



تمكين الفرص
Unlocking the Potential

Ruwi Expansion Phase 2 , MUSCAT

SCOPE OF WORK

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1 Definitions & Abbreviation

1.1 FTTH: Fibre To The Home

1.2 Associated specifications, standard drawings

REF:	Title
SPC-FXI-001	Duct and Chamber Installation
SPC-FXI-002	Optic Fibre Systems Testing
SPC-FXI-003	Fibre Optic Cable
SPC-FXI-007	Detectable Warning Tape
SPC-FXI-008	Chamber Covers
SPC-FXI-009	Underground Duct
SPC-FXI-010	Draw Rope
SPC-FXI-011	FDH Protection Posts
SPC-FXI-012	Joint Enclosures
GUD-FXI-001	OBC Contractors HSE Compliance Guidelines
GUD-OBC-001	BOQ and Costing Preamble
GUD-PLN-001	FTTH Network Design Guidelines
PRO-PLN-001	Materials Approval Process
SD-FXI-001	Standard Layout: - <ul style="list-style-type: none"> • Sheet 1 Position of chambers in trunk route • Sheet 2 Standard Duct Depths • Sheet 3 Chamber size and spacing for trunk route • Sheet 4 Chamber size and spacing for FTTH distribution
SD-FXI-002	Chamber Reinforcing Details <ul style="list-style-type: none"> • Sheet 1 Type 4 • Sheet 2 Type 6
SD-FXI-003	Duct testing apparatus <ul style="list-style-type: none"> • Sheet 1 Mandrel • Sheet 2 Brush
GUD-PLN-004	Geospatial Data Guideline

2 Executive Summary

- 2.1 This scope of works is designed to define the entire process required by Oman Broadband for the Construction Services required for the deployment of a Fiber Optic Network within identified area in Ruwi Expansion phase 2 , Muscat. The area covers **959** potential customer connections.
- 2.2 Ruwi Expansion project consists of **97** plots with an estimate of **959** potential customer connections. The design of this area utilized an existing duct from Ruwi POP till the area boundary, and a new distribution civil infrastructure had been proposed to serve the area.

2.3 The scope of the works will be detailed below but in summary it will cover the following items for which Oman Broadband is a complete solution: -

1. Validation of all plan and design packages for civil and cable systems
2. Ensure that efficient use of existing duct and chambers
3. Prove and test any existing duct infrastructure as required
4. Provide all cable, duct and chamber accessory materials for the works
5. Construct all ducting and chambers requirements
6. Cable terminations at the Pop Site, street cabinet distribution hub and network access points
7. Installation of street cabinet distribution hubs and associated splitters
8. Testing of all fibre systems
9. Acquisition of all construction NOCs as required by Municipality

2.4 The areas to be covered by the project are listed below.

3 Area Description and Project Scope

3.1 The project is in Muscat.

3.2 Oman Broadband will utilize an existing route and will build a new duct system and install FTTH components to deliver fibre from Ruwi PoP site to proximity of the customer base in Ruwi Expansion phase 2 Area. Oman Broadband has designed a civils infrastructure to match the fibre requirements of the area.

3.3 The project consists of FTTH Network and civil work for Ruwi Commercial which is shown in drawings.

3.4 The area boundary is given in the associated .dwg (AutoCAD) files as follows

3.4.1 ROUTE DESIGNS

Ruwi_Expansion_Phase2_RDD

4 General

4.1 The Contractor shall ascertain all local conditions relevant to the Works and shall be completely responsible for the construction, testing and commissioning of the Works. The Contractor shall also be completely responsible for the provision of the defined Services during the post construction periods such as defect liability, together with the provision of all associated Documentations. The Contractor shall do whatever is necessary to fulfil his obligations under the Contract and he shall also be responsible for all process licenses and similar agreements.

4.2 The drawings related to the Works are identified as Contract Drawings. Contract Drawings are the drawings originally provided in the Tender documentation which have been annotated where necessary to reflect any changes accepted during the tendering/award processes and subsequently forming part of the Contract as the Contract Drawings.

4.3 The Contractor shall obtain in the name of the Oman Broadband all necessary permits related to the construction of the Works.

- 4.4 The Contractor shall take full responsibility, for ensuring that the designs for all civil engineering elements of the Works are appropriate for the prevailing ground conditions.
- 4.5 After construction work has been completed the Contractor shall undertake any necessary repairs and refurbishment to return the site to a new condition regardless of the reason and responsibility for any damage which has occurred.
- 4.6 Residential staff/labour camps shall not be allowed on the Site or any adjacent land without the prior written approval of the relevant Authorities and the Oman Broadband Contract Holder. The Contractor shall provide the Contract Holder with copies of all records related to permissions obtained for such camp. As with the Site any adjacent land occupied by the Contractor shall be provided with suitable high-level sight barrier fencing.
- 4.7 Prior to construction commencement, the Contractor shall ensure that all proposed temporary facilities are approved by relevant Ministries and Government bodies.
- 4.8 The Contractor shall obtain permission from the Municipality and all other relevant Authorities to determine suitable landfill sites for disposal of surplus/unsuitable excavated materials arising from his Works.

5 QUALITY MANAGEMENT PLAN

- 5.1 The Contractor must submit, during mobilisation, his project specific quality policy, and procedures in the form of a fully integrated Quality Management Plan for the approach to QA/QC during the design, construction phases. The plan must demonstrate the actions that will ensure high quality products are to be constructed.
- 5.2 He shall be fully responsible for the provision of a comprehensive training programme for all levels of his personnel and subcontractors in the requirements of the Quality Management Plan.
- 5.3 He shall employ a full time qualified and experienced Quality Manager and appropriate QA/QC Professionals to adequately staff the design and construction of the Plant and of the Services to ensure full compliance of the Quality Plan. The Quality Plan shall be approved and regularly reviewed and revised by the Oman Broadband's Contract Holder.
- 5.4 The Contractor shall be required to produce and maintain a Quality Assurance Master Plan prior to the commencement of construction. The Plan shall be reviewed and up-graded throughout the construction period to the satisfaction of the Oman Broadband's Contract Holder.
- 5.5 All method statements shall clearly define the applicable QA/QC procedures.
- 5.6 The Contractor shall also demonstrate that he is maintaining his certification to a recognised Quality Assurance Standard such as ISO 9001:2000. The QA manager must be familiar with the demands of such standards and their implementation.
- 5.7 The Contractor shall maintain the Issues and Risks Logs which it is expected to be used for Issues and Risk resolution; the purpose of which is to maintain progress against the master PiP. These are to be available at all times to the Oman Broadband's Contract Holder.
- 5.8 The Oman Broadband's Contract Holder's representative will be involved in the day-to-day quality inspections of the construction and installation of the Works. Inspection sheets shall be agreed

between both parties in order to ensure that formal acceptance or rejections are recorded throughout the progress of the Works.

- 5.9 All quality control document produced by the Contractor shall be stored and handled in a single fully structured computer based system.
- 5.10 The Contractor shall arrange for complete six monthly audits of the execution of his Quality Plans. The Oman Broadband's Contract Holder shall be provided with copies of the audit reports and the Contractors recommendations for correction of any identified non-conformities

6 WORKS TO BE UNDERTAKEN BY THE CONTRACTOR

The Works to be undertaken by the Contractor are categorised as follows:

- Mobilisation
- Engineering, procurement and construction planning
- Construction, testing and commissioning

6.1 Mobilisation - General

- 6.1.1 An efficient mobilisation is to be considered as a key requirement for the successful delivery of the Contract.
- 6.1.2 All necessary registration and insurance documentation as outlined in the Conditions of Contract shall be put in place during mobilisation to the approval of Oman Broadband
- 6.1.3 During this stage and in the period up to the commencement of the main construction period the Contractor shall take possession of the Site and undertake the pre-construction activities identified below:
 - Install Contract signage boards
 - Establish and furnish any site offices for the Oman Broadband, Oman Broadband's Representative and himself
 - Establish all necessary utility connections
 - Establish all necessary on Site and off Site storage and lay-down areas
 - HSE training
- 6.1.4 The Contractor shall provide adequate bottled drinking (mineral) water for the Oman Broadband and Oman Broadband's site personnel.
- 6.1.5 The Contractor shall provide an adequate and secure temporary electricity supply for the purposes of construction including the site offices.
- 6.1.6 The Contractor shall be responsible for providing adequate potable water supplies to the site for all purpose.
- 6.1.7 The Contractor shall be responsible for obtaining adequate telephone line connections for his own requirements and the requirements of the site offices for Oman Broadband and Oman Broadband's site personnel.

6.2 Mobilisation – Health, Safety and Environment Plan:

6.2.1 The Contractor shall submit to Oman Broadband a fully detailed HS&E Plan. For any site work which is proposed to commence before the HS&E is fully approved the Contractor shall ensure that his Method Statement fully details his HS&E procedures for the specific task.

6.3 Engineering, Procurement and Construction Planning - General:

6.3.1 The Contractor shall be completely responsible for the permitting and procurement of all elements of the Project Works all in accordance with the specified requirements.

6.3.2 The Contractor shall submit for the Oman Broadband's Contract Holder's review and approval a comprehensive programme of activities for the procurement and construction planning deliverables to be undertaken during the Project.

6.3.3 The programme shall clearly detail the activities for all aspects of the project.

6.3.4 For the procurement activities the programme shall clearly identify the target dates for the placing of orders for key equipment, factory inspection/testing and delivery. During the Engineering, Procurement Planning and Construction Planning period the Contractor shall provide complete details of the approach to:

- Approved vendors lists
- Inspections – statutory and non-statutory
- Factory and site acceptance testing
- Shipping services and transportation to Site
- Test certification

6.4 Engineering, Procurement and Construction Planning - Preliminary Activities:

6.4.1 The Contractor shall during this stage undertake all necessary investigations to determine all Site aspects which will impact his future activities such as:

- Local pre-condition surveys
- Site conditions – climate, access, labour situation, topography, availability of enough space for storing equipment, etc
- Site ground investigation
- Buried utilities
- Access restrictions
- Permit requirements

6.4.2 The Contractor shall engage the services of a full time Omani PRO to assist in all aspects of these activities.

6.4.3 The Contractor shall establish his Engineering office if required in the location approved at the time of Tender and confirmed in the Contract Documentation.

6.5 Construction, Testing and Commissioning:

6.5.1 The Contractor shall be completely responsible for the construction, testing and commissioning of the duct network as described in the Contract Documentation and as detailed to the approval of the Oman Broadband's Contract Holder during the Engineering Phase. Construction activities shall be in accordance with the approved Construction Plan, HS&E Plan, the requirements of the Specifications, the other parts of these Schedules and the approval of the OMAN BROADBAND's Contract Holder.

7 KEY PERSONNEL

- 7.1 The Contractor shall engage full time staff of adequate numbers and quality during the construction phases of the Works. The key staff, employed by the Contractor, shall be as agreed with the Oman Broadband during the pre-award stage.
- 7.2 The Contractor shall give one-month advance notice to the Oman Broadband's Contract Holder for his intention to change any of his key personnel. The Contractor shall not implement changes of his key personnel without obtaining the prior approval of the Oman Broadband's Contract Holder. To obtain such approval the Contractor shall demonstrate to the Oman Broadband's Contract Holder that the proposed replacement is equal or better than the appointee approved during the post-tender stage
- 7.3 All key staff shall be proficient in written and spoken English. If any the Contractor's appointed key staff fails to meet the standard of English indicated in their C.V. the Oman Broadband's Contract Holder shall have the authority to request a replacement.
- 7.4 The Contractor shall provide the following key staff as minimum :

Construction:	Min Relevant experience
• Contract Manager	> 10 yrs
• HSE Manager	> 10 yrs
• Procurement Manager	> 5 yrs
• Construction Manager	> 10 yrs
• QA/QC Manager	> 10 yrs

8 DOCUMENTATION

8.1 GENERAL

- 8.1.1 The required Documentation shall reflect the following requirements:
- Mobilisation
 - Permitting
 - Engineering, Procurement Planning and Construction Planning
 - Construction
 - Testing and Commissioning
 - Construction completion
- 8.1.2 The Contractor shall submit to the Contract Holder at least One soft copy of all required documentation.
- 8.1.3 The main items of Documentation to be provided by the Contractor shall be as follows but not limited to:
- Registration
 - Insurances
 - Contract Programme (PiP)
 - Quality Plan

- H&SE Plan Including MD 286 compliance
- Permits

8.2 Documentation required During Mobilisation

8.2.1 The following Documentation shall be submitted by the Contractor to the Contract Holder within 6 days for local contractors and 19 days for International Contractors.

- **Registration Documentation:**

8.2.2 The Contractor shall submit for the information of the Oman Broadband's Contract Holder the necessary registration documentation to confirm the Contractor may undertake business activities in Oman.

- **Insurance Documentation:**

8.2.3 The Contractor shall submit for the information of the Oman Broadband's Contract Holder the policy documentation confirming necessary Insurance provisions as required under the Contract are in place.

- **Contract Programme:**

8.2.4 The Contractor shall submit his programme for the whole of the Works within 14 days of the effective date. An indicative program of works is to be attached in Appendix identifying the main priority areas and some key target dates. Oman Broadband reserves the right to alter the program of works by either adding or deleting areas. Oman Broadband additionally reserves the right to alter the priority of the areas to be built where reasonably practicable.

- **Mobilisation Project Plan:**

8.2.5 Within 14 days from the effective date, the Contractor shall submit for the approval of the Oman Broadband's Contract Holder a Project Plan covering his proposed mobilisation activities. The Project Plan shall include as a minimum the following:

- Project management approach during mobilisation
- Schedule of Key Personnel
- Mobilisation scope
- Advanced mobilisation programme data from the Contract Programme including permit applications to relevant authorities
- Quality management plan
- HS&E Plan

- **Mobilisation Method Statements:**

8.2.6 Not less than 5 days before commencement of any activity, the Contractor shall submit for the approval of the Oman Broadband's Contract Holder detailed method statements covering his proposed mobilisation construction activities.

8.3 Documentation to be submitted during Permitting

8.3.1 The following Documentation shall be submitted by the Contractor to the Oman Broadband's Contract Holder as developed prior to construction.

- **Construction Permit from the Municipality:**

8.3.2 The Contractor shall secure and submit for the Oman Broadband's Contract Holder's information and records the necessary permits from the Municipality granting approval to undertake construction activities on site and to erect temporary or permanent buildings.

- **No Objection Certificates (NOCs):**

- 8.3.3 The Contractor shall secure and submit for the Oman Broadband's Contract Holder's information, records and necessary NOCs from the relevant authorities confirming they have no objection to the Contractors proposed construction activities on and off site as appropriate.

8.4 Documentation to be submitted during Construction planning

- 8.4.1 The following Documentation shall be submitted by the Contractor to the OMAN BROADBAND's Contract Holder for information/approval as identified during the Engineering, Procurement Planning and Construction Planning period at defined.

- **Engineering, Procurement Planning and Construction Planning Project Management Plan:**

- 8.4.2 Within 14 days of the commencement of the Engineering, Procurement Planning and Construction Planning period the Contractor shall submit for the approval of the Oman Broadband's Contract Holder a Project Plan covering his proposed Engineering, Procurement Planning and Construction Planning activities. The Project Plan shall include as a minimum the following:

- Confirmation of the scope of activities to be undertaken
- Schedule of Key Personnel
- Quality Management Plan
- HS&E Plan

- **Procurement Planning:**

- 8.4.3 For the procurement activities the programme shall clearly identify the target dates for the placing of orders for key equipment, factory inspection/testing and delivery. The Contractor shall provide complete details of the approach to:

- Approved vendors lists
- Inspections – statutory and non-statutory
- Factory and site acceptance testing
- Shipping services and transportation to Site
- Test certification

- **Procurement Programme:**

- 8.4.4 Within 14 days from the commencement of the Engineering, Procurement Planning and Construction Planning period the Contractor shall submit for the information of the Oman Broadband Contract Holder advanced programme data from the Contract Programme covering his proposed activities during this period. The data shall identify the key milestones.

- **Procurement Reports:**

- 8.4.5 The Contractor shall provide for information to the Oman Broadband Contract Holder monthly reports on the progress of all procurement activities for key requirements such as Ducting and Chambers. The report shall highlight anticipated dates for the witnessing of factory tests. The Reports shall show also purchase, usage, and balances.

- **Construction Planning:**

- 8.4.6 Throughout the Engineering, Procurement and Construction Planning Phase the Contractor shall develop his construction programme and site operating procedures into a Construction Plan which

must be in place and approved by the Oman Broadband's Contract Holder before the main construction activities commence. This documentation shall comprise as a minimum details on the following:

- Quality Assurance and Control Plan
- Contractor's plant and equipment
- Site management/supervision personnel
- Sub-contractors
- Site administration
- Site personnel policy
- Off-loading, reception and storage of materials
- Method statements
- Reporting procedures and deliverables
- Cost reporting in support of invoicing
- Local procurement
- Communication, documentation, distribution and transmission procedures
- Document numbering and numbering system
- Staff/Labour accommodation arrangements

- **HSE Plan:**

- 8.4.7 Within 30 days from the commencement of the Engineering, Procurement Planning and Construction Planning period the Contractor shall submit for the approval of the Oman Broadband's Contract Holder a HSE Plan covering all of his proposed HSE related activities during the construction period. The Plan shall identify the key personnel and include a resources histogram.

8.5 Documentation to be submitted during Construction

- **Construction:**

- 8.5.1 During the construction period the Contractor shall submit by the Contract Holder the following documentation:

- HS&E records
- Risk Register/Log and Issues Log
- All necessary permit renewals
- Monthly progress reports

- **Testing and Commissioning:**

- 8.5.2 During the testing and commissioning period the Contractor shall submit to the Contract Holder the following documentation:

- Testing and Commissioning Plan
- Method statements as appropriate
- QA/QC documentation
- HS&E records
- Progress photographs

- **Testing/Commissioning Plan:**

- 8.5.3 The Testing/Commissioning Plan shall be compiled by the Contractor's Commissioning Engineer and as a minimum contain procedures for the following:

- Training
- Record documentation
- Emergency procedures if any

8.6 Handover documentation

8.6.1 The Contractor shall provide the following documents to Oman Broadband network in electronic format together with 2 hard copies;

- As built record drawings in a .dwg format showing an accurate depiction of the installed equipment showing locations of all duct work, and chambers. This is to be captured electronically using GIS software to record the precise location of Oman Broadband network asset based upon the original network design drawings previously supplied by Oman Broadband

8.6.2 Oman Broadband will not accept completion of Work Package until all Handover Documentation has been received and accepted.

9 PROJECT SCOPE REQUIREMENTS

9.1 The Construction works included in this contract shall include, but is not limited to all or any of the following:

- Work within trunk routes, minor roads, housing estates, private streets and lands
- Work with special engineering difficulty, including works of a specialist nature
- Trial holes and location of existing services
- All temporary works including traffic management, protection of the public and all operatives associated with the project.
- Open excavation trench work and reinstatement of existing surface finishing to roads and / or footpaths verges and the like
- Installation of duct work into excavations in carriageways, footpaths, verges by traditional open excavation.
- Construction of chambers into carriageways, footpaths, verges and demolishing / rebuilding existing chambers.
- Core drilling into existing manholes and inspection chambers.

9.2 No duct or access chambers will be laid in private property without the explicit permission from the Oman Broadband.

9.3 In Oman, trees and ornamental gardens are seen as national assets, care must be taken to avoid damage to tree roots and disruption to ornamental gardens. In case of destruction due to the laying of ducts it shall be reinstated as before.

10 PRE-INSTALLATION TESTS AND PROCEDURES

10.1 Oman Broadband, Oman Broadband's Contract Holder and/or their appointed representatives will undertake witness testing of a number of key items of products at the factory of origin.

10.2 Due to the anticipated International nature of the equipment sourcing, the Contractor shall arrange all accommodation associated with factory testing by Oman Broadband and/or the Oman Broad Contract Holder's personnel.

10.3 The factory and other pre-installation tests shall be as required in accordance with the Specification.

11 SUBCONTRACTING AND SUPPLIERS

- 11.1 For those matters listed, the Contractor shall only engage the suppliers and subcontractors as are listed in this document.
- 11.2 The Contractor shall use the same Conditions of Contract as is being followed in this Contract for all contracts with Sub-contractors. A copy of the subcontract document shall be submitted to the Oman Broadband's Contract Holder for review and approval prior to seeking tenders for subcontracts.