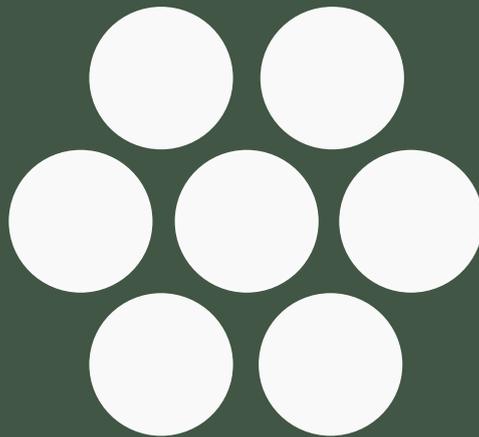
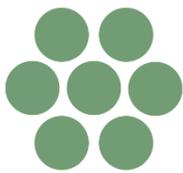


INSTRUCTIONS ROBUST FIBRE

Sub-Appendix 7.2 - Site Deployment Project

Version 1.8





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1. Introduction

This sub-appendix describes the design, procurement, implementation, documentation and handover of site facilities for active equipment in communication networks.

Sub-Appendix 7.2 covers the entire process from initiation to commissioned and documented site facility and aims to ensure that the site meets requirements for functionality, robustness, operational reliability and security in accordance with Robust Fibre and relevant legislation.

For the purposes of this sub-appendix, a site deployment project refers to the complete implementation of a site facility, including feasibility study, design, procurement, construction, documentation and handover to operations. The term does not refer solely to civil works or cable installation, but to the entire coordinated process for establishment or modification of a site.

This sub-appendix applies regardless of the selected form of contract.

2. Application and Principles

2.1 Application

Sub-Appendix 7.2 shall be applied in the case of:

- establishment of a new site,
- modification, reconstruction or adaptation of an existing site.

It applies regardless of whether the site project is carried out as a standalone project or as part of a larger network project.

When designing, procuring and implementing site facilities with requirements for enhanced security, in addition to the requirements in Appendix 4 - Robust Site and Node, the instructions for Facilities with Enhanced Security - Appendix 1 - Robust Site for Critical Digital Infrastructure shall also be applied.

2.2 Fundamental Principle

Once a decision regarding a site has been made in accordance with Sub-Appendix 7.1, the site's need, functional role and connection to the network are established. Site design and procurement shall thereafter be carried out in accordance with this sub-appendix, without the selected form of contract affecting the requirement profile, design stages or stage gates.

The form of contract affects only the allocation of responsibilities and the timing of detailed design, not which design activities shall be carried out or which result is required.

When site design is performed as a consultancy assignment on behalf of the client, the assignment shall be conducted in accordance with ABK 09, as applicable, in line with the principles set out in Sub-Appendix 7.1.

2.3 Normative Reference to Appendix 4 - Robust Site and Node

Sub-Appendix 7.2 regulates the process for design, procurement, implementation, documentation and handover of site facilities.

All site facilities designed and implemented in accordance with this sub-appendix shall, as a minimum, comply with the minimum requirements set out in Instructions for Robust Fibre, Appendix 4 - Robust Site and Node.

Appendix 4 thus constitutes the technical requirement basis for the design of site (node facility) while this sub-appendix describes how the requirements shall be ensured, verified and documented throughout the different stages of the project.

Any deviations from the minimum requirements in Appendix 4 shall be risk assessed, documented and approved within the framework of the design process in accordance with this sub-appendix.

Where Facilities with Enhanced Security – Appendix 1 – Robust Site for Critical Digital Infrastructure is applicable, that appendix shall also constitute part of the technical requirement basis, with requirement escalations in accordance with the established security level.

3. Input Data and Coordination with Network Design

When initiating site design, the operations and asset management perspective shall also be taken into account, including requirements for standardisation of technical solutions and equipment (e.g. climate control systems, backup power, access control systems and racks), with the objective of minimising variation within the network and facilitating long-term operations, maintenance and future extensions.

When site design is initiated, the following input data from Sub-Appendix 7.1 shall be available:

- decision that a site shall be established or modified,
- the site's functional role within the network topology,
- requirements for capacity, redundancy and availability,
- preliminary requirements for fibre connections and routes,
- initial Risk and Vulnerability Analysis (RSA).
- Site design shall be carried out in close coordination with network design in order to ensure that the site and network solution together form a coherent, robust and operationally reliable whole.

4. Design Process - Overview

The design of a site facility shall always follow the same main stages:

- Feasibility Study (site)
- Preliminary Design
- Detailed Design
- Procurement
- Implementation
- Documentation
- Handover to Operations

The process in this chapter is normative and applies regardless of the selected form of contract. The form of contract does not affect the sequence, content or requirements of the design stages.

5. Feasibility Study - Site

5.1 Purpose

The purpose of the feasibility study is to establish the fundamental prerequisites for the site facility and to create a basis for preliminary design.

5.2 Measures

The feasibility study shall include:

- verification of the site requirement in accordance with the decision in Sub-Appendix 7.1,
- assessment of a suitable site type,
- analysis of alternative locations,
- assessment of connection prerequisites for fibre and power,
- overall assessment of building permits and other required permits,
- assessment of whether the measure is subject to building permit requirements and identification of any additional permit requirements,
- assessment of the complexity of the building permit process, particularly when located within a detailed development plan area, including the need for plan amendments, consultations and affected stakeholders,
- overall estimation of the time required for the building permit and permit process as a basis for continued design and scheduling,
- preliminary RSA with focus on physical security, dependencies and availability,
- overall cost estimate.

Classification, Operational Reliability and Power Supply

- In the feasibility study, the site's function and importance shall be assessed from a security and operational reliability perspective in accordance with applicable cybersecurity legislation and relevant regulations and guidance issued by the responsible supervisory authority.
- The assessment shall include:
 - existing active connections within the site,
 - planned connections at full site build-out,
 - the expected function and importance of the site within the network upon completion,
 - the need for uninterruptible power supply, backup power and redundancy based on the site's role, availability requirements and consequences in the event of an outage.

5.3 Result

The feasibility study shall result in a sufficient decision basis for initiating preliminary design.

6. Preliminary Design

6.1 Purpose

The purpose of the preliminary design is to establish the site's functional and technical main solution and to create a basis that locks the requirement profile prior to procurement.

Preliminary design is a mandatory stage.

6.2 Measures

The preliminary design shall, as a minimum, include:

- determination of site type and location,
- establishment of the principal technical solution,
- overall requirements for power supply, backup power, cooling and ventilation,
- requirements for physical security and perimeter protection,
- determination of connection points for fibre and power,
- preliminary layouts and space requirements,
- coordination with the network topology and redundancy principles,
- execution and update of the Risk and Vulnerability Analysis (RSA),
- cost and schedule assessment.

6.3 Result

The preliminary design shall result in:

- established function and configuration of the site,
- clearly defined functional and robustness requirements,
- basis for procurement,
- basis for building permits and other required permits.

7. Detailed Design

7.1 Purpose

Mandatory stage

Detailed design is a mandatory stage in site deployment projects. It shall not be omitted, simplified or replaced by technical decisions during the implementation stage. Complete and approved construction documents shall always be prepared prior to commencement of construction.

The purpose of detailed design is to ensure that complete construction documents are prepared for the site facility.

7.2 Requirements

The detailed design shall result in:

- construction and installation drawings,
- technical solutions for electrical systems, power supply, backup power, cooling and ventilation,
- solutions for fibre connections and cable routing,
- solutions for physical security and monitoring,
- labelling standards and documentation requirements,
- updated Risk and Vulnerability Analysis (RSA).

Detailed design shall be reviewed and approved prior to commencement of construction.

8. Procurement of Site Facility

8.1 Purpose

The purpose of the procurement is to enter into a contract with a contractor capable of carrying out the construction and installation of the site facility in accordance with the established requirements.

8.2 Requirements for Tender Documents

The tender documents shall, as a minimum, include:

- established functional requirements,
- requirements for robustness and availability,
- security and RSA requirements,
- requirements for documentation and digital delivery,
- requirements for coordination with the network,
- requirements for testing, verification and inspection.

The procurement shall not introduce new technical decisions.

Where site measures are a direct consequence of the network project, such measures shall, where appropriate, be included in the same procurement as the network contract and shall not be procured as a separate project.

9. Implementation

The site facility shall be constructed and installed in accordance with approved documents and established requirements.

The implementation shall include:

- planning of works affecting ongoing operations,
- installation of technical systems,
- self-inspections and quality controls,
- testing and verification of functionality, redundancy and security,
- final inspection.

10. Documentation and Handover

10.1 Documentation

The documentation shall include:

- as-built documentation,
- updated Risk and Vulnerability Analysis (RSA),
- test protocols; test protocols shall present performed tests and verify that the site facility meets the established requirements. The scope and content of the tests shall be carried out in accordance with the requirements in the tender documents and/or the Technical Specification,
- labelling documentation, including the established labelling principle and as-built documentation of all physical labelling within the site, such as racks, ODFs, fibre ports, cables and connections, with traceable linkage to ODF schematics, fibre schematics and network/GIS documentation,
- operations and maintenance instructions.

The documentation shall be delivered digitally and be adapted for operations and asset management.

10.2 Handover to Operations

Handover shall take place only when the site facility has been approved, documented and verified in accordance with established requirements. Approved final inspection shall have been completed.

11. Allocation of Responsibilities under Different Forms of Contract

11.1 Design-Bid-Build (AB)

Under a Design-Bid-Build contract, the client is responsible for detailed design. The contractor carries out construction and installation in accordance with the client's documents.

11.2 Design-Build (ABT)

Under a Design-Build contract, the contractor is responsible for detailed design. The client is responsible for establishing the functional requirements and for reviewing and approving the detailed design prior to commencement of construction.

11.3 Shared Responsibility

Regardless of the form of contract, the client is responsible for ensuring that the site's function, requirement profile, robustness level and security requirements are correctly established prior to procurement.