

Terms of Reference
Feasibility Assessment and Design of Borama-Heego Rural Access Road
Ministry of Agriculture Development – Somaliland

Country	Somaliland
Project Holder	Ministry of Agriculture Development (MoAD)
Project	Sustainable Land Management Project
Fund	Somaliland Development Fund Phase 2
IFA Title	Feasibility assessment and design of Borama-Heego rural access road
Period	6 Weeks
IFA No.	P101-087, P101-088, P101-089

1. Background

The Somaliland Development Fund (SDF) was established in 2012 to provide a single vehicle through which development partners could support Somaliland's development goals. The first phase of the SDF was implemented in 2013-2018 and supported the Government of Somaliland (GoSL) filling a critical gap through funding projects that are fully aligned to the National Development Plan (NDP) while at the same time recognizing the role of GoSL in the delivery of basic services.

The Somaliland Development Fund – Phase 2 (SDF2) covers the period 2018-2024. SDF2 is conceived as an inclusive economic development program. It supports the GoSL in delivering infrastructure that is relevant for inclusive economic development. It focuses on sustainable investments that spur job creation and fast growth, while at the same time laying the foundation for long-term resilience and development, leading to a more stable and peaceful Somaliland. SDF2's support is fully aligned with government priorities as defined in the National Development Plan 2 (NDP2) 2017-2021 and reflect the priorities set out in Somaliland Vision 2030.

The objectives of the SDF2 are threefold:

- Support increased inclusive economic growth through investment in productive, strategic infrastructure to enhance economic growth and revenue generation.
- Strengthen and maintain the capabilities of the government of Somaliland to prioritise and manage the sustainable and equitable development of Somaliland's infrastructure.
- Support strong government ownership of development priorities aligned with the National Development Plan.

2. Ministry of Agriculture Development proposed project

The SDF has allocated funds to the Ministry of Agriculture Development for the implementation of the Sustainable Land Management Project. The proposed project is a scaling up of SDF1 soil and water conservation project at Maroodijeh Upper Catchment and will be implemented in the Durdur Ad Catchment, in Awdal region.

The project contains five major outputs:

Output 1: Capacity building

Capacity development component for MoAD to enhance its ability to initiate, deliver, and support the management of investments/projects – Crucial for economic development and value for money being realized as a result of the projects, will be the ability to select investments with comparative

strategic economic and social advantage for diverse members of the population and which are resilient to current and future shocks (climate and otherwise). In summary, the project will provide capacity development to MoAD to improve institutional performance and effectiveness of service delivery.

Output 2: Improved community level governance

Community engagement through creation/enhancing or formation of village development committees (VDC), water management committee, women committee and watershed management committee in the catchments – Under this component the VDCs established under SDF1 in MUC will be maintained and strengthened, and in DAC VDCs will be established (where they do not exist) and strengthened.

Output 03: Improved soil and water conservation

Construction of soil and water conservation (SWC) structures – This component is divided into two sub-components, namely soil conservation, which is mainly the construction of soil bunds, construction of eyebrows, plugging of gullies on did slopes and the construction of sand dams, and water conservation structures like the construction of communal berkads and earth dams.

Output 04: Improved farming practices introduced

Promotion of improved agricultural practices and crop husbandry and famer trainings. Under this component the project will: 1) conduct a yield assessment baseline survey; 2) introduce and promote legumes in the cropping system; 3) introduce improved crop varieties; 4) provide farmer field school trainings; and 5) construct a feeder road that will enable marketing of farm produce from project locations to Borama and elsewhere.

Output 05: Dryland agriculture research and extension

Completion and operationalization of Aburin Dryland Agriculture Research Centre which was started under SDF1. Under this component the project will purchase the laboratory equipment for the Research Centre.

3. Scope of Work

The overall objective of assignment is to conduct a feasibility assessment, preparation of detailed engineering designs and preparation of tender document for the 19km Borama-Heego rural access road in Awdal region. Specifically, the assignment is expected to produce:

- a) Technical survey and route selection options
- b) Detailed engineering design, construction specifications, bill of quantities and engineering cost estimates

The assignment is divided into two phases. The first phase of this assignment will include all necessary field surveys and studies and preliminary designs, while the second phase of the assignment will produce detailed design, construction specifications, bill of quantities and tender document.

Phase I	Phase II
<ul style="list-style-type: none"> • Material survey • Road Alignment Survey/Topographical survey • Geotechnical & necessary Hydrological survey along the road. • Preliminary design 	<ul style="list-style-type: none"> • Detailed design of the rural road and associated structures. • Bill of quantity cost estimates, detailed construction drawings and technical specification • Tender document, general condition of contract/specific conditions of contract.

4. Key tasks

4.1 Phase 1

Under phase 1, the Consultants will be expected to conduct the following tasks:

4.1.1 Task 1: Review of existing documentation

- Review documents from the Ministry of Agriculture Development in relation to the Borama-Heego rural road.

4.1.2 Task 2: Alignment and engineering survey

- Identify the alignment of the road and if possible alternative one other alignment.
- Generate and establish benchmarks and temporary benchmark along the road.
- Intervals of the cross-section should be up to 8m to 15m closer intervals to larger intervals, for necessary detail of earthwork, quantity calculations with accuracy 20% of the final quantities.
- Determine profile cross-section plus one hundred, whilst tying the levelling to the established benchmark.
- For rivers and seasonal streams, conduct data and survey a cross-section of 50m both downstream and upstream.
- Identify potential road slopes disasters in the road section under study. The road slope disaster shall be determined and classified as soil collapse, rock collapse, landslide, road slip debris, river erosion, coastal erosion.
- Establishment of vertical and horizontal geometry with existing terrain.
- All survey data should be recorded and preserved in standard survey format and notebook for checking and review.

4.1.3 Task 3: Geotechnical and geological survey

- Obtain samples, disturbed sample, and undisturbed sample of the soil.
- Conduct demonstrative field test or in-situ test on site to check soil strength.
- Perform classification of the soil, grain size distribution of soil, Atterberg limits, moisture content, and representative samples of different soil type.
- Conduct CBR test to determine the bearing capacity of soil.
- At the proposed construction material sources test bits shall be made for laboratory investigations such as grain size, unit weight and water absorption, Los-Angeles abrasion test and soundness test, to indicate the available suitable construction material site.
- Produce a report for analysing the results obtained from the field both laboratory test and in-situ tests.
- Carry out all subgrade strength design of rural road design in such a way to deliver an acceptable design standard, commensurate with potential hazards both to the principles and the public, by suitably qualified and experienced geotechnical professional.
- Produce soil characteristic and strength report that clearly details all design parameters and assumptions and where appropriate, the analysis approach adopted. Consideration of drainage measures, consideration of the scour potential of the cut or fill face and control treatments, slope stabilization measures, recommendation, and design of field monitoring systems if necessary and every other necessary required tests.

4.1.4 Task 4: Hydrological survey (only for the required sections)

- Collect preliminary hydrological data in the area traversed to determine the location and appropriate spots of the culverts.

- Undertake available data (physical data, geological maps of the territory, climatology report local drainage system, flood control project plans, etc.).
- Provide the data on the stream water velocity maximum flood levels, flood prone area existing drainage system and design discharge for 15 years return period for box culverts.
- Provide hydrogeological survey report.

4.1.5 Task 5. Preliminary design

Based on data collected from phase 1 and consultation with the stakeholders the Consultants will develop a preliminary design which include the following:

- Suggestions on possible route of the road and effects on existing infrastructure.
- Consideration of the difficult existing terrain features and the right of way restrictions in the resulting design case to case.
- Provision of two alternative schemes together with comparative analysis taking in consideration of the cost and durability with their drainage structure.
- Establishment of comparative cost analysis for the alternative road design options considering the different types of road construction material, route options, and carriageway lanes.
- Evaluation of possible time schedule on a Bar chart for the detailed design, tendering and construction stage.

4.2 Phase 2

Based on the field-based data collected during the technical feasibility study, the Consultants are expected to produce a detailed engineering design and complete tender document. Specific activities will therefore consist of the following:

4.2.1 Task 6: Road design

- Design road intersection and interchanges geometrical design horizontal and vertical alignments and slopes.
- Provide typical rural road section drainage of different types of road section, such as; road culverts, culvert box, side drainage and other miscellaneous structures based on the results of the design.
- Design thickness of gravel road structure and the appropriate rural road structure layers, construction material.
- Propose the available construction material for rural road constructions relevant with performance characteristics.
- Recommend appropriate operation and maintenance strategy.
- Facilities such as rural road lane width and rural road will be according to AASHTO and Somaliland roads design manual 2014.
- Provision of rural road warning signs.
- If required design of road diversion during construction stage and minimize the impact of traffic to residential areas.

4.2.2 Task 7: Drainage Structure

- Collect data to determine the sizes of drainage structure relative to road terrain.
- Conduct survey for history of flooding.
- Prepare hydraulic design calculation to determine type of drainage, inlet and outlet of the design and proposed material for drainage structure.
- Analyse and design the drainage structure, select suitable construction considering durability and strength and later operation and maintenance.

4.2.3 Task 8: Tender document

- Take-off and quantity estimation of each work item.
- Select a unit price for each different type of work including direct cost and indirect cost.
- Cost break down shall be adopted using US Dollar.
- Construction specifications should be developed for each construction earthwork works.
- Develop Bill of Quantity and engineering cost estimates of the project total cost.
- Detail out a tentative workplan for the project.

5. Deliverables

The major deliverables of this assignment will be the following:

Activities	No. of Copies	Date of Submission
a) Inception Report	3	End of week 1
a) Survey study of the Borama-Heego rural road	3	End of week 2
b) Preliminary design ideas and sketch	3	End of week 3
c) Draft detailed design report, draft bill of quantities, draft drawings, and draft cost estimate	3	End of week 5
d) Final detailed design report, bill of quantities, specifications, engineering estimate & tender documents	3	End of week 6

6. Design team composition, individual inputs, and qualifications

6.1 Team composition and inputs

The assignment team shall comprise of the following personnel, who will be mobilized at different stages of the assignment and shall work under the Team Leader (Road and Drainage Engineer).

Expertise	Working days
Road and Drainage Engineer (Team Leader)	40
Geotechnical Expert	20
Topographic Surveyor	20

The Consultants are expected to meet the following qualifications:

Consultant	Key qualifications
KE1: Road and Drainage Engineer (Team Leader)	<p>The Road and Drainage Engineer shall be the overall Team Leader of the assignment and shall be responsible for execution of the assignment including consolidation of the assignment's deliverables, coordinating addressing of comments as well as delivering final product for this assignment. In addition to the overall responsibility, the TL will be responsible for delivering tasks 1, 4, 5, 6, 7 and 8. The TL is expected to have the following qualifications and experience:</p> <p><u>Qualifications and skills</u></p> <ul style="list-style-type: none"> • Minimum of Master's in civil engineering with specialisation in Roads/Highway Engineering.

Consultant	Key qualifications
	<ul style="list-style-type: none"> • Registered professional engineer with a recognized engineering body. • Demonstrated excellent command of spoken and written English. <p><u>General professional experience</u></p> <ul style="list-style-type: none"> • Minimum of 10 years' experience working in the design, implementation construction, supervision, and planning of road works in Sub Saharan Africa and/or East Africa. • Demonstrated experience in conducting <p><u>Specific professional experience</u></p> <ul style="list-style-type: none"> • Minimum of 7 years' experience in conducting feasibility appraisal and/or design of rural access roads. • Must have executed at least 2 similar assignments in the last 5 years. • Minimum of 7 years' experience in use of AutoCAD and other road design software
KE2 Geotechnical Engineer	<p>The Geotechnical Engineer (GTE) shall be responsible for delivering on all geotechnical related tasks under the assignment. The GTE will specifically be responsible for delivering task 4. The GTE will be expected to have the following qualifications and experience:</p> <p><u>Qualifications and skills</u></p> <ul style="list-style-type: none"> • Bachelor's degree in Geotechnical Engineering or Civil Engineering. • Must be registered with a recognized professional body in the home country. • Demonstrated excellent command of spoken and written English. <p><u>General professional experience</u></p> <ul style="list-style-type: none"> • Minimum of 10 years' experience in conducting geotechnical investigations for large and complex projects in Africa with experience in East and Horn of Africa. <p><u>Specific professional experience</u></p> <ul style="list-style-type: none"> • Minimum of 5 years conducting geotechnical investigations for road construction projects. • At least 7 years' experience in planning and designing of road subgrade and earth embankments and borrow bit analysis. • Must have carried out at least two similar (geotechnical investigations for road construction project) assignments in the last 5 years. • Must be familiar with the use of computer-aided applications such as AutoCAD.
KE3 Topographic Surveyor	<p>The Topographic Surveyor (TS) shall be responsible for delivering on all surveying related tasks under the assignment. The TS will be responsible for delivering tasks 3 and 4. The TS shall have the following qualifications and experience:</p> <p><u>Qualifications and skills</u></p> <ul style="list-style-type: none"> • At least a Bachelor's degree in Surveying or Geomatic Engineering. • Registered Topographic surveyor in the country of domicile or with an internationally recognised body.

Consultant	Key qualifications
	<ul style="list-style-type: none"> • Demonstrated excellent command of spoken and written English. <p><u>General professional experience</u></p> <ul style="list-style-type: none"> • Minimum of 8 years' experience as topographic surveyor in large projects in the East and Horn of Africa. <p><u>Specific professional experience</u></p> <ul style="list-style-type: none"> • Minimum of 5 years' experience in topographical survey for road projects survey. • Minimum of 3 years' experience in use of computer aided surveying software and AutoCAD and equipment such as Total Station and processing of survey data into reports. • Must have carried out at least two similar assignments in the last 5 years.

7. Equipment

No equipment is to be purchased on behalf of the Client/Contracting Authority as part of this service contract or transferred to the Contracting Authority or local counterparts at the end of this contract. The Consultants are expected to either rent or bring his/her equipment to complete the consultancy assignment with all the necessary software installed.

8. Fees and Allowances

- The successful candidates will be offered competitive daily fees.
- Fees will be paid on monthly basis based on agreed milestones and submission and approval of milestone report, timesheet, and an invoice.
- Final payment will be made after the completion and approval of the final report.
- The SDF Secretariat shall organise and pay for the Consultants' accommodation, travel within Somaliland, and DSA as per SDF guidelines.

9. Duty of care

- The Consultants will work under the overall SDF Secretariat Health, Safety and Security protocols.
- The Consultants will be expected to provide own insurance for health care (which must include Medevac provision which caters for COVID-19 related evacuation), accidents, and other risks associated to the assignment. The SDF Secretariat shall be free from any liabilities arising from the same.

10. Other provisions

- **Accountability:** The SDF Deputy Team Leader (Projects) maintains the overall supervision of this assignment. However, the Consultants will technically report to the Construction Sector Specialist at the SDF Secretariat and will work on day-to-day basis with the Project Management Team at MoAD, specifically the Project Manager.
- **Possession of sites:** SDF Secretariat/MoAD project team may accompany the Consultants to field missions for the purpose of possession of sites/familiarization. In this case, the Project Management Team staff, and other relevant technical staff in MoAD will be available to work closely with the Consultants.
- **Relevant documents:** The SDF Secretariat/MoAD shall furnish all pertinent available data and information and give such assistance as shall be reasonably required by the Consultants in carrying out provision of this Agreement.

- Duty post: The work is to be performed in Awdal region of Somaliland (Heego & Borama). Briefing and debriefing meetings will be held in Hargeisa, Somaliland. Draft and final reports will be submitted in Hargeisa;
- Office Space: The Consultants will be expected to work at MoAD office station.
- Personal Computers: The Consultants are responsible for the provision of own personal computer and other relevant equipment.
- In-Country Travel/Transportation: Travel and transportation in Hargeisa and to the field will be the responsibility of the SDF Secretariat.
- Accommodation in Hargeisa: Accommodation for the Consultants in Hargeisa and in the field will be the responsibility of SDF project.
- Standards: The Consultants will use international standard codes of practice for designing purpose, such as EUROCODE (EC), BRITISH standard (BS), AASHTO, ACI, ASTM and Somaliland Roads Standard Manual (SRS).