correspondence, instructions given to the Contractor(s), test records, measurement and quantity calculations, payment records and all other relevant documents pertaining to both the works and supervision contracts. Issue site instructions to the Contractor.
 - Timely prepare and submit consolidated monthly reports on work programme, physical and financial status, site meetings, contractual matters, etc., together with recommendations for action by the Employer. Quarterly reports to include updated list of Civil Works Contract, Implementation Schedule and anticipated adequacy of funding.
 - Monitor the implementation of environmental impact mitigation measures as per the Environmental Impact Statement (EIS), Environmental and Social Management Plan (ESMP) and EPBs (Environmental Project Briefs) during the construction of the works in consultation with the Environmental Specialist of the Employer and in particular, monitor the following recommendations for environmental protection during implementation of the project:
 - i. Minimize water and soil pollution by directing runoff waters into tailing ponds
 - ii. Minimize noise and dust levels
 - iii. Ensure safety during construction by ensuring the contractor installs and enforce effective traffic management systems, temporary road signs for traffic control and safety, and enforce the wearing of appropriate safety clothing and footwear and accessories in high risk areas.
 - iv. Enforce installation of fire extinguishers and first aid kits on site.
 - v. Shape and landscape all borrow pits and quarries on completion of works.
 - vi. Minimize the risk of soil erosion by grassing the embankments, protection on bridge sites and the inlets and outlets of culverts on sandy soil with gabions or stone pitching.
 - vii. Avoid spillage of hazardous and contaminants material and ensure adequate storage facilities and security are provided. Disposal of such material shall be carried out in a controlled manner and in accordance with the Contract requirements.
 - viii. Install and Enforce effective traffic management systems
 - Approve location of camp sites only in areas which minimize disruption to local population, fauna and flora and water courses; provide adequate drainage facilities and treatment of sewage and waste disposals. Ensure that camp areas are dismantled and rehabilitated by the Contractor once construction is completed. The condition of the decommissioned camp site shall be better or not worse than pre-works condition.
 - Prepare control charts of the main activities and a project master schedule, indicating both past performance and forecasts for completion including time involved in each case (a summary of progress indexes to be included i.e. cost performance indexes (CPIs) and schedule performance indexes (SPIs)).
 - Measure and verify quantities of works satisfactorily carried out and certify monthly and final payment certificates for consideration by the Employer. Monthly certificates to be submitted to the Employer for payment shall include the total cost of the works executed in foreign and local currency (net of taxes and duties).

- Record, examine and evaluate all claims or application for extension of time submitted by the Contractor and submit timely recommendations thereof backed by detailed analysis for consideration and approval by the Employer.
- After every twelve months the Engineer shall prepare and submit a detailed progress report with updated cost of the civil works contract, project risk register, implementation schedules and substantiate any request related to additional funding, if such is needed to full completion of the project. This report shall include assessment of the achievement of those indicators included in the Project Performance Management System including traffic data.
- Mindful of the conditions of the works contract, discuss with the Contractor to ascertain the establishment of unit rates for new items of works in the contract and submit to the Employer for approval.
- Prepare and submit to the Employer the final cost of the executed works.
- Prepare a Final Construction Report and As-Built Drawings which should both be signed off to confirm and certify as true record of the completed construction works.
- Subject to prior consultation with the Employer effect changes that will improve design or specification for the works; based on value engineering. Such changes shall not increase the contract time nor shall the increase in the Total Works Value (Accepted Contract Amount less contingency provision) resulting from such changes exceed the percentages agreed with the Employer, namely:
 “Variation of individual items of the Bills of Quantities up to 25% of the item value or a maximum per variation of 1 % of the Total Works Value as indicated in the Summary of the Bills of Quantities with a cumulative amount of variations up to 5% of this Total Works Value.”
- Maintain a site diary on a daily basis with the contents and format to be agreed with the Employer.
- The Engineer shall organize and undertake on-the-job training for qualified counterpart engineers. The engineers will be seconded to the Engineer by the Employer during execution of the works contract. The training will include apart from others, all aspects of supervision of works contracts. The Consultant will supervise the Contractor during the preparation of “As Built” to ensure that the drawings are accurate and that the subsequent review and approval time is minimized.
- Ensure that the Contractor organizes HIV/AIDS awareness campaigns by providing health education to the work force and the local population and provides condoms. For this aspect of the supervision services, the Consultant should include a qualified Environmentalist/Social Expert as part of the supervision team who is particularly conversant with resettlement issues and will monitor the implementation of the ESMP and the Contractor's environmental, social, safety, and gender related obligations amongst other pertinent matters.
- Ensure, through the Environmentalist/Social Expert, that the Contractor appoints his own representative to liaise with the Project Liaison Committee(s). Monthly meetings of the PLC(s) will be held to monitor site activities against the basic checklist set out in the Special Specifications of the Works Contract.

The overall objective of PLC will be to ensure that there is smooth implementation of the project and that community interests are taken care of. The PLC will be made up of the appointed representatives of the local people, the local authorities, RDA and Contractor's representative. The PLC will at most meet monthly. The Contractor will facilitate the meetings. Monthly meetings of the PLC(s) will be held to monitor site activities against the basic checklist set out in the Special Specifications of the Works Contract.

- Supervise the Contractor's contractual obligation on HIV/AIDS prevention, positive gender discrimination and road safety as well as general compliance with health and safety regulations applicable to the works.
- In the event of adjudication or arbitration, provide the necessary personnel and expertise to advise and assist the Employer in any such process and prepare any further analysis of the contractor's claims submissions as may be necessary to assist the Employer in the presentation of his case.
- Carry out inspections, prepare a defects list and draft the Taking Over Certificate within one month of the commencement of the Defects Liability Period.
- At latest within one month following final inspection of the completed works, agree with the Contractor the final measurements of the works, and prepare the final payment certificate for submission to the Employer.
- The Engineer will be required to undertake the investigation for, design, specification and quantification of certain additional works that will be identified and required during the period of the construction and to manage the disbursement of funds for these works through the establishment and agreement of unit rates as applicable and consistent with the contract rates and within the budget established by the provisional sums provided for such works in the Bills of Quantity under the Civil Works Contract. These works will include but not necessarily be limited to:

The Consultant shall ensure that all documentation needed by the Client to exercise his duties in the time frame required will be available in good manner and time. In particular the Consultant will be responsible for identifying those items requiring the approval of the Client and flag these items clearly for his attention. The Consultant will be responsible for informing the Contractor clearly and unambiguously on decisions made by the Client on these and all other issues of relevance to the good execution of the contract.

The Consultant shall organize progress meetings and shall monitor the progress of the works and shall report on these issues to all parties concerned. The Consultant shall keep track of all material and financial resources and shall ensure that this information is accessible to the Client. The Consultant will be responsible also for all coordination functions within the contract, including those related to local government issues, utilities, environmental, health and safety considerations. The Consultant shall ensure that women development issues are addressed on site. The Consultant will be responsible also for all the day-to-day interactions with the Contractor.

The Contractor is responsible for the construction and handing over of the works in accordance with that contract. The Consultant will ensure that the responsibility for any modifications to the contract, requested by the Contractor, is retained by the Contractor and that the procedures by which he may request these changes are formally presented to and acknowledged by Consultant after approval by the Client.

a. Contract Preliminaries and Generals

- i. The consultant shall review the academic qualifications and professional registration status with Engineering Institution of Zambia and Engineering Registration Board of Zambia of the proposed key field management personnel of the contractor and make appropriate recommendations to the Client; The Consultant shall receive from the Contractor, check for compliance with contract requirements and all statutory requirements such as ZRA, NAPSA, and Workers Compensation Fund etc., approve all performance bonds, insurance certificates and policies and guarantees relating to the contract before submitting to the Client for acceptance.

i. Review of work programs and monitoring of the adherence to these programs

The Consultant will review the work programme and schedule of plant as submitted by the contractor(s) together with a related projection of payments and resulting cash flow this will include components of works subcontracted. Where appropriate he will request clarification without, however, imposing any modifications. The Consultant has, however, the right to reject a works programme that is either determined to be unrealistic, will imply unacceptable obstruction of the normal traffic flows or is unacceptable for other major considerations to be indicated by the Consultant with reference to the stipulations of the contract. Once the work programme(s) is (are) approved, a parallel schedule of services to be rendered by third parties (public utilities, Traffic Police Department, etc.) will be submitted by the Contractor for approval by the Consultant.

The Consultant will review the measures proposed by the Contractor with respect to traffic diversions and will ensure as limited as possible disturbance of normal traffic flows. The Consultant shall ensure that the measures proposed will in no event compromise the safety of the road users.

b. Establishment of a Management Information System

The Consultant shall put in place an adequate Management Information System to inform all parties concerned in a transparent and concise way about the progress of works, the financial situation of the project and about possible difficulties encountered.

This Management Information System shall make use of up to date computer facilities. Provisions are made in the works contract for the provision of the required hardware, cabling and software. All computers on site shall be integrated in a Local Area Network (LAN). The Consultant shall develop software applications using the latest edition of Microsoft Office Professional. The Consultant shall organize both hardware and software such, that information is included in the MIS from the moment it is generated.

The information processed in the Management Information System shall result in an accurate image of progress made, both in physical and financial terms, making clear distinction between physical progress and payable performance. Formats to be used will be compatible with the formats of the financial documents to be produced for periodical payments. The system shall provide early warning signals (critical path analysis) and information regarding problem areas. "Action by" formats will be used, with reminders if action required is overdue. The information in the Management Information System shall be verified, analyzed and packaged weekly and shall be accessible to all parties concerned.

The Management Information System shall support a digital record of documentary and photographic data. In respect of documentary data, the system shall include an up-to-date, detailed daily Site Diary and detailed records of all contractual correspondence and data; all work stoppages or delays; accidents on site; official visitors to site; weather records; all activities in progress at any time on site showing the start and end time and full details or the resources employed per activity. It shall contain detailed records of the Contractor's equipment on site and its precise date of arrival or removal from site, its date of manufacture, previous hours worked and condition, the date commissioned to commence work, its availability and utilization. Equipment availability figures for each category of equipment shall be established and kept up to date.

In respect of photographic data, the Management Information System shall include a formal record of digital progress photographs taken throughout the period of performance of the Contract at set locations and of any construction activity of technical or contractual interest at any time. Each photograph is to be captioned with: reference number, time, date, precise location, subject and points

of particular note. These digital data shall be stored on a CD-ROM together with the captions and shall be made available to Project Manager, Contracting Authority and Delegation on a monthly basis.

c. Verification of quality and quantity of works performed and materials used Setting out of the works

The consultant shall set out the benchmarks and hand the complete information to the Contractor to allow him to proceed with the detailed setting out of works. The Consultant shall analyze the results of the setting out of works and will verify the coherence with the benchmarks. The Consultant shall ensure that adequate references will be established for the verification of quantities to be brought into the works.

The Consultant shall ensure that an adequate record of measurements is kept for the purpose of establishing accurate as-built drawings and that a sufficient number of fixed monuments be consolidated as a permanent reference of coordinates. Particular attention will be given to the establishment of stable reference points in areas where settlements are to be expected.

d. Carryout the quality control and monitoring activities i.e. testing of works before, during and after construction

Materials Quality Control

The Contractor will test all materials to be used for the works prior to incorporating them in the works. The Consultant will verify the quality of these materials in accordance with the Conditions of Contract and the technical specifications in particular. Particular attention shall be paid to possible contamination of materials from uncontrolled sources, e.g. organic pollution and acidity of water for concrete mixes if no piped water is available.

The Consultant shall in principal, carry out these tests on site in a field laboratory to be supplied through the works contract. The content of this laboratory is specified in B1400 of Technical Specification of the works contract. Staff required to carry out tests are to be provided by the Consultant. The number of staff specified in Annex IV to the contract is indicative and constitutes a minimum. Tests for which the site laboratory does not have the equipment required may be carried out in third party laboratories under the relevant stipulations of the conditions of the works contract and shall be paid through the works contract.

e. Quality of Works in all its Phases

The Consultant shall verify that all works are carried out in conformity with the specifications. He shall request the Contractor to issue written method statements to both the Contractor's foremen and the Consultant's inspectors for each relevant action and shall ensure that the work methods agreed are strictly adhered to.

The Consultant shall ensure that all tests required are carried out and that samples provided for testing truly represent the quality of the materials brought into the works. Types of tests and their frequency will be requested in accordance with good engineering practice. A systematic record of all tests performed will be kept in such manner that all test data are accessible for systematic and statistical analysis.

f. Review of Work, Rejection of Defective Work, Inspection and Tests

The Consultant shall:

- (a) conduct on-site observation of the work in progress to determine if the work is proceeding in accordance with the contract schedule, and that the completed work conforms to the contract specifications;

- (b) inform the contractor when work is to be corrected or rejected or to be uncovered for observation, or special testing, inspection or approval;
- (c) verify that all laboratory and field tests are carried out as required and that the contractor maintains adequate records thereof;
- (d) accompany visiting inspectors representing public or other agencies having jurisdiction over the project, and record the outcome of these inspections and report as appropriate;
- (e) Verify that selection and use of materials is in accordance with the specifications. Establish procedures, criteria, and oversee testing to verify the quality of the materials;
- (f) Suggest or review and approve substitute materials when necessary. Estimate the cost of such materials and make appropriate adjustments in the specifications.

g. Verification of measurements, preparation and issuance of Payment Certificates and Final Project Account

The consultant shall review monthly interim payment (inclusive of Subcontractors) applications submitted by the Contractor and jointly verify with the Contractor in accordance with the conditions of contract and upon approval forward five copies of the approved payment certificates plus all supporting measurement sheets, progress report and other supporting documentation within 14 days of receipt from the Contractor with recommendations regarding payment to the Client, who will approve them for payment. The certificate shall detail the actual quantities of work items completed to date compared with the total billed quantity for each item together with the contract unit rates for each work item, materials on site, details of day-works, price adjustments, any other payments to which the contractor may be entitled to under the contract, and deductions for retentions and advance repayments.

The Consultant shall ensure that at all times during the implementation of the contract; he will be in a position to issue an interim payment certificate within 28 days from the end of the monthly period in question.

h. Advice on Problems arising during the Execution of the Works

In the event problems of engineering nature arise during the execution of the works, the Consultant will address these problems and suggest solutions. In the event the nature of these problems will justify so, they will be subject to a special report to the Project Manager. Any instruction to the Contractor providing a clarification of or a variation to specifications and/or drawings will be given in writing. Administrative Orders shall be issued in respect of variations to specifications and/or drawings. These Administrative Orders will need prior consent by the Project Manager and the Contracting Authority in the event they will give rise to additional expenditure and/or an extension of the performance period.

Problems of non-engineering nature shall be brought to the attention of the Project Manager, who will decide whether these problems can best be analyzed on site by the Consultant or referred to other competent bodies. The consultant shall not be requested to deal with problems regarding land acquisition, right of way and damage to third party property and shall only play a coordinating role with respect to problems regarding public utilities and traffic management outside the construction site, unless these problems relate to the Contractor's deviation roads.

i. Monitoring of Sustainable use of Resources and Protection of the Environment

The Consultant will review the EMP prepared by the Contractor. The Consultant shall monitor human and material resources mobilized by the Contractor and keep a comprehensive record of these resources and the use made thereof. In his periodic reporting the Consultant shall relate resources

mobilized and works performed. Unbalanced resources or discrepancies between projected outputs and works performed will be brought to the attention of the Contractor.

The Consultant in reviewing the EMP of the Contractor shall monitor the environmental impact of the works and issue the necessary instructions to the Contractor whenever avoidable damage to the environment occurs or is likely to occur. In particular, the Consultant shall monitor the full respect of the following recommendations for environmental protection during implementation of the project:

- Minimize water and soil pollution caused by runoff waters;
- Minimize noise and dust levels;
- Shape and landscape all borrow pit and quarry sites after use;
- Minimize the risk of soil erosion; stabilize bridge sites and the inlets and outlets of culverts on sandy soils with gabions or stone pitching;
- Locate camps to an area so as to minimize disruption to local population, fauna and flora and watercourses; provide adequate drainage facilities and treatment of sewage and waste disposals and ensure that camp areas are dismantled and rehabilitated once construction is completed; and
- In respect of the above, the Consultant shall ensure that the Environmentalist in his team will start the assignment in the early phases of the supervision activities, but will remain available during the entire period of performance of the contract on a part time basis.

j. Monitoring the implementation of HIV and AIDS Prevention, Sensitization and Awareness Campaigns as provided for in the Works Contract

The Consultant shall ensure that regular HIV and AIDS prevention, sensitization and awareness campaigns reach staff on the project and the surrounding community. In this respect the Consultant shall ensure that the Contractor implements HIV and AIDS activities through the sub-contracted HIV and AIDS service provider recommended by National AIDS Council (NAC) at Provincial/District Level.

k. Monitoring the implementation of occupational health and safety matters on sites

The Consultant shall also ensure that the Contractor observes occupational health and safety requirements on site.

l. Coordination with Third Parties

The Consultant shall ensure that all parties involved in the works will be informed about the developments on site relevant to their respective competences. Representative of public utilities traffic management/police, local government and water management bodies shall be invited from time to time to site meetings and whenever necessary special coordination meetings shall be convened.

m. Analysis of claims submitted by the contractor

Any claims submitted by the contractor during the course of the works will be analyzed by the Consultant and appropriate advice will be given to the Client on their validity.

n. Completion of Construction

The Consultant shall:

- inspect the works in the company of representatives of the Client, the Contractor and the Sub-contractor, prior to handing over of any section of the works;
- (a) prepare a final snag list of items to be completed or replaced together with a time schedule for remedying of the same;

- (b) verify that all items on the final snag list have been completed or corrected; and
- (c) Prior to the commencement of the Defects Liability period for any section, provide written affirmation that the works have been completed in accordance with the requirements of the contract, plans and specifications, and issue a Taking-Over Certificate.

o. Defects Liability Period

- The Resident Engineer will provide on-site supervision of the Contractor's operations for the first month of the Defects Liability Period corresponding to the last section of the project accepted as completed;
- During this period outstanding construction matters will be finalized to the extent possible, and the As-Built drawings completed;
- During the remaining 36 months of the Defects Liability Period corresponding to the last section of the project accepted as substantially completed, the Consultant will be responsible for monitoring the Contractor's operations and for issuing any instructions and Completion Certificate;

p. Final Completion of Works

Defects Liability Certificate:

Immediately prior to the expiration of the Defects Liability Period for any section of the works for which a Taking-Over Certificate has been issued, the Consultant shall in the company of the Client, and the Contractor inspect the said section and provide written affirmation that the works have been completed and maintained in accordance with the contract, and issue a Defects Liability Certificate for the section.

Final Statement

Upon receipt from the Contractor within 56 days of the issue of the Defects Liability Certificate for the last section for which the defects liability period has expired, the Consultant shall prepare in co-operation with the Contractor the Final Account for the contract.

As-Built Drawing

The As-Built drawings shall be submitted one month after the substantial completion of the works. 4 No. bound sets in A3 size, and a further 4 No. bound sets in A1 size, together with 6 No. sets of both A3 and A1 negatives shall be provided to RDA Head Office. An Electronic copy of the As-built drawings shall also be submitted. 1 No. bound sets in A3 size, and a further 1 No. bound sets in A1 size, together with 1 No. sets of both A3 and A1 negatives shall be provided to RDA Regional Office.

q. Limitation on Consultant's Authority

The Consultant shall not authorize any deviation from the construction contract document or approve any substitute personnel, materials, equipment and items in the scope of works which involve potential additional expenditure, time extensions or which have the potential to adversely affect the quality of the intended works without the written approval of the Client.

r. Referral to the Employer:

The Engineer is to refer to the Employer in any matters regarding additional works or variations to the contracted works as described in Section 6 of the Terms of Reference.

5. REQUIRED DELIVERABLES AND TIMELINES

5.1 DELIVERABLES – PHASE 1

The key deliverables and outputs include detailed designs for the road, the preparation of an environmental and social impact study, tender documents, assisting the implementation agency in issuing the tender evaluation offers, awarding contracts (as per the loan agreement) and detailed designs for the border post, health post, and truck parking and other facilities as per these TORs.

Exhibit 3: Summary of Design and Design Review, ESIA and RAP Deliverables and Payment Terms

No.	Deliverable Description and Payment Portion of Contract	% of Phase 1 Payment	Submission Due date (after commencement)	Number or Quantity & submission Format	Submitted to Who (Where)
1	Inception Report	15	4 weeks	4 Hard copies, 1 softcopy	Refer to ToRs
2	Draft Design Review Report & Draft Bidding Documents for the road	20	12 weeks	4 Hard copies, 1 softcopy	Refer to ToRs
3	Preliminary Design Report for the Border Post Infrastructure, health Post, Staff Houses, Weighbridge and Truck Park	20	12 weeks	4 Hard copies, 1 softcopy	
4	Terms of Reference and Scoping Reports (Environmental Studies)	5	8 weeks	Refer to ToRs	Refer to ToRs
5	Draft ESIA, RAP and ESIA annex reports inclusive of the review period by RDA, ZEMA. BADEA	5	16 weeks	Refer to ToRs	Refer to ToRs
6	Draft Final Design Report for the Border Post	10	18 weeks	4 Hard copies, 1 softcopy	Refer to ToRs

	Infrastructure, health Post, Staff Houses, Weighbridge and Truck Park and bidding documents				
7	Final Design Review Report and Final Bidding Documents for the road	15	16 weeks	4 Hard copies, 1 softcopy	Refer to ToRs
8	Final Design Report for the Border Post Infrastructure, health Post, Staff Houses, Weighbridge and Truck Park and bidding documents	10	22 weeks	4 Hard copies, 1 softcopy	

a) Inception Report (including Quality Assurance Plan)

The Consultant shall combine their findings from the site reconnaissance exercise and the review of data collected with the Terms of Reference and this Technical Proposal and prepare an Inception Report. The Inception Report shall be submitted within four (4) weeks of the commencement of the assignment (4No. hard copies and 1 soft copy on a flash disk). The report shall contain the following aspects as a minimum:

- i. Status of the Consultant's mobilization as at reporting time;
- ii. Consultants resources (key staff and equipment for both design and supervision phases);
- iii. Confirm the scope of works (locations, processes extent, data reliability, applications and approach to problems, and technology), and do a comparative analysis with results of reconnaissance, stating all the identified constraints and solutions thereof.
- iv. A synthesis of information collected/collated and any shortcomings identified.
- v. Recommend extra scope of works with motivation and risk indicators for maintaining status-quo.
- vi. Consultant's strategic approach, methodologies, tools and techniques to fully respond to these ToRs.
- vii. Identification of any options that are immediately apparent for investigation.
- viii. Implementation programme and plan of action for the Consultancy activities.
- ix. The Consultant shall show the internal quality assurance and risk management systems that will ensure both completeness and attainment of the assignment's intended objectives.

- x. Monitoring procedure to be defined by interrelating actions, their key success indicators, assumptions (for both success and failure of project), risk events using the Logical Framework Analysis (LFA).
- xi. A brief on progress to date and particularly that relate to any problems/issues encountered.
- xii. Detailed bridge designs requirements
- xiii. Environmental requirements.

The Consultant is expected to make a Power Point Presentation at RDA Head Office upon submission of the Inception Report. The Employer will issue comments on the Inception Report within 2 weeks of receipt, during which time the Consultant shall proceed with his other activities. Please refer to the summary of deliverables table for more details.

b) Draft Design Review Report for the road (Including Tender documents, drawings and BoQ)

The Draft Design Review Report shall be submitted within 12 weeks of the commencement of the assignment as summarised in the exhibit in Appendices. **The consultant shall evaluate and submit a comparison of three (3) detailed options of the proposed intervention for approval by the Client prior to commencement of the Draft Design Review.**

The report shall contain the following as a minimum:

- Report on the whole design review process highlighting all the findings and recommendations (all activities from the data collection until design review requirements for compliance);
- Time schedule for the completion of both assignments (consultancy and civil works).
- Capture all the comments and improvement suggested during the inception report presentation.
- Road safety considerations, climate resilience input in the design with the full cost implications known, sections requiring rigid pavement, account for the rail crossing points and recommendations regarding the use of modified bitumen, if warranted.
- Design Documents for Bridge Crossings/Bridge(s)
- Tender Environmental Requirements Documents

The report shall be submitted as follows:

- Four (4) hard copies on A4 paper size: one (1) copy to the RDA Regional Managers Office and three (3) copies to RDA Head Office for review and necessary approval.
- one (1) to be submitted to RDA Head Office for review and necessary approval.

The submission should include appendices and drawings containing:

- Copies of all word, excel, AutoCAD or other similar files used in compiling the report.
- One complete copy of the report and all appendices and drawings contained in a single PDF file per volume.
- The rest of the submission guidelines are detailed in an exhibit under the Appendices.

The Consultant is expected to make a Power Point Presentation at RDA Head Office upon submission of the Draft Design Review Report. The Employer will issue comments on the Draft Design Review Report within two (2) weeks of receipt. The Consultant shall handover all survey and engineering investigation information obtained in the original software of generation.

c) Final Design Review Report for the road (including tender documents, final Drawings and final BoQ)

The Final Design Review Report shall be submitted within 16 weeks of the commencement of the assignment as summarised in the exhibit in Appendices.

The report shall contain the following as a minimum:

- Reporting on all activities included in for the whole design review processes above based on the format of the Draft Design Review Report, in a manner that will ensure a fit-for-purpose design;
- Capturing and implementing all of the Client's comments on the Draft Design Review Report and as discussed during the presentation;
- Final Tender Environmental Requirements Documents
- Final Design Documents for Bridge Crossings/Bridge(s)
- A Complete set of Final Bidding Documents and Final Drawings; and
- A confidential cost estimate

A total of 4 hard copies and 1 soft copies shall be submitted to RDA comprising of:

- A complete design review report including the appendices;
- A set of bidding documents with suite of drawings; and
- Soft copies of all raw data as collected from field investigations and surveys.
- The rest of the submission guidelines are detailed in an exhibit under the Appendices.

The Client shall subject the final design review report to the in-house design review system, after which final comments (if any) will be issued for final incorporation before the report can be accepted. The Consultant shall handover all survey and engineering investigation information obtained in the original software of generation, together with raw data in softcopy. Please refer to the summary of deliverables in exhibit table under Appendices, for more details.

d) Environmental Reporting

The Consultant shall prepare and compile a draft Environmental Impact Assessment report upon the completion of the studies.

The Consultant will submit two (2) hard copies and a soft copy of the draft EIA report to RDA for review and onward transmission to ZEMA for further review. Upon receipt of comments on the draft report from ZEMA and RDA, the Consultant will proceed to incorporate the comments and prepare the final EIA report.

The Consultant shall submit fourteen (14) hard copies of the final EIA report together with a soft copy to RDA for onward submission to ZEMA for decision making.

Where the RAP or ARAP has been prepared the Consultant will submit two (2) hard copies and a soft copy of the draft RAP/ARAP to RDA for review. Upon receipt of comments on the draft RAP/ARAP report from RDA, the Consultant will proceed to incorporate the comments and prepare the final RAP/ARAP report.

The Consultant shall submit five (5) hard copies of the final RAP/ARAP report together with a soft copy to RDA to facilitate the compensation of the Project Affected Persons.

Related Reports or documents (consultative meetings minutes with stakeholder, technical notes, all contractual correspondences, and all comments, queries or responses from stakeholders)

All the above submission shall be formally addressed to RDA, stating the submission due date in accordance with the above stated timeline, action needed on the reports and expected response date. Please refer to the summary of deliverables table for more details.

e) Preliminary Design Report (Border Post Infrastructure, health Post, Staff Houses, Weighbridge and Truck Park)

The following deliverables from the control survey exercise shall be presented and reported with the preliminary design report with selective critical raw data attached as annexes.

- i. Schedule of all control beacons complete with beacon sketches and co-ordinates.
- ii. DTM in AutoCAD format (dwg or dxf) defined using 3D faces (AutoCAD mesh).
- iii. X, Y, Z data for all survey points in comma delimited ASCII format including all coding.
- iv. Existing plan and profile drawings 1:1000(H), 1:100(V) at A1 size, reduced to A3 size.
- v. Tabular presentation of the horizontal geometry of the alignment.
- vi. All preliminary findings from field initial investigations
- vii. All preliminary options, preferred option and its motivation during the ppt presentation
- viii. Economic analysis of different options (if any) and justification of project implementation,
- ix. Report on all preliminary investigations and test covered and what is outstanding at detailed reporting stage
- x. Report on all the preliminary design solution and what is outstanding for the detailed design stage.
- xi. Revised time schedule and deliverable submissions for the assignment

The Preliminary report shall comprise of all (or sampled raw data from surveys/investigations done) to be appended at the end of the report for verification and validation by RDA. The submission shall undergo RDA in-house design quality checks from which approval to proceed to next stage or revert to the field if the investigations or surveys are deemed inadequate for a conclusive detailed engineering design.

The submission should include appendices and drawings of the different design options or selected design options containing:

- a. Copies of all word, excel, AutoCAD or other similar files used in compiling the report.
- b. One complete copy of the report and all appendices and drawings contained in a single PDF file per volume.

The Consultant is expected to make a Power Point Presentation at RDA Head Office upon submission of the Draft Design Review Report. The Consultant shall handover all survey and engineering investigation information obtained in the original software of generation.

The Employer will issue comments on the Preliminary Design Report within three (03) weeks of receipt. The Consultant shall not commence with Detailed Design activities until after he has received the Employer's comments on the Preliminary Design Report. Please refer to the summary of deliverables table for more details.

f) Draft Final Design Report and Draft Bidding Documents (Border Post Infrastructure, health Post, Staff Houses, Weighbridge and Truck Park)

The Draft Final Design Report and Draft Bidding documents shall contain as a minimum:

- i. Reporting on all activities included in for the whole investigations and design processes above based on the format of the Preliminary Design Report;
- ii. Capturing and implementing all of the Client's comments on Preliminary Report;
- iii. A Complete set of Draft Bidding Documents and Tender Drawings; and
- iv. A confidential cost estimate.

The Client shall subject the draft final design report to the in-house design review system for the second and final time, after which comments shall be issued within 2 weeks. The Consultant shall handover all survey and engineering investigation information obtained in the original software of generation, together with raw data in softcopy. Please refer to the summary of deliverables table for more details.

g) Final Design Report and Final Bidding Documents (Border Post Infrastructure, health Post, Staff Houses, Weighbridge and Truck Park)

The contents of the submission shall be the same as required for the Draft Final Submission. Please refer to the summary of deliverables table for more details.

5.2 DELIVERABLES – PHASE 2

No.	Deliverable Description and Payment Portion of Contract	% Phase 2 Payment	Submission Due date (after commencement)	Number or Quantity & submission Format	Submitted to Who (Where)
1.	Inception Report	15	4 weeks	4 Hard copies, 1 softcopy	Refer to ToRs
2.	Preliminary Design Report	30	16 weeks	4 Hard copies, 1 softcopy	
3.	Terms of Reference and Scoping Reports (Environmental Studies)	5	8 weeks	Refer to ToRs	Refer to ToRs
4.	Draft ESIA, RAP and ESIA annex reports inclusive of the review period by RDA, ZEMA. BADEA	10	16 weeks	Refer to ToRs	Refer to ToRs
5.	Draft Final Design Report and bidding documents	20	20 weeks	4 Hard copies, 1 softcopy	Refer to ToRs
6.	Final Design Review Report and Final Bidding Documents	20	24 weeks	4 Hard copies, 1 softcopy	Refer to ToRs

a) Inception Report (including Quality Assurance Plan)

The Consultant shall combine their findings from the site reconnaissance exercise and the review of data collected with the Terms of Reference and this Technical Proposal and prepare an Inception Report. The Inception Report shall be submitted within four (4) weeks of the commencement of the assignment (4No. hard copies and 1 soft copy on a flash disk). The report shall contain the following aspects as a minimum:

- i. Status of the Consultant's mobilization as at reporting time;
- ii. Consultants resources (key staff and equipment for both design and supervision phases);
- iii. Confirm the scope of works (locations, processes extent, data reliability, applications and approach to problems, and technology), and do a comparative analysis with results of reconnaissance, stating all the identified constraints and solutions thereof.
- iv. A synthesis of information collected/collated and any shortcomings identified.
- v. Recommend extra scope of works with motivation and risk indicators for maintaining status-quo.
- vi. Consultant's strategic approach, methodologies, tools and techniques to fully respond to these ToRs.
- vii. Identification of any options that are immediately apparent for investigation.
- viii. Implementation programme and plan of action for the Consultancy activities.
- ix. The Consultant shall show the internal quality assurance and risk management systems that will ensure both completeness and attainment of the assignment's intended objectives.
- x. Monitoring procedure to be defined by interrelating actions, their key success indicators, assumptions (for both success and failure of project), risk events using the Logical Framework Analysis (LFA).
- xi. A brief on progress to date and particularly that relate to any problems/issues encountered.
- xii. Detailed bridge designs requirements
- xiii. Environmental requirements.

The Consultant is expected to make a Power Point Presentation at RDA Head Office upon submission of the Inception Report. The Employer will issue comments on the Inception Report within 2 weeks of receipt, during which time the Consultant shall proceed with his other activities. Please refer to the summary of deliverables table for more details.

b) Environmental Reporting

The Consultant shall prepare and compile a draft Environmental Impact Assessment report upon the completion of the studies.

The Consultant will submit two (2) hard copies and a soft copy of the draft EIA report to RDA for review and onward transmission to ZEMA for further review. Upon receipt of comments on the draft

report from ZEMA and RDA, the Consultant will proceed to incorporate the comments and prepare the final EIA report.

The Consultant shall submit fourteen (14) hard copies of the final EIA report together with a soft copy to RDA for onward submission to ZEMA for decision making.

Where the RAP or ARAP has been prepared the Consultant will submit two (2) hard copies and a soft copy of the draft RAP/ARAP to RDA for review. Upon receipt of comments on the draft RAP/ARAP report from RDA, the Consultant will proceed to incorporate the comments and prepare the final RAP/ARAP report.

The Consultant shall submit five (5) hard copies of the final RAP/ARAP report together with a soft copy to RDA to facilitate the compensation of the Project Affected Persons.

Related Reports or documents (consultative meetings minutes with stakeholder, technical notes, all contractual correspondences, and all comments, queries or responses from stakeholders)

All the above submission shall be formally addressed to RDA, stating the submission due date in accordance with the above stated timeline, action needed on the reports and expected response date. Please refer to the summary of deliverables table for more details.

c) Preliminary Design Report

The following deliverables from the control survey exercise shall be presented and reported with the preliminary design report with selective critical raw data attached as annexes.

- i. Schedule of all control beacons complete with beacon sketches and co-ordinates.
- ii. DTM in AutoCAD format (dwg or dxf) defined using 3D faces (AutoCAD mesh).
- iii. X, Y, Z data for all survey points in comma delimited ASCII format including all coding.
- iv. Existing plan and profile drawings 1:1000(H), 1:100(V) at A1 size, reduced to A3 size.
- v. Tabular presentation of the horizontal geometry of the alignment.
- vi. All preliminary findings from field initial investigations
- vii. All preliminary options, preferred option and its motivation during the ppt presentation
- viii. Economic analysis of different options (if any) and justification of project implementation,
- ix. Report on all preliminary investigations and test covered and what is outstanding at detailed reporting stage
- x. Report on all the preliminary design solution and what is outstanding for the detailed design stage.
- xi. Revised time schedule and deliverable submissions for the assignment

The Preliminary report shall comprise of all (or sampled raw data from surveys/investigations done) to be appended at the end of the report for verification and validation by RDA. The submission shall undergo RDA in-house design quality checks from which approval to proceed to next stage or revert to the field if the investigations or surveys are deemed inadequate for a conclusive detailed engineering design.

The submission should include appendices and drawings of the different design options or selected design options containing:

- a. Copies of all word, excel, AutoCAD or other similar files used in compiling the report.
- b. One complete copy of the report and all appendices and drawings contained in a single PDF file per volume.

The Consultant is expected to make a Power Point Presentation at RDA Head Office upon submission of the Draft Design Review Report. The Consultant shall handover all survey and engineering investigation information obtained in the original software of generation.

The Employer will issue comments on the Preliminary Design Report within three (03) weeks of receipt. The Consultant shall not commence with Detailed Design activities until after he has received the Employer's comments on the Preliminary Design Report. Please refer to the summary of deliverables table for more details.

d) Draft Final Design Report and Draft Bidding Documents

The Draft Final Design Report and Draft Bidding documents shall contain as a minimum:

- i. Reporting on all activities included in for the whole investigations and design processes above based on the format of the Preliminary Design Report;
- ii. Capturing and implementing all of the Client's comments on Preliminary Report;
- iii. A Complete set of Draft Bidding Documents and Tender Drawings; and
- iv. A confidential cost estimate.

The Client shall subject the draft final design report to the in-house design review system for the second and final time, after which comments shall be issued within 2 weeks. The Consultant shall handover all survey and engineering investigation information obtained in the original software of generation, together with raw data in softcopy. Please refer to the summary of deliverables table for more details.

e) Final Design Report and Final Bidding Documents

The contents of the submission shall be the same as required for the Draft Final Submission. Please refer to the summary of deliverables table for more details.

5.3 DELIVERABLES – PHASE 3

The Consultant shall prepare and submit the following detailed reports:

(a) Inception Report

The Engineer shall prepare an Inception Report four (4) weeks after the commencement date. This report shall include results of the review of the Contractor's work programme, any modifications thereto, status of the Engineer and Contractor's mobilization and any other matter requiring the Employer's action. This report shall be prepared and be submitted to the Employer HQ, three (3) copies and one (1) copy to the RDA Regional Manager

(b) Monthly Reports

The Consultant shall prepare Progress Reports every month for the duration of the contract. These are to be submitted in 6 copies and should reach the Employer not later than 15 days after the end of the month being reported on. The distribution of the reports will be as follows: three (3) copies to the Employer at HQ, two (2) copies to the AfDB, and one (1) copy to the RDA Regional Manager. The Consultant shall also assist RDA in the preparation of quarterly reports for transmission to the Bank, following the format instructed by RDA.

Failure to submit reports whether at intermediate stages or overall on specified time periods may result to imposition of liquidated damages equal to 1/1000th (one thousandth) of the value of the part concerned payable per day of delay up to 15%(fifteen per cent) of the said value.

The format and the content of the monthly progress reports shall be as agreed with the Employer taking into account AfDB's reporting requirements. They will include but not limited to the following:

- i. Summary progress of the Works, both physical and financial;
- ii. Mention of any changes on the original envisaged technical solutions;
- iii. Major changes of quantities compared to contractual Bills of Quantity;
- iv. Record of working units (number of equipment and labour) used for the various types of works and total number of working hours of every item of equipment, plants and labour category.
- v. Suggestions for resolving any technical and other problems which occur and those affecting the progress of the Works. A separate section will be given to cover issues, problems and solutions.
- vi. Financial status of both Works and consultancy contracts;
- vii. Progress charts including percentages of completion of individual main Work items and overall project;
- viii. Weather information and charts, and
- ix. Construction and supervision data

Each monthly report will contain a section devoted entirely to an assessment of the impact of accumulated delays, if any, and a projected date for completion of the project. In the event that the projected date is later than a revised date which will result from approved time extensions, the report include an evaluation of a contractor-proposed plan for corrective measures to be implemented to increase the rate of progress and complete the project on time. In addition, the effect of delays on the cost and timing of the Consultant's activities should also be assessed.

(c) Quarterly Progress Report

The Quarterly Progress Report shall contain at least the information in the monthly reports. In addition there shall be fuller detail of the items within the monthly report as well as a record of payments made to the Contractor and the Engineer, including a clear presentation of any monies outstanding and the number of days overdue. The Reports shall include an update on the programme compliance for both implementation and expenditure and an assessment of the funding adequacy.

(d) Detailed Progress Report

After every twelve months the Engineer shall prepare and submit a detailed progress report with updated cost of the civil works contract, implementation schedules and substantiate any request related to additional funding, if such is needed to full completion of the project. Three copies of the report shall be sent to the Employer's HQ, one (1) copy to the RDA Regional Manager.

(e) Accident Reports

A report of the circumstances of any significant accidents occurring on the site shall be forwarded to the Client with all due dispatch.

(f) Claims and Extension of Time Reports

A report detailing the Engineer's assessment of all claims notified by the Contractor shall be prepared and submitted to the Client.

(g) Final Report

Upon completion of the contract, the Consultant shall prepare a Final Report, which shall highlight all major points of interest that arose during the contract. The report will also include the summary of the type, quality, quantities and sources of materials used on the project; contractor's plant and personnel; problems encountered and solutions employed; changes in design and specifications and the reasons therefore; a breakdown of the final cost item by item; a summary of variation orders and expenditures of provisional sums and contingency sums.

Five (5) copies of Final Report shall be submitted in "Draft" prior to the Consultant's demobilization after issuing the Defects Liability Certificate, and the report shall be finalized within one month of receiving formal comments from the Client. Eight (08) hard copies and two (02) electronic copies of the Final Report shall be submitted to the RDA Head Office within 30 days after receipt of the said comments. An additional Two (02) Hard Copies shall be submitted to the respective Regional Managers' Office.

Upon issuance of the defects liability and the final payment certificates, the Consultant shall prepare within 30 days a Final Completion Report and submit three (3) copies to RDA HQ and one (1) copy to the RDA Regional Manager. The report shall include a separate volume on proposed future maintenance activities for the road. Final reports shall be delivered in softcopy in addition to the specified number of hard copies.

6. CONSULTANT'S PERSONNEL

The Consultant shall provide competent team for the services, which shall be managed by the Team Leader/Highways Engineer and who will represent the Consultant in performing the requested services. The Consultant shall not change the contractual agreed establishment without prior approval by the Client.

Phase 1

Position	Expected Man-Months Input
Team leader /Highway Engineer.	6
Pavement and Geometric Engineer	5
Architect	5
Geotechnical/Materials Engineer	5
Bridge and Structural Engineer	4
Hydrology/Drainage Engineer	4
Surveyor / Geomatic Engineer	5
Quantity Surveyor or Building Engineer	4
Socio-Environmentalist	4
Road Safety Expert	4
Materials Technician	4
TOTAL	50 Man - months

Phase 2

Position	Expected Man-Months Input
Team leader /Highway Engineer.	7
Pavement and Geometric Engineer	6
Geotechnical/Materials Engineer	6
Hydrology/Drainage Engineer	5
Surveyor / Geomatic Engineer	6
Socio-Environmentalist	4
Road Safety Expert	4

Materials Technician	4
TOTAL	42 Man - months

Phase 3

Position	Number Required	Expected Man-Months Input
Resident Engineer	1	20 months
Assistant Resident	1	18 months
Measurement Engineer	1	18 months
Site Surveyor	1	18 months
Materials Technicians	2	36 months
Inspectors of Works	2	36 months
Environmental and Social Specialist	1	18 months
Safety and Health Specialist	1	18 months
TOTAL	10	182 months

All the Consultant's personnel shall be fully conversant with the use of English language (i.e. the writing, reading and speaking), which is the contract mode of communication. In addition, all the key staff described herein, shall be fully computer literate regarding word processing and spread sheets, with at least one member of staff fully computer literate in the use of: data bases; total station surveying and other survey software packages.

The Consultant's personnel for the design review phase, which can be also used under Phase II (Construction Supervision) shall include the following:

Team Leader / Highway Engineer

He/she shall have a minimum of a Bachelors Degree in Highway or Civil Engineering with a minimum of Fifteen (15) years experience in both road design and construction. (Any higher qualifications in a relevant field will be an added advantage). He/she shall be a registered member of a recognized professional body and registered to practice by an appropriate body such as the Engineers Registration Board (E.R.B) or similar professional bodies. He/she shall have at least eight (08) years' experience in carrying out feasibility studies and engineering designs of road construction projects. He/she shall have relevant experience including a working knowledge of the disciplines involved in such studies (in particular alignment design, pavement design and materials investigation, bidding documents preparation, cost engineering and safety issues) as well as experience in managing feasibility studies and project designs for similar assignments, bases on SATCC, particularly in coordinating a multidisciplinary team of experts. Experience of assessing climate change impacts and consequent required engineering adaptations are an added advantage

He/she will also be familiar with FIDIC and/or other internationally recognized forms of Contract procedures and administration. He/she should have at least 5 years experience in road construction works in developing countries, preferably in sub-Sahara African region, but experience in Zambia will be beneficial.

He/she will be responsible for the design review/update and tender document preparation and is expected to take overall responsibility for the provision of the consultancy services. He/She will be a key communication link between the site and offices for both the Client and Consultant. He/She will also be responsible for reporting as required in the Terms of Reference and any other reports on any special occurrences.

Pavement and Geometric Engineer

He/she shall have a minimum of a bachelor's degree in Highway or Civil Engineering (Any higher qualifications in a relevant field will be an added advantage) and a minimum of 8 years relevant experience in pavement design and road engineering materials, and a minimum of 4 years relevant experience in geometric design. He/she shall be a registered member of a recognized professional body and registered to practice by an appropriate body such as the Engineers Registration Board (E.R.B) or similar professional bodies.

He/she shall have experience in soil and materials testing both in the laboratory and in the field, especially related to road construction. He/she should have at least 8 years' experience in road construction works and materials technology in developing countries, preferably in sub-Saharan African region, but experience in Zambia will be beneficial. Further qualification in materials or pavement engineering, and use of flexible pavement analysis software packages (e.g. Rubicon and others) shall be an added advantage.

He will be responsible for Pavement and Geometric Designs, material sources and quality testing and assurance for materials. He shall also be responsible for Traffic Engineering on the Project and responsible for all road safety aspects on the Project.

Architect

The Proposed specialist shall have an educational background of a minimum of a Bachelor of Architecture or its equivalent with international experience as team leader on supervision of major Buildings of which there must be at least one Multi – Purpose facility. The proposed specialist shall have at least 15 years of working experience and 5 years' experience in similar assignments. A Postgraduate qualification in Project Management or Project Monitoring and Evaluation will be an added advantage.

He/She should be registered with an appropriate professional registration institution. He/She will be responsible for all architectural designs.

Geotechnical/Materials Engineer

He/she shall have a minimum of a bachelor's degree in Highway or Civil Engineering (Any higher qualifications in a relevant field will be an added advantage) and a minimum of 8 years relevant experience in Geotechnical and road engineering materials. He/she shall be a registered member of a recognized professional body and registered to practice by an appropriate body such as the Engineers Registration Board (E.R.B) or similar professional bodies.

He/she should have at least 3 years' experience in road construction works and materials technology in developing countries, preferably in sub-Saharan African region, but experience in Zambia will be beneficial. Further qualification in materials or pavement engineering, and use of flexible pavement analysis software packages (e.g. Rubicon and others) shall be an added advantage.

He will be responsible for Geotechnical and Materials Engineer investigations designs, material sources and quality testing and assurance for materials.

Bridge and Structural Engineer

He/She shall have a minimum of a Bachelors Degree in Structural or Civil Engineering with a minimum of fifteen (15) years' experience in Bridge design, Structural Designs and construction of

civil engineering works. Must have been involved in the design of at least one bridge structure as part of work experience.

He/She shall have relevant experience in road works and similar assignments including a working knowledge of the disciplines involved in such studies (in particular site location, bridge design and materials investigation, cost engineering and safety issues) as well as experience in managing feasibility studies and project design for similar assignments, particularly in coordinating a multi-disciplinary team of experts.

He/She shall have experience in the design of bridges, highway drainage structures and in carrying out geotechnical and hydrological studies.

He/She shall be a registered member of a recognized professional body such as the Engineering Institution of Zambia (EIZ) and shall also be registered to practice by an appropriate body such as the Engineers Registration Board (Eng.R.B) or similar professional bodies. He/She should have at least 5 years' experience in Highway Drainage Structures and should have carried out hydrological studies in developing countries, preferably in Southern Africa. He/she shall have a good command of the English Language.

He/She shall be responsible for Bridge design, design of highway drainage structures and in carrying out geotechnical and hydrological studies.

Hydrology/Drainage Engineer

He/she shall have a minimum of a bachelor's degree in Civil Engineering or related field. He/she shall be a member of a professional body such as the Engineering Institution of Zambia (E.I.Z) and registered to practice by an appropriate body such as the Engineers Registration Board (E.R.B) or similar professional bodies. He/she shall have a minimum of seven (07) years relevant experience in Hydrological Studies and Designs, Drainage Engineering.

He/she should have at least five (05) years' experience in developing countries, preferably in Southern Africa, but experience in Zambia will be beneficial.

He will be responsible for Hydrological and Drainage studies and designs.

Surveyor / Geomatic Engineer

He/she shall have a minimum of a bachelor's degree in Geomatic Engineering or Land Surveying. He/she shall be a member of a professional body such as the Engineering Institution of Zambia (E.I.Z) and registered to practice by an appropriate body such as the Engineers Registration Board (E.R.B) and the Surveying Institute of Zambia or similar professional bodies. He/she shall have a minimum of seven (07) years relevant experience in topographic surveys in highway engineering works for road projects using computerized surveys and computer-aided design software packages for longitudinal and cross-sections profiles for existing and new proposed alignments.

He/she should have at least five (05) years' experience in field surveying in developing countries, preferably in Southern Africa, but experience in Zambia will be beneficial.

He will be responsible for surveying works , investigation, mapping and drawings.

Quantity Surveyor or Building Engineer

He/she shall have a minimum of a bachelor's degree in Building Science or Quantity Surveying. He/she shall be a member of a professional body such as the Engineering Institution of Zambia (E.I.Z) and registered to practice by an appropriate body such as the Engineers Registration Board (E.R.B) and the Quantity Surveying Institute of Zambia or similar professional bodies. He/she shall have a minimum of eight (08) years relevant experience in Building Science or building engineering out of which he/she should have at least four (04) years' experience in the design of civil engineering buildings. He should have at least two years' experience in developing countries, preferably in Southern Africa, but experience in Zambia will be beneficial.

He will be responsible for all matters related to design of buildings and building engineering, for building related works.

Socio-Environmental

He/She shall have a minimum of a first degree in Environmental Management, Natural Resource Management or equivalent with minimum seven (7) years experience in similar works. He/She should have at least five (5) years' experience in the management of environmental and social risks and impacts of development projects preferably road projects in Southern Africa. Knowledge of the local languages in the study areas is essential. He/she shall have a good command of the English Language.

He/she will be responsible for the management of all Environmental and Social issues on the project.

Road Safety Expert

The Road Safety Specialist shall be a registered professional civil engineer with a degree in civil engineering or equivalent qualification and with a minimum of 8 years' general experience, and shall have undertaken at least 2 projects as a Road Safety Expert.

He/She shall be responsible for oversight of road safety data collection, analysis, road safety audit and recommendation and implementation of road safety improvement measures and shall have at least 5 years' experience in developing countries, preferably Southern African.

He will be responsible for road safety aspects on the Project and assist with Socio and Environmental Studies.

Materials Technician

He/she shall have a minimum of a certificate in a relevant field with a minimum of Six (06) years practical experience in soil and materials testing both in the laboratory and in the field. Experience is periodic maintenance and rehabilitation road project is a necessary pre-requisite. He/she should have at least Five (5) years' experience as a technician in road construction materials testing supervision and should have experience in material testing in at least one bituminous road construction project. He/she shall be a registered Technologist/Technician with the Engineering Institution of Zambia (EIZ). He/she shall have a good command of the English Language.

He will be responsible for material sourcing and testing.

Resident Engineer

He/She shall have a minimum of a Bachelor's Degree in Highway or Civil Engineering with a minimum of Fifteen (15) years' experience in road design and construction. (Any higher qualifications in a relevant field will be an added advantage). He/She must have served as a Resident Engineer or equivalent capacity in at least three (3) road construction projects of similar magnitude and complexity in the past ten years. He/She shall be a registered member of a recognized professional body and registered to practice by an appropriate body such as the Engineering Institution of Zambia (E.I.Z), the Engineering Registration Board (Eng.R.B) or similar professional bodies. He/She shall have at least Five (05) years' experience in carrying supervision of road construction and maintenance projects involving the use of surface dressing and fog spray in the Southern African Region.

He/she will also be familiar with FIDIC and/or other internationally recognized forms of Contract procedures and administration. He/She should have at least 5 years' experience in road construction works, preferably in Southern Africa. He/she shall have a good command of the English Language.

Assistant Resident Engineer/Materials Engineer

He/She shall have a minimum of a Bachelor's Degree in Highway or Civil Engineering (Any higher qualifications in a relevant field will be an added advantage) and a minimum of Ten (10) years relevant experience in pavement design and road engineering materials. He/She must have at least five years of experience on site construction works He/She shall be a registered member of a recognized professional body and registered to practice by an appropriate body such as the Engineering Institution of Zambia (E.I.Z), the Engineering Registration Board (Eng.R.B) or similar professional bodies.

He/She shall have experience in soil and materials testing both in the laboratory and in the field, especially related to road construction. He/She should have at least Five (5) years' experience in road construction works and materials technology in developing countries, preferably in Southern Africa. He/she shall have a good command of the English Language.

Measurement Engineer

The Measurement Engineer shall be a graduate engineer with a minimum of 5 years' experience with at least three years' experience in the measurement of road works for approval of interim and final payment certificates. He/she must be fully conversant with standard methods of measurement as applied to contracts of this nature.

Surveyor

He/She shall have a minimum of a Bachelor's Degree in Geomatic Engineering or Land Surveying. He/she shall be a member of a recognized professional body and registered to practice by an appropriate body such as the Engineering Institution of Zambia (E.I.Z), the Engineering Registration Board (Eng.R.B), the Surveying Institute of Zambia or similar professional bodies. He/she shall have a minimum of Seven (07) years relevant experience in topographic surveys in highway engineering works for road projects using computerized survey software for longitudinal and cross-sections profiles for existing and new proposed alignments.

He/She should have at least Five (05) years' experience in field surveying in developing countries, preferably in Southern Africa. He/she shall have a good command of the English Language.

Materials Technician

He/she shall have a minimum of a certificate in a relevant field with a minimum of Six (06) years practical experience in soil and materials testing both in the laboratory and in the field. He/She should have at least Five (5) years' experience as a technician in road construction materials testing supervision and should have experience in material testing in at least one bituminous road construction project. He/she shall be a registered Technologist/Technician with the Engineering Institution of Zambia (EIZ). He/she shall have a good command of the English Language.

Inspector of Works

He/she shall have a minimum of a Diploma in Civil or Highway Engineering. He/she shall have a minimum of Ten (10) years in supervision of road construction; rehabilitation and maintenance of bituminous surfaced roads and should have particular experience in quality control, drainage works, pothole repair, cement stabilization and bituminous surface treatments etc. He/she shall be a registered Technologist/Technician with the Engineering Institution of Zambia (EIZ). He/she shall have a good command of the English Language.

Environmental and social Specialist

He/She shall have a **minimum** of a Bachelor's Degree in Environmental Management, Natural Resource Management, or equivalent with minimum Seven (07) years' experience in conducting Environmental and Social Impact Assessments (ESIA) or similar assignments in road construction projects.

He/She should have at least Five (05) years' experience in environmental and social risk/ impact management in developing countries, preferably in Southern Africa. Experience in Zambia will be an added advantage. He/she shall have a good command of the English language.

Safety and Health Specialist

He/She shall have a **minimum** of a Bachelor's Degree in Safety, Occupational Health or related technical (engineering/natural science) or equivalent with minimum Seven (07) years' experience in handling matters of health and safety or similar assignments in road construction projects.

He/She should have at least Five (05) years' experience in issues of safety and health in developing countries, preferably in Southern Africa. Experience in Zambia will be an added advantage. He/she shall have a good command of the English language.

7. CLIENT INPUT AND COUNTERPART PERSONNEL

The Employer and / or other parties

The Employer will make available to the consultant all available documents and relevant data necessary for the proper and timely execution of the assignment and will:

- (a) Provide one set of all contract documents and original design reports.
- (b) assist the Engineer in obtaining formal consent from other authorities or persons having rights or power in connection with works or the site thereof
- (c) assist in obtaining licenses and permits in connection with the works including

On special arrangements, if requested to do so - the Engineer shall organize and undertake on-the-job training for qualified counterpart engineers. The engineers will be seconded to the consultant by the Employer during execution of the works contract. The training will include apart from others, all aspects of supervision of works contracts, contract works scheduling, quality control of completed works, setting out and measurement. The Consultant will in addition monitor the Contractor's preparation of the "As Built" drawings and participate in this process as necessary to ensure that the drawings are accurate and that the subsequent review and approval time is minimized.

Facilities for the Engineer

Under the construction contract, the consultant shall be provided with office and laboratory accommodation and equipment and housing and transportation for staff. These facilities are to be included in the Civil Works Contract and detailed in the Special Specifications and Bills of Quantities.

Duration of the Assignment

The duration of the construction supervision and defects liability period is **18 months** and **36 months** respectively. The engagement shall be deemed to have started on execution of the agreement for the services and shall terminate when the final inspection of works at the completion of the defects liability period has been done and the Engineer has fulfilled all his/hers obligations. The duration for Phase 1 and Phase 2 shall be 6 months and 7 months respectively.

Payment Terms

The Consultant shall quote the cost of his/her expatriate/local stag technical, equipment and other costs as he deems these to be required. S/He shall summarize his/her monthly and total costs and accompany the same with a schedule showing the Consultant involvement.

The Costs shall be quoted to cover the Engineer's performance of his/her duties described in item 3 in accordance with the following:

- a) Monthly costs, subsistence and allowances for expatriate personnel;
- b) Monthly costs, overtime and allowances for local personnel;

- c) Transportation for key personnel;
- d) Cost of producing and printing reports including secretarial expenses;
- e) Local travel costs;
- f) Shipment of personal effects, reports, documents etc.; and
- g) Other costs which must be specified by the Engineer.

An advance of not more than 15% of the total cost reimbursable may be provided for mobilization costs against an acceptable Bank guarantee, depending on the agreement of both parties during the negotiation meeting. The advance payment will be set off by the Client in 3 equal installments against the statements starting from the 1st invoice of the services, until the advance payment has been fully set off.

Reimbursable Costs, which cover all out-of-pocket payment, will be paid against acceptable documentary evidence.

Phase 1 and 2 payment shall be triggered by acceptance and approval of deliverables by the Client.

Construction supervision payment shall be time related based on minimum intervals of one (1) month on pro-rata basis of each key staff member's availability on site as confirmed by the Regional Office through time-sheets.

Payment certificates will be subjected to 5% retention to a maximum of 5% of the contract sum which will be released after the Engineer has furnished the final report and As-Built drawings as detailed in these ToRs. No other payments will be made to the Engineer under this contract.

Payments shall be made to the Consultant in accordance with the Conditions of Contract.

General Obligations

The Engineer's remuneration shall be deemed to cover his/her liabilities, travel costs and support of his/her head office staff and all his/her obligations other than additional services not covered by these terms of reference.

Leave

The Consultant's expatriate staff engaged in the supervision of the construction Works will be entitled to 30 days leave per calendar year. In connection with leave, the expatriate staffs are entitled to one round trip international travel per year, for which the Engineer will be reimbursed. Man-months during annual leave will not be paid. It is expected that any additional support required to the Engineer during periods of leave will be provided by utilization of the input from the Project Manager or other assigned staff and that the leave requirements of the team will be scheduled to minimize any such requirements or disruption to the services and to be assigned during periods of low productivity by the Contractor or during the annual shutdown of the works should such be included in the Contractors programme.

EXHIBITS (for guidance only)

Exhibit 1: Sample of Horizontal and Vertical Profile Data (place below the vertical profile grid)

Culverts / Bridges (Size, Catchment)	2x900Dia (25Ha)							
Distance (SKD) km+m								
Original Ground Reduced Levels								

Vertical Alignment	Xm RHS Finished Levels									
	Center – Finished Road Levels									
	Xm LHS Finished Levels									
	Vertical Curves, Grades, K-factors									
Super-elevation, Run-off Distances										
Horizontal Curve Data										
Safe Passing Sight Distances										
Side Drain (Invert width, Fill/Cut Slopes)										
Guard Rails, Scour Checks										
Soils Survey Data	Natural Drainage (P, Av, G) to 1m (to included extent of rock-fill area)	G	G	G	G	G	Av	Av	P	P
	Soils Classification to 1m depth (to include extent of parent rock)									
	Design Subgrade (SG)	SG3	SG3	SG3	SG3	SG5	SG5	SG5	SG5	SG5

Exhibit 2: Summary of As-Built Data (Table to be place between Horizontal Lay-out Plans)

COMPLETION DETAILS AS-BUILT	Chainage / Distance (km+m)										
	Critical Project Dates	Surface Completed									
		Opened to Traffic									
	Services/Utilities (overhead & underground)										
	Surface Application Rates	2 nd Aggregates									
		1 st Aggregates									
		Prime									
	Base Layer	B.Pit No.									
		Thickness									
		Density									
	Sub-base Layer	B.Pit No.									
		Thickness									
		Density									
	Selected Layer / Subgrade	B.Pit No.									
		Thickness									
		Density									
	Bridges /Culverts										
Marker Posts Distance											

