

TERMS OF REFERENCE FOR CONSULTANCY SERVICES TO DESIGN NATIONAL BROADBAND NETWORK, PREPARE PROJECT DOCUMENTS AND RFP FOR THE PROCUREMENT OF BROADBAND NETWORK CONSTRUCTION SERVICES

Background

The Government of Georgia signed a Loan Agreement for financing the implementation of Log-in Georgia Project (“Project”) with the World Bank (WB). The proposed Project development objective is to increase access to affordable broadband internet, and to promote its use by individuals and enterprises, in targeted rural settlements.

The Project Consists of the following key components:

- Component 1: Increasing access to broadband – this Component will help expand access to broadband internet in rural settlements across Georgia and improve the enabling environment for digital development.
 - Subcomponent 1.1: Supporting the Open Net Program – the Open Net Program will develop a national infrastructure to offer open access, wholesale, broadband telecommunications services.
 - Subcomponent 1.2: Improving the enabling environment for digital infrastructure – this subcomponent will support activities to improve the enabling environment for digital infrastructure development in Georgia. This will support the development of legal, policy, and regulatory instruments, and design of investment attraction measures included in the national broadband development strategy (adopted in 2020).
- Component 2: Promoting the use of broadband-enabled digital services – this Component will support the development of Georgia’s digital economy through a strengthened enabling environment, promoting digital use-cases of broadband, and addressing barriers to the participation of individuals in the digital economy.
 - Subcomponent 2.1: Enabling environment for digital economy development – this subcomponent will support activities to improve the enabling environment for digital economy development in Georgia.
 - Subcomponent 2.2: Promoting use-cases – the subcomponent will promote specific use-cases of improved broadband connectivity in targeted rural settlements.
 - Subcomponent 2.3: Increasing digital inclusion – this subcomponent will finance targeted interventions to boost the use of the internet and digital services by women, social minorities, and persons with disabilities in targeted settlements.
- Component 3: Project implementation support – this component will support the management and implementation of the Project and associated activities.

The Project will be implemented over a five-year period by the Open Net NNLE as the implementing entity, with the oversight of the Ministry of Economy & Sustainable Development (MOESD) of the Government of Georgia (GoG). Open Net NNLE will be the Project Implementing Entity (PIE) to support the implementation of the Project.

Objective and Purpose of the Assignment

1. Identification of appropriate technical solutions to achieve the required project objectives while ensuring cost-efficiency;
2. Identification of investment requirements per cable deployment type /per urban-rural distinction / per subscriber;
3. Identification of implementation approach for deployment;
4. Supporting Open Net in conducting a procurement process to select supplier for broadband network construction services.

Tasks and Responsibilities

The consultant shall report to the Director, Open Net NNLE and shall work with other individuals and organizations as identified by the Director to fulfil the terms of reference.

The work done by the consultant should include:

Phase One: Demand Assessment

1.1 The consultant shall conduct demand assessment, based on the socio-demographic characterisation and approved National Broadband Development Strategy (NBDS) in Georgia, which shall be used to estimate infrastructure requirements to provide broadband services for the period of time from 2020 to 2025. To achieve this, the consultant shall use:

- a. the demand analyses prepared by Detecon International GmbH in 2015-2016 and 2016-2017 as provided, by the Open Net;
- b. data (take-up coefficient), provided by ComCom;
- c. the bandwidth growth of consumer broadband services (backhaul and backbone connections), to be validated by authorized electronic communications operators;
- d. the list of the settlements, and
- e. other official available statistical data including that of National statistics agency of Georgia “Geostat”.

1.2 The consultant shall support the Open Net in the process of validating its prepared demand assessment formally and officially with electronic communications service providers, based on their inputs related to the type, technical and service parameters and volume of the services to be requested from Open Net, to ensure the offtake of capacity provisioned by the National Broadband Network (NBN) in the covered settlements.

1.3 The consultant shall provide Open Net with the detailed methodology and results of revenue and capacity projections based on feedback provided on electronic communication services providers and market analysis data and per service provided.

Phase Two: Review, Design and modelling of the network (both passive and active parts)

The consultant is expected to review and update the National Broadband Network (NBN) topology and related project documents.

2.1. The consultant shall review and update the Passive Infrastructure related documents prepared by Open Net N(N)LE in 2020 as well as documents prepared by Detecon International GmbH in 2015-2016 and 2016-2017 as appropriate, and as provided by the Open Net N(N)LE.

2.2 The consultant shall design and model the Active network (core and distribution) based on the demand assessment conducted during the Phase One.

2.3 The design shall include details of leased and new capacities (fibre optical cable), as well as, proposed form of contracting with Service Providers (with relevant SLA thresholds).

2.4 The proposed network could be rolled out in a greenfield manner, connecting any number of end users back to a central point of concentration. The design shall include information on the key fibre access points (FTTx) and network elements required.

2.5 The design should include the choice of architecture and type of cable deployment, as different architectures require different amounts of fibres, and other passive elements. The passive infrastructure should be optimised in terms of both investment and operation, to address any limitations of the technologies and products that are to be deployed; consultant should take into consideration climate change risk considerations when preparing this design.

2.6 After selecting the architecture and technologies, the choice of the exact topology, including level of redundancy needs to be made, as will the products to be used and contingencies to be factored in. The impact of these choices on costs, migration ease of implementation, future-proof capacity, flexibility and compatibility with existing networks should be considered.

2.7 Open Net will facilitate consultant for GIS mapping of final choice of full network topology shall be performed/validated with all targeted geographical areas and all connections, including connections to the core network.

2.8 The consultant shall support Open Net in presenting the design officially and formally with all interested parties. The consultant should answer any questions that may arise, conduct discussions, if necessary, adjust the network to meet the interests and feedback of all parties.

2.9 The design of active part of the network should estimate the quantities and types of necessary active equipment and its technical parameters required to provide services as per results of the Demand Assessment.

2.10 Based on the design and modelling of the network, the consultant shall deliver full network topology (for the whole Georgia and for the individual region separately) and a comprehensive Technical specification/Technical requirements document both for Passive and Active Infrastructure rollout.

2.11. The consultant shall prepare technical documentation (requirements) covering most suitable Operational systems (OSS/BSS) for enhanced management, monitoring, asset management and documentation, as well as support service and SLA management.

2.12 The Consultant shall make references to the security/cybersecurity requirements for the different project component according to the sector best practices and standards for such infrastructures, for these to be incorporated in the future tender documentation.

Phase Three: Costing

3.1 For the purposes of costing (defining a bill of quantities, bill of materials, etc.), the consultant shall separate out calculations for the deployment of core and distribution networks.

3.2 Based on the design of the network, an estimation of the deployment and operational costs associated with the network will be made. As a result, it should be possible to estimate the deployment costs for each target geographical area:

- a. Derive cost basis and investment requirements, type of cable deployment and compare to international benchmarks:
 - i. CAPEX: investment, development, licenses, etc.
- b. The cost analysis should be comprehensive and include all relevant costs and underlying works as well as documented and referenced assumptions;
- c. Analysis of potential disruptive factors, key cost drivers, and access barriers;
- d. Recommendation of best-fitting technology strategy for Georgia national broadband strategy per targeted geographical areas.

3.3 The analysis of the different architectures should focus not only on capital related expenditure but also on the operational costs related to the choice of cable deployment type and active part of the network.

3.4 The study should provide information on the passive layer infrastructure required to deploy the various fibre technology scenarios developed. In doing so the study should identify the most cost-effective options, taking due account of the following existing infrastructure:

- a. Existing terrain;
- b. Existing ducting and cabling systems.

3.5. Based on the study undertaken, the consultant is expected to provide a comprehensive report on estimated costs both for Passive and Active Network Infrastructure rollout and operations for the whole Georgia and per individual region separately.

3.6. The consultant shall provide estimated costs for OSS/BSS separately.

Note: all cost calculations have to be based on research of the global market.

Phase Four: Support to Preparation of Procurement Documents

4.1 Based on the study and the deliverables of the above mentioned three phases, Open Net will instruct the consultant to assist in preparation of the scope of work and technical specifications for the procurement of the deployment of the Broadband Network Infrastructure, consisting of Passive networks, for one of the following project delivery systems: (i) Design and Build to be contracted separately by two or more entities; OR (ii) Design-Build to be contracted by a single entity.

4.2 The Passive network specifications must include (not limited to):

4.2.1 Passive network infrastructure topologies, separately, per region;

4.2.2 Cost of the deployment of Passive networks, separately for individual region;

4.2.3 Technical specifications/requirements' documents for Passive networks (including, but not limited to warranty and support service requirements for post – deployment period)

4.3. The Consultant shall assist in preparation of the technical specifications for the procurement of the Active network for the project delivery system – Design-Supply-Install to be contracted to a single entity.

4.4. The Active network specifications must include (not limited to):

4.4.1 Active network infrastructure topologies, separately, per region;

4.4.2 Cost of the deployment of Active networks, separately for individual region;

4.4.3 Technical specifications/requirements' documents for Active networks (including, but not limited to warranty and support service requirements for post – deployment period).

4.5 Inputs to bidding documents as prepared by Open Net NNLE shall be provided by the Consultant, based on the format specified by Open Net, in accordance with the principles of transparency, non-discrimination, competitiveness, rational use of funds and fair procurement.

Phase Five: Evaluation Assistance

5.1 The consultant is expected to assist the Open Net in conducting procurement of the potential qualified suppliers of active and passive infrastructure, including by participating in the question-and-answer sessions, and in the evaluation of the submissions (Proposals or Bids) by potential supplier(s).

5.2 The consultant shall prepare detailed requirements/guideline/criteria for the evaluation of the proposals submitted through the procurement process by potential suppliers.

Deliverables:

1. Demand Assessment report (Phase1)
2. Engineering report as per 2.10 (Phase 2) evaluating
 - a. technological requirements,
 - b. providing an analysis of different network architecture,
 - c. GIS map of the network topology.
3. Engineering report as per 2.11 (Phase 2)
4. Reports on Costing as per 3.6 (both passive and active) and 3.7 (Phase 3)
5. 5.1 Input to Bidding Documents Depending on the project delivery system the consultant will deliver a TOR for a detailed Design (Low Level Design) and construction of a Passive Network Infrastructure (Phase 4);
5.2 The consultant will deliver a TOR for the deployment of an Active Network (Phase 4).
6. Evaluation of Documentation and Assistance in supplier selection process (as a service) (Phase 5).

All deliverables must be submitted in both English and Georgian Languages. All documents shall be submitted in hard copies and electronic (pdf or similar) format. All correspondence to the Employer shall be in English and Georgian languages.

The consultant shall present deliverables associated with the phases 1-4 within 120 days after signing of the contract.

Milestones

Duration of the Contract will be 210 days, expected between February 26, 2021 and September 27, 2021. The contract could be extended according to the business needs.

The table below summarizes the anticipated key milestones of the assignment. The indicated timeline allows for review time.

Milestone	Submission Date	Language
Completion of the Phases 1 through 4	Within 120 days after commencement of services	English & Georgian
Completion of Phase 5	Within 90 days after commencement of first milestone	

Required Qualification

Education:

At least a Master's degree in one of the following fields, or related fields:

- telecommunications engineering,
- electrical and electronics engineering,
- telecommunications economics,
- economics,
- finance, or
- business administration.

Work experience & skills:

- International experience of similar type of assignments or consultancies (with regards to deliverables of the consultancy)
- Strong business/financial/economical knowledge and experience;
- Knowledge and experience in telecommunications, engineering, or related fields;
- At least 10 (ten) years' experience in the electronic communications sector in providing consultancy/advisory services, or in network design and/or operations;
- A good knowledge of technology development and costing;
- Awareness of cybersecurity and resilience aspects of telecommunications networks;
- Experience in or knowledge of commercial operations of networks;
- Ability to work collaboratively in a team and deliver outputs on time; and
- Excellent speaking and writing skills in English.

Facilities and Services to be provided by Open Net

Open Net shall provide:

- Office area and facilities, office equipment and communication necessary to carry out the services;
- All necessary information and documents required for completion of tasks;
- Domestic travel expenses related to visits to Project sites, per GoG regulations.