外部委託業者の募集

References: IO/24/OT/10031165/VML

"Procurement and Installation of Load Centre 18"

（ロードセンター18 の調達と据え付け）

IO 締め切り 2025 年 3 月 10 日(月)

〇はじめに

本事前情報通知（PIN）は、作業契約の入札授与および実行につながる公開入札調達プロセスの最初のステップです。本文書の目的は作業範囲と入札プロセスに関する技術的な内容の基本的な要約を提供することです。

国内機関は、次回の入札に先立って、これらのサービスを提供することができる企業、機関またはその他の団体が入札の詳細を事前に通知する前に、この情報を公表するよう求められます。

〇 背景

ITER は平和利用の核融合発電の科学的および技術的な実現可能性の実証を目的とした、国際共同研究開発プロジェクトです。ITER 機構の 7 つのメンバーは、;欧州連合（EURATOM が代表）、日本、中華人民共和国、インド、大韓民国、ロシア連邦、および米国です。

ITER の敷地はフランス南東部のブーシュデュローヌ地区にあり、ITER 本社（HQ）もあるフランス CEA サン・ポール・レ・デュランス に近いところに位置しています。詳細については、ITER のウェブサイト http://www.iter.org を参照して下さい。

〇 作業範囲

現在の入札プロセスは、B56 および B56 拡張への電力供給を目的とした新しい 22kV ロードセンター（LC18）の設計、詳細調査、調達および設置を含む供給契約の締結を目指しています。LC18 のコンポーネント統合は、IO サイトで実施する必要があります。作業範囲およびすべての要件は、技術仕様書 ref. ITER_D_7NGXJR v1.1（本 PIN に添付）にて定義されています。

〇調達プロセスと目的

目的は、競争入札プロセスを通じて供給契約を落札することです。

この入札のために選択された調達手続きは公開入札手続きと呼ばれます。

オープン入札手順は、次の 4 つの主要なステップで構成されています。

- ステップ 1-事前情報通知（PIN）

  事前情報通知は公開入札プロセスの第一段階です。IO は、関心のある企業、機関又はその他の団体に事前に入札機会について通知するために、国内機関に対し、今後の入札に関する情報を公表するよう正式に要請します。**関心のある入札者は、下記の調達スケジュールに記載された期限までに、表現の関心フォーム（別紙 I）を電子メールでご返送ください。**

- ステップ 2-入札への招待（ITT）
  事前指示通知（PIN）の公表から 14 日以内に、入札への招待（ITT）が公告されます。この段階では、PIN を見た関心のある入札者が入札書類を入手し、入札説明書に従って提案書を作成して提出することができます。

- ステップ 3-入札評価プロセス
  入札者の提案は、IO の公平な評価委員会によって評価されます。入札者は、技術的範囲に沿って、かつ、入札への招待（ITT)に記載された特定の基準に従って作業を実施するために、技術的遵守を証明する詳細を提供しなければなりません。

- ステップ 4-落札
  認定は、公開されている入札への招待（ITT)に記載されている、コストに見合った最適な価格または技術的に準拠した最低価格に基づいて行われます。

〇日程

IO の内部マイルストーン、他システムの統合、インターフェースシステムの設計スケジュールに基づき、以下のマイルストーンを考慮する必要があります：

事前指示書（PIN）の発行	2025 年 2月27 日
関心表明フォームの提出	2025 年 3月10 日
入札への招待（ITT）の発行	2025 年 3月12 日
明確化のための質問（もしあれば）	2025 年 4月9 日
入札提出	2025 年 4月23 日
入札評価と契約授与	2025 年 4 月/5 月
契約調印	2025 年 5 月
作業開始	2025 年 5 月

〇契約期間と実行

ITER機構は2025年5月ごろに授与する予定です。予想される契約期間は19か月の予定です。

ITERでの作業に使われる言語は英語です。プロレベルの流暢さが求められます（話す、書く両方)。

〇経験

入札者は付属書 I に詳述された作業範囲に関連する技術的および産業上の経験を実証する必要があります。

〇候補

参加は、個人またはグループ/コンソーシアムに参加するすべての法人に開放されます。法人とは、法的権利及び義務を有し、ITER 加盟国内に設立された個人、企業又は機構をいいます。ITER 加盟国は欧州連合(EURATOM メンバー)、日本、中華人民共和国、インド共和国、大韓民国、ロシア連邦、アメリカ合衆国です。

法人は、単独で、またはコンソーシアムパートナーとして、同じ契約の複数の申請または入札に参加することはできません。共同事業体は、恒久的な、法的に確立されたグループ又は特定の入札手続のために非公式に構成されたグループとすることができます。

コンソーシアムのすべての構成員(すなわち、リーダーと他のすべてのメンバー)は、ITER 機構に対して連帯して責任を負います。

【※　詳しくは添付の英語版技術仕様書「**Procurement and Installation of Load Centre 18**」をご参照ください。】
ITER 公式ウェブ　http://www.iter.org/org/team/adm/proc/overview からもアクセスが可能です。

「核融合エネルギー研究開発部門」の HP：　http://www.fusion.qst.go.jp/ITER/index.html
では ITER 機構からの各募集（IO 職員募集、IO 外部委託、IO エキスパート募集）を逐次更新しています。ぜひご確認ください。

イーター国際核融合エネルギー機構からの外部委託
に関心ある企業及び研究機関の募集について

＜ITER 機構から参加極へのレター＞

以下に、外部委託の概要と要求事項が示されています。参加極には、提案された業務に要求される能力を有し、入札すべきと考える企業及び研究機関の連絡先の情報を ITER 機構へ伝えることが求められています。このため、本研究・業務に関心を持たれる企業及び研究機関におかれましては、応募書類の提出要領にしたがって連絡先情報をご提出下さい。

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PRIOR INDICATIVE NOTICE (PIN)

OPEN TENDER SUMMARY

for

OT/25/10031165/VML

"Procurement and Installation of Load Centre 18"

Abstract

The purpose of this summary is to provide prior notification of the IOs intention to launch a competitive Open Tender process in the coming weeks. This summary provides some basic information about the ITER Organisation, the technical scope for this tender, and details of the tender process for the provision of electrical and lightning protection works to the ITER Organization.

1 Introduction

This Prior Indicative Notice (PIN) is the first step of an Open Tender Procurement Process leading to the award and execution of a Supply Contract. The purpose of this document is to provide a basic summary of the technical content in terms of the scope of work and the tendering process.
The Domestic Agencies are invited to publish this information in advance of the forthcoming tender giving companies, institutions or other entities that are capable of providing these services prior notice of the tender details.

2 Background

The ITER project is an international research and development project jointly funded by its seven Members being the European Union (represented by EURATOM), Japan, the People's Republic of China, India, the Republic of Korea, the Russian Federation and the USA. ITER is being constructed in Europe at St. Paul–Lez-Durance in southern France, which is also the location of the headquarters (HQ) of the ITER Organization (IO).

For a complete description of the ITER Project, covering both organizational and technical aspects of the Project, visit www.iter.org.

3 Scope of Work

The present tender process is aiming to set up a supply contract including design, detailed study, procurement and installation of a new 22kV Load Centre (LC18), to power B56 and B56-extention. It is required that the component integration in the Load Centre 18 is done on IO site.

The scope of work and all requirements are defined in the technical specifications ref. ITER_D_7NGXJR v1.1 (attached to this PIN).

4 Procurement Process & Objective

The objective is to award a Supply Contract through a competitive bidding process.

The Procurement Procedure selected for this tender is called the Open Tender procedure.

The Open Tender procedure is comprised of the following four main steps:

- Step 1- Prior Indicative Notice (PIN):
  The Prior Indicative Notice is the first stage of the Open Tender process. The IO formally invites the Domestic Agencies to publish information about the forthcoming tender in order to alert companies, institutions or other entities about the tender opportunity in advance. **Interested tenderers are kindly requested to return the expression of interest form (Annex I) by e-mail by the date indicated in the procurement timetable below.**

- Step 2 - Invitation to Tender (ITT):
  Within 14 days of the publication of the Prior Indicative Notice (PIN), the Invitation to Tender (ITT) will be advertised. This stage allows interested bidders, who have seen the PIN, to obtain the tender documents and to prepare and submit their proposals in accordance with the tender instructions.

- Step 3 – Tender Evaluation Process:
  Tenderers' proposals will be evaluated by an impartial, professionally competent technical evaluation committee of the ITER Organization. Tenderers must provide details demonstrating their technical compliance to perform the work in line with the technical scope and in accordance with the particular criteria listed in the invitation to tender (ITT).

- Step 4 – Contract award:
  A service contract will be awarded on the basis of best value for money according to the evaluation criteria and methodology described in the Invitation to tender (ITT).

Procurement Timetable

The tentative timetable is as follows:

Milestone	Date
Publication of the Prior Indicative Notice (PIN)	27 February 2025
Submission of expression of interest form	10 March 2025
Invitation to Tender (ITT) advertisement	12 March 2025
Clarification Questions (if any) and Answers deadline	9 April 2025
Tender Submission	23 April 2025
Tender Evaluation & Contract Award	April / May 2025
Contract Signature	May 2025
Start of the work	May 2025

5 Quality Assurance Requirements

Prior to commencement of any work under this Contract, a "Quality Plan" shall be produced by the selected Contractor and submitted to the IO for approval, describing how they will implement the ITER Procurement Quality Requirements.

6 Contract Duration and Execution

The ITER Organization shall award a supply contract in May 2025. The resulting Contract will be for 19 months.

The working language of ITER is English, and a fluent professional level is required (spoken and written).

7 Experience

The tenderer shall form a team of the dedicated staff who shall have the required experience as detailed in the attached technical specifications in order to provide the required support service.

8 Candidature

Participation is open to all legal entities participating either individually or in a grouping / consortium. A legal entity is an individual, company, or organization that has legal rights and obligations and is established within an ITER Member State.

Legal entities cannot participate individually or as a consortium partner in more than one application or tender of the same contract. A consortium may be a permanent, legally-established grouping, or a grouping which has been constituted informally for a specific tender procedure. All members of a consortium (i.e. the leader and all other members) are jointly and severally liable to the ITER Organization.

In order for a consortium to be acceptable, the individual legal entities included therein shall have nominated a leader with authority to bind each member of the consortium, and this leader shall be authorized to incur liabilities and receive instructions for and on behalf of each member of the consortium.

It is expected that the designated consortium lead will explain the composition of the consortium members in a covering letter at the tendering stage. Following this, the Candidate's composition must not be modified without notifying the ITER Organization of any changes. Evidence of any such authorization shall be submitted to the IO in due course in the form of a power of attorney signed by legally authorized signatories of all the consortium members.

9 Sub-contracting Rules

Sub-contracting is allowed under this Contract.

IDM UID
7NGXJR

VERSION CREATED ON / VERSION / STATUS
05 Feb 2025 / 1.1 / Approved

EXTERNAL REFERENCE / VERSION

Technical Specifications (In-Cash Procurement)

LC18 Technical Specification

This document outlines the minimum requirements for the procurement and installation of Load Centre 18 (LC18) that will power supply B56 and its future extension through PCR-001343.

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1 Preamble

This Technical Specification is to be read in combination with the General Management Specification for Service and Supply (GM3S) – Ref [1] that constitutes a full part of the technical requirements.

In case of conflict, the content of the Technical Specification supersedes the content of Ref [1].

2 Scope

This service contract includes design, detailed study, procurement and installation of a new 22kV Load Centre (LC18), to power B56 and B56-EXT.

This Load Centre includes local LV distribution and 22kV/0.4kV auxiliaries transformer

The contractor will have also to perform the necessary Site Acceptance Tests prior to first energization, as well as the startup of the Load Centre, in collaboration with EPD team.

The Load Centre will be powered from B55 (LC12) thru two 22kV lines. 22kV cables from B55 to LC18 are also included in the contract as well as the power and instrumentation cables from LC18 to B56 and B56-EXT.

Contractor will have also to design and procure, install and test the two 22kV/410V Transformers of B56 and B56-EXT and its secondary connections to existing or future main distribution boards.

Some adaptation works in B56 are included as well in this contract scope.

3 Acronyms & Definitions

3.1 Acronyms

The following acronyms are the main one relevant to this document.

Abbreviation	Description
MTO	Material Take Off
CRO	Contract Responsible Officer
GM3S	General Management Specification for Service and Supply
IO	ITER Organization
PRO	Procurement Responsible Officer
MDB	Main Distribution Board
SDB	Sub Distribution Board
UPS	Uninterruptible Power Supply
CB	Circuit Breaker
RCD	Residual Current Device
PE	Protective Earth
LPCT	Low Power Current Transformer
SSEN	Steady State Electrical Network
EPD	Electrical Power Distribution team
TQC	Tel Que Construit
DTU	Document Technique Unifié
PTW	Permit To Work
PPSPS	Plan Particulier de Securité et de Protection de la Santé
DT/DICT	Déclaration de projet de Travaux
LC	Low voltage Load Center
CAD	Computer Aid Design
IDM	ITER Documentation Management system
IEC	International Electrical Committee
SCP	Société du Canal de Provence (water provider)
TPC	Terre-Plein Central (for buried electrical ducts)
GBA Block	Glissiere en Beton Armé

For a complete list of ITER abbreviations see: ITER Abbreviations (ITER_D_2MU6W5).

3.2 Definitions

Contractor: shall mean an economic operator who have signed the Contract in which this document is referenced.

EPD Team: ITER ORG electrical operation team, responsible of all site electrical distribution networks.

4 Applicable Documents & Codes and standards

4.1 Applicable Documents

This is the responsibility of the Contractor to identify and request for any documents that would not have been transmitted by IO, including the below list of reference documents.

This Technical Specification takes precedence over the referenced documents. In case of conflicting information, this is the responsibility of the Contractor to seek clarification from IO.

Upon notification of any revision of the applicable document transmitted officially to the Contractor, the Contractor shall advise within 4 weeks of any impact on the execution of the contract. Without any response after this period, no impact will be considered.

Ref	Title	IDM Doc ID	Version
1	General Management Specification for Service and Supply (GM3S)	82MXQK	1.4
2	IO Environmental Management System doc 1: PMAE v1	97W4PN	1.4
3	Environmental requirements	97WRFP	2.2
4	Alert procedure on ITER construction site	7LB8NY	3.1
5	Internal Regulations	27WDZW	3.1
6	Work Authorisation Procedure for the ITER Site	7K66XB	
7	PPSPS templates	K7C6SZ	4.4
8	Procurement Quality Requirements	22MFG4	5.1
9	Requirements for Producing a Quality Plan	2MFMW	
10	ITER Site access Procedure	S3893D	3.1
11	CAD instructions for companies	9PNNM4	
12	ITER Site Master Plan	27X5FM	3.11
13	Calculation notes for LC18 22kV Cables-	CNEVRW	1.0
14	ITER_43BL18_SLD_001 LC18 Single Line Diagram	CRZX9D	1.0
15	ITER_43CL18_CBD_001 LC18 Preliminary Cabling Diagram	CSQU5D	1.0
16	B56 Extension – Schedule of Works	CRM3CD	1.0
17	B56 Extension -General Plan – Cross-sections and elevations – B56 Extension and Annex Building	CNQXF7	2.0
18	B56 Extension -General Plan – Plan view and elevations – B56 Extension and Annex Building (1st floor and 2nd floor)	CNMEMW	1.0

Table 1: Applicable Documents

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4.2 Applicable Codes and Standards

This is the responsibility of the Contractor to procure the relevant Codes and Standards applicable to that scope of work.

The Contractor shall comply in performing the contract, with applicable laws, decrees, circulars and standards.

The Contractor shall comply with French construction standards or to European construction standards if such European standards exist and are equivalent to those French standards.

Unified Technical Documents (DTUs) and DTU Specifications and Calculation Rules shall be considered as industry practices and are applicable to the contract.

The Contractor shall be responsible for all requests for administrative authorisations and declarations that are required by virtue of applicable regulations.

For all products and materials subject to quality standards, the Contractor must only use products and materials that comply with said standards.

For all the works related to lightning Protection, the QUALIFOUDRE certification is mandatory.

Ref	Title	Doc Ref.	Version
CS1	Low Voltage Electrical Installations	NF C 15100	
CS2	High Voltage Electrical Installations	NF C 13200	
CS3	Electrical activities	NF C 18510	
CS4	French Labor code Regulatory Part, Part IV: Health and safety at work	Article R4224-5	
CS5	French Labor code modification	Décret du 21 Avril 1988	
CS6	Decree 2010-1017 obligation of the contracting authority		
CS7	Decree 2010-1016 obligation of the employers		
CS8	Decree 2010-1118 operation on (or in the vicinity) an electrical installation and the authorization		
CS9	French order of 19 April 2012 related to standards interesting electrical installations in buildings receiving workers		
CS10	Decree 2010-1018 various provisions relating to the prevention of electrical hazard in workplace		

Table 2: Applicable codes and standards

5 Scope of Work

5.1 Civil work for LC18 preparation

5.1.1 Description

The Company will have to supply and install a concrete prefabricated Load Center compliant with NFC 13200. This includes the preparatory civil works, the delivery on ITER site, the lifting operation, cables laying and connections (described in another chapters)

The Load Center must be installed on the existing platform. The company will have to excavate the soil at a defined location. A sand bed might be necessary in accordance with the manufacturer's recommendation.

A grounding network must be installed by the contractor (120mm² copper cable, buried at 1m depth) around the substation, it shall be connected with two independent links to the existing earthing ring already buried at the limits of the ITER Platform. Buried connection will be done by exothermic welding.

As shown in Figure 1, LC18 will be implemented on the Embankment located at the south of B56.

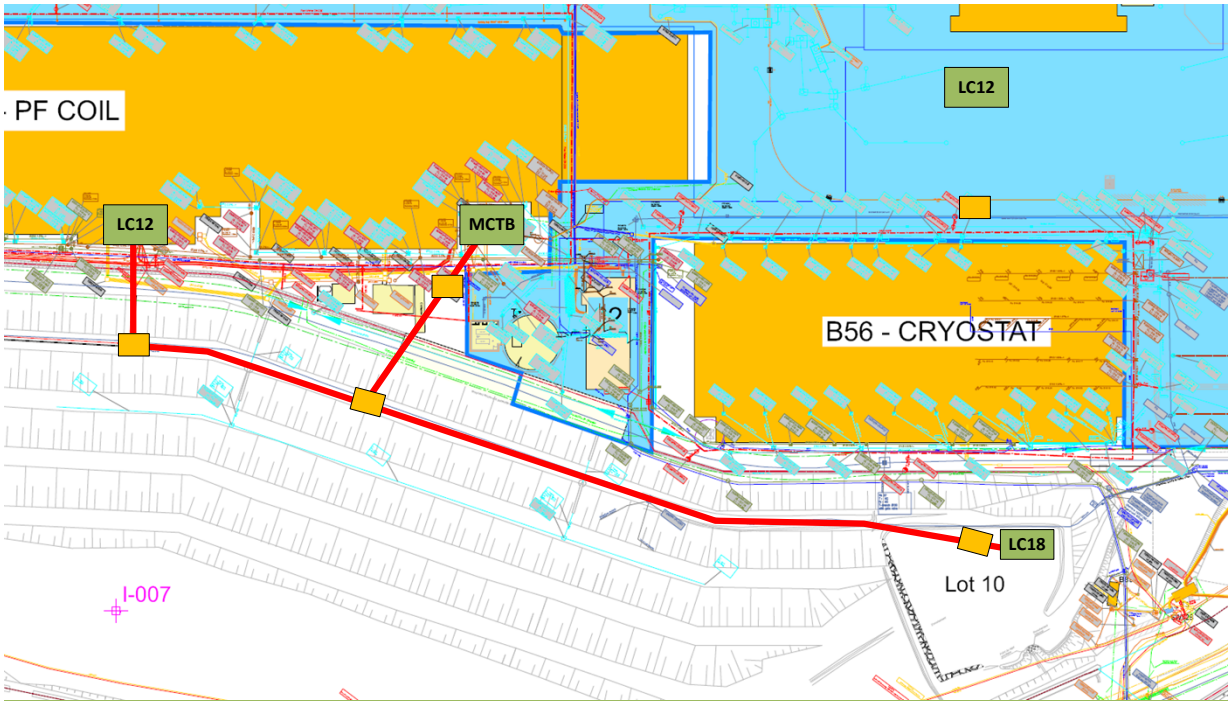

Figure 1:LC18 location

5.1.2 LC18 Connections to pulling chambers coming from B55/LC12

The company will have to connect LC18 container to the nearest west pulling chamber as shown in Figure 1 using 4x200mm buried ducts. As off today, this network is planned to be completed

for the first quarter of 2025. Depth and layout of these ducts will be adjusted during excavation works according to the pulling chamber position.

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5.1.3 B56 Connections to existing pulling chambers

Between LC18 and B56, cables will be routed using existing path. The contractor will supply and install a new pulling chamber (2x2m bottom less) and insert it on the existing route between S5 and B56. Existing ducts will be cut and connected to the new pulling chamber.

From LC18 to the new pulling chamber, 4 ducts of 200mm each will be installed.

Exact position for the new pulling chamber will be decided during the excavation work, according to the position of the existing ducts. Depth will be adjusted accordingly. Detailed drawing showing ducts entering B56 are attached to this specification at the chapter 12.3.

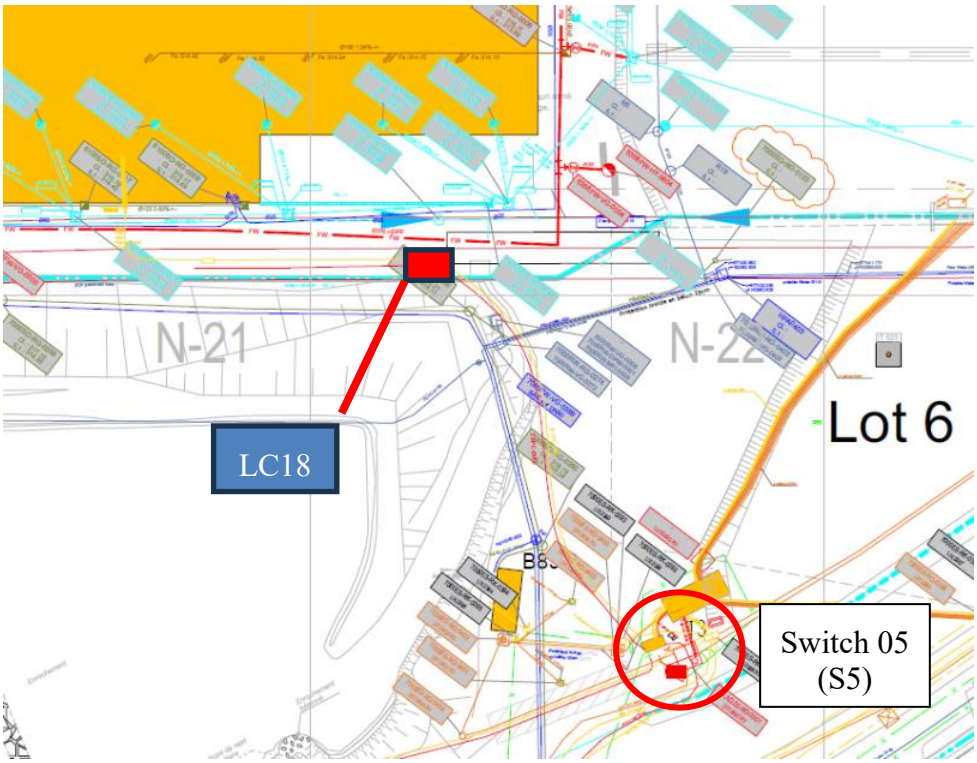

Figure 2: Pulling chamber to be installed between Switch S05 and B56

- The bidders shall answer to IO proposal described in the figure above in order to allow IO to be fair among all the bidders. However, the contractor could propose an alternative solution in addition to IO proposal providing the prices does not exceed the initial proposal and if it is validated by IO.
- The contractor shall perform all the civil work and preparatory works necessary for the network installation (Excavation, backfilling etc.).
- The contractor shall provide all the necessary tools (trucks, forklift, excavator etc.) and manpower (Labourer, Mason, foreman etc.) mandatory for the civil and electrical works.
- The contractor shall procure and install a pulling chamber size 2mx2m.
- The contractor shall procure, install and connect to the pulling chambers the necessary ducts to accommodate cable pulling (4x200mm ducts for segment from LC18).
- The contractor shall perform all the necessary site survey to confirm the distance estimated in this technical specification.
- The contractor shall perform all the mandatory network verification and detection prior to perform any excavation.
- The contractor shall make all requests to obtain authorization for excavation which are located near existing networks, especially for raw water networks see chapter 5.1.4).

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- The contractor shall submit its permit to work inside eVision system (IO system for managing permit to work). The contractor will have to prepare all necessary administrative paperwork (PPSPS etc.).
- TPC Duct size shall be selected and installed to accommodate 3 MV cables with a bending radius of at least 650mm and with cable cross section area maximum 185mm^2.
- The associated buried network signalization is in contractor's scope.
- The Contractor shall perform a full topographic survey of the Site to base their design and drawing(s) on the in-situ topographic coordinates.
- All implemented manholes shall be EN124/D400 class minimum.
- Manholes shall be clearly identified by screwed on aluminium engraved plates showing identification number (provided by the IO).
- Triangle-shape manhole covers shall be avoided. All covers shall be in one piece only to avoid the cover falling inside the manholes.
- Ducts shall be high-density polyethylene (PEHD), outer corrugated profile, smooth inner, cuff link in end, TPC-type.
- The ducts are to be installed and left clean with no remaining debris or being blocked inside. All ducts ends shall be kept closed / protected against any contamination by water, debris or dust.
- As per mandatory standards, identification nets will be installed above the buried ducts.
- In general, any buried networks shall be designed and laid in the freeze-free depth necessary to protect them from the frost (e.g. deeper than 0.8m from the ground surface level in any place).
- Rules for distance between buried (utilities) networks and rules for proximity between networks and plants shall be respected (refer to NF P98-332).
- Along with the TPC ducts trenches, the contractor shall install a 120mm2 copper cable, buried with the ducts. The cable shall be connected to the existing earthing network.
- Buried connections will be done by exothermic welding.

5.1.4 Interfaces requirements

Particular attention is required during the work and their preparation due to the high number of existing networks to be crossed in the defined area, in particular, the crossing of SCP raw water pipe where a specific process shall be followed as described below.

There is a raw water pipeline (DN700) which belongs to Société du Canal de Provence (SCP) located along the South edge of Area 73 and South to the existing B56. It is a critical network supplying the adjacent CEA nuclear installations. For any Works to be carried out near this SCP DN700 pipeline, the Contractor shall respect its 6m exclusion zone and obtain the SCP's approval in case the Works are carried out within the easement. Prior to submitting the Permit to Work request (PTW), the Contractor shall perform a DT/DICT through the "guichet unique" (http://www.reseaux-et-canalisations.ineris.fr).

For this purpose, the Contractor shall issue an explanatory note and support drawing(s) illustrating the extent of the Works (e.g. the excavation zone and planned installation of the pipelines, their depth and distance from the SCP pipeline). This documentation shall be written in French.

The SCP review/approval process will take a minimum of ten (10) working days. The Contractor shall include this process in his planning. The response report from SCP shall be attached to the PTW, which is a mandatory condition for the request to be treated.

The new buried networks shall be installed at a distance of at least 80cm and reported in

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the ITER drawings.

5.2 Procurement, Delivery & Installation of LC18

5.2.1 Load Centre envelope

Figure 3: Container Example

The forecasted dimensions of the envelope are to be confirmed by the Contractor during design phase. RAL 1015. A basement is mandatory.

Internal layout shall accommodate a desk for operation purposes.

Some GBA blocks (or equivalent) will be installed in front of the LC18 container, at 2m distance, to prevent collision with vehicles.

However, the general layout shall take into account the possibility to install mobile diesel generator nearby the container.

As an example, EPCO containers can be considered (Jurancon 3.43)

The contract shall design, procure, install the substation and it shall include:

- 2 access doors.
- False floor with necessary cable trays, with independent paths for MV, LV and IC cables.
- Manual switch and indoor lighting devices (LED).
- Auxiliary lights with manual switches.
- At least 2 Sockets.
- Main Earthing Busbar, and equipotential network.
- HVAC units for Heating and cooling.
- Emergency lighting with remote control.
- 2 Outdoor lighting devices (20w led) with detector above the doors.
- The Contractor shall provide the regulatory signs and safety equipment (SF6 if any, electrified care, glove, stool, 2 fire extinguishers, etc…)
- RONIS Locks for Interlocking (the details are provided in section 5.2.7)
- Auxiliary transformer 22kV/0.4kV, dry type, IP21 envelope, 40kVA minimum
- Low voltage Electrical Boards, 22kV Switchgear, UPS, Emergency distribution panel (see 5.2.6)
- Outdoor panel for 400V mobile diesel connection, including all necessary auxiliaries.

- Arc release tunnel might be necessary, depending on the switchgear manufacturer specifications.

5.2.2 Internal distribution in LC18 substation

The company must design, supply and install all the other necessary cables for internal distribution (Auxiliary transformer, HVAC, Lightings, cables between SEPAM, sockets, link between outside emergency power supply panel and main LV distribution board, I&C cables, etc...)

All electrical cabinets will have to be fixed on the ground, as per manufacturer recommendations.

5.2.3 22kV Switchgear

Minimum requirements for the switchgear

- Un (kV): 22
- Ur (kV): 24
- Busbar rated current Ir (A): 630
- Short duration short circuit withstand Ik (kA/1s) : 20
- Internal arc classification : A-FL or A-FLR according installation condition
- Internal Arc Withstand current (kA/1s) : 20
- Arc release tunnel might be necessary, depending of the manufacturer specifications.
- INCOMER-1 incoming panel rated current (A) : 630
- INCOMER-2 incoming panel rated current (A) : 630
- MEASUREMENT CELL Voltage transformer unit 24kV, 3 fuses 6.3A, type VRQ2n/S1, prim Voltage (kV) : 22/√3, sec voltage (V) : 100/√3, accuracy class 0.5, thermal power 250VA
- (x2) BREAKER Disconnector / Circuit breaker panel rated current (A) : 630
- (x2) INTERRUPTOR Circuit breakers rated current (A) : 630
- INTERRUPTOR Circuit breaker breaking capacity Isc (kA) : 20 @ 24 kV
- INTERRUPTOR Circuit Breaker Making Capacity Ima (kA) : 50 @ 24 kV
- Fuse disconnector breaker breaking capacity Isc (kA) : 20 @ 24 kV
- 6 Electronic Current transformers LPCT TLP 130 (links B56 and B56-EXT)
- 2 Core Balance CT CSH200 (links B56 and B56-EXT)
- All the Shunt trip coil are in 230VAC (UPS)

Protection relays to be installed in the two CIRCUIT BREAKERS and FUSE DISCONNECTOR Cells:

- SEPAM S81 or S82 (supply 48Vdc) (Or equivalent protection relay).
- LPCT interface CCA671 or equivalent
- 1 Power converter 230Vac/48Vdc
- Communication module ACE850TP or equivalent if needed (supply 230VAC from UPS or 48VDC Converter)
- Related circuit breakers, terminal blocks, RJ45 cables…
- 1 Internet switch MOXA PT-508-SS-LC-25 (48Vdc)

SUPPLY

- 1 DIN rail mounted patch panel rack
- All related circuit breakers

All MV Cells positions (Circuit breakers, switch disconnectors, fuse, earthing switches etc..) shall be monitored and hardwired to the SEPAM.

The Figure 4 below shows the overview of the protection relay architecture.

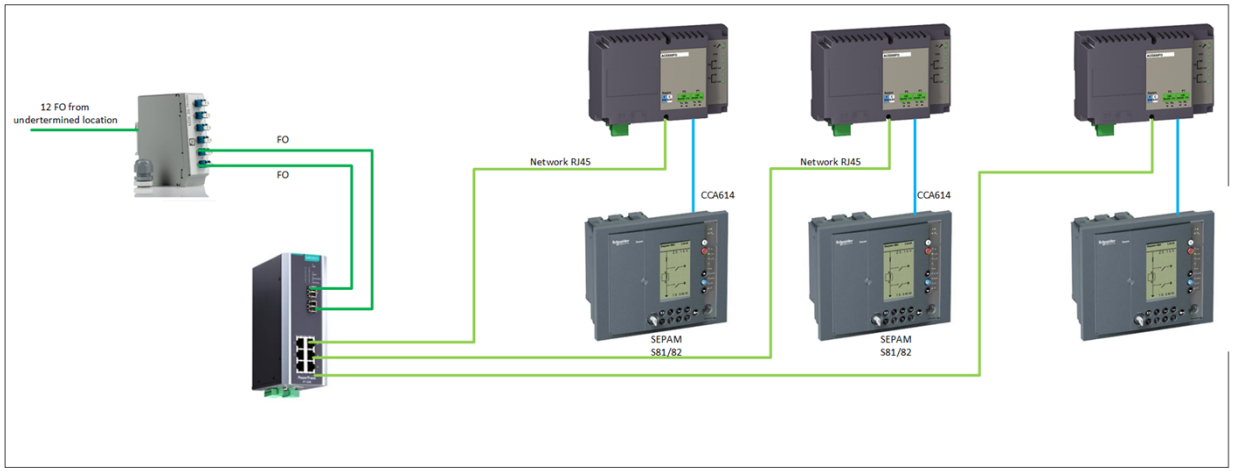


Figure 4: Overview of Protection relay architecture (SEPAM Example)

5.2.4 LV UPS

The substation must be equipped with an UPS 10kVA dedicated to switchgear low voltage Auxiliary supply. The preferred UPS brand is EATON.

The minimum requirements for the UPS are:

- Power 10kVA, input 400VAC.
- Autonomy 2 hours at full load.
- Output 230VAC.
- Earthing system TNS.

5.2.5 LV Distribution Board

The contractor shall supply and install a Main Distribution Board as follows:

- Schneider Prisma plus including 1 mains column and 1 column for cables (the following arrangement is proposed for reference but may be optimized by the contractor). The incoming/outgoing cables will arrive by the bottom of the MDB, Terminal blocks to connect all incoming our outgoing cables are mandatory.
- The Board will be separated in 2 zones, zone 1 class 4 (from normal power supply), zone 2 class 2 (from UPS)

Main characteristics:

- Nominal current 160A, expected IK3 max 20kA.
- Form 2b.
- Busbars LINERGY 250A (at least).
- 1 column 700mm width.

SUPPLY

- 1 columns for cables 300mm width.
- Steel panels 10/10mm at least with epoxy paint.
- IP55, IK10.
- Large Earthing Busbar.

SUPPLY

Column A (700mm), Glazed door

ZONE 1 class 4

Manual transfer Device based on 2 NSX160F 4P4D+micrologic 2.2 (sources from Auxiliary transformer and from Emergency panel defined in 5.2.6), Circuit breakers must be fitted with a mechanical interlocking system, MX shunt trip coil, OF/SD contact.

- 1 voltage light indicator 230Vac and its circuit breaker.
- counting unit type Diris A40 and its circuit breaker.
- 1 NSX100N 4P4D + micrologic 2.2 with sub distribution breakers as follows:
- 1 Circuit breaker 20A-4P for the UPS (10kVA).
- 1 Circuit breaker 20A-4P for Spare.
- 1 Circuit breaker 2P 16A+RCD 30mA for the 230V sockets (LC18 substation)
- 1 Circuit breaker 2P 10A for lighting and emergency lighting
- 1 Circuit breaker 2P 4A for emergency lighting
- 1 Circuit breaker 2P 10A for outdoor lighting (substation)
- 2 Circuit breakers 2P 16A for the HVAC
- 1 Multiclip 160A 4P
- A set of terminal blocks
- 1 NSX100N 4P4D + micrologic 2.2 as spare

The board shall be equipped with a surge protection device

- Surge arrester (main busbar):
- Type 1+2
- TNS electric system nominal voltage 230/400VAC
- Imp=25kA (10/350) by pole mini
- Current In ≥ 5 kA per pole. Wave 8/20
- Up≤1.5kV
- With remote signalling contact wired on cage clamps
- Protected by fuse according to the manufacturer (**if integrated fuse, attention must be paid to short circuit current value**)
- Short-circuit current (50Hz): to be adapted to the installation point (depending on the electrical calculation note).

Reminder: For surge arresters connection to ground, the Respect L1+L2+L3 <=50cm is mandatory by NF-C62305 and NF-C15100

ZONE 2 class 2

- 1 main circuit breaker 2P 40A
- 1 modular distribution block
- A set of modular circuit breakers 2P for SEPAM protection relays, tripping coil + spare space for additional feeders.
- A set of terminal blocks.

All the open or moulted case breakers shall be equipped with MX 230V tripping coil and OF/SD contact. The modular breaker shall be equipped with OF/SD contact.

Modular circuit breaker will be IC60N from SE, curve and type will be determined by the caneco calculation note (included in the scope of the Contractor).

SUPPLY

CB, Surge arrester and UPS Faults signals shall be monitored (through the protection relays)

Cable Columns (300mm)

Cable columns will be placed as following: 1 on the left of the column A, 1 on the right of the column B. Each cable columns must include, Power and control terminal blocks, vertical cable tray.

5.2.6 Outdoor Emergency power supply panel

The company must supply and install an external electrical panel allowing the connexion of a mobile diesel generator 40kVA. Panel characteristics and equipment:

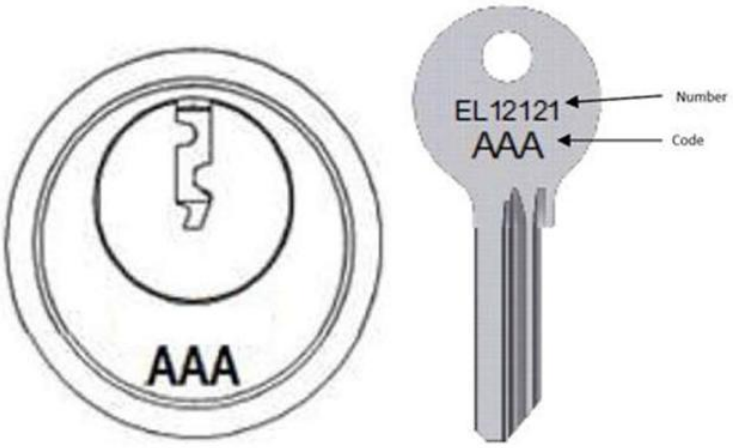
- IP66, Ik10.
- Size 500x400x300mm approximately.
- Main protection IC60N 4P4D curve B + RCD 30mA + Mx shunt trip coil + OF/SD contacts.
- Terminal blocks (diesel connection and link to LC18 class 4 auxiliary board).
- Large grounding busbars.
- LV power to provide pre-heating function to the mobile emergency diesel.

The exact location of this panel will consider the position of the mobile emergency diesel, nearby the LC18.

SUPPLY

5.2.7 Key interlocks

All the locks must be RONIS profile. The cylinder must have the Code engraved, keys must have Code and Number engraved; each lock must be delivered with two keys. All keys must be Profile RC EM.



Interlock between B55 and LC18
(To be provided at contract starting date)

Interlock between LC18 and B56 transformer
(To be provided at contract starting date)

Interlock between LC18 and B56-EXT transformer
(To be provided at contract starting date)

Interlock between LC18 and auxiliary transformer
(To be provided at contract starting date)

Interlock between B56 LV main breaker and B56-EXT LV main breaker
(To be provided at contract starting date)

5.2.8 Procurement variations

The contractor is authorised to propose alternative brand/model to the present technical specifications. However, these variations shall be managed as options with separate price proposal.

IO will have the right to accept or reject part or all options proposals.

5.3 22kV connections installation

All the MV cables/accessories must have the following characteristics:

- Cable compliant with NFC33226
- U0/U :12/20kV (24kV)
- Aluminium
- Trefoil formation
- Core class 2 stranded, compacted
- Core max continuous temperature 90C, 250C in case of short circuit
- Screen of Extruded semi-conductor compound around the core
- Insulation XLPE
- Semiconductor: strippable ribbed extruded compound with hygroscopic powder.
- Aluminium screen glued to the outer sheath
- Outer sheath PE flame retardant C2, Eca (CPR)

5.3.1 22kV cables from B55-LC12

The company must supply and install the cables between B55 and LC18, in existing ducts and pulling chambers as described in the Figure 1. A spare loop will be kept on the LC18 Load Centre.

- Two cables 3x1x185mm² Aluminium + PE 70mm² bare copper, approximate length 280m. It is contractor responsibility to verify such estimation through site survey during the tender phase.
- Indoor Cold shrink 3M termination E3UIC RF-24-50-240 (24kV) on LC12 22kV switchgear side
- Indoor Cold shrink 3M termination E3UIC RF-24-50-240 (24kV) on LC18 22kV switchgear side
- The company must install the interlock Keys type RONIS profile 201 RONIS (details in chapter 5.2.7)

The civil infrastructure to perform this cable pulling activity is planned to be available at the second 2025 quarter.

5.3.2 22kV cable To B56 transformer

- 3x1x95mm² Aluminium+PE 70mm² bare copper, approximate length 40m (cable trays and TPC duct)
- Indoor Cold shrink 3M termination E3UIC RF-24-50-240 (24kV) on LC18 22kV switchgear side
- Separable connector 630A interface type C (24kV) on B56 transformer primary side
- The company must install the interlock Keys type RONIS profile 201 RONIS (details in chapter 5.2.7)

5.3.3 22kV cable To B56-EXT transformer

- 3x1x95mm² Aluminium+PE 70mm² bare copper, approximate length 40m (cable trays and TPC duct)
- Indoor Cold shrink 3M termination E3UIC RF-24-50-240 (24kV) on LC18 22kV switchgear side
- Separable connector 630A interface type C (24kV) on B56-EXT transformer primary side
- The company must install the interlock Keys type RONIS profile 201 RONIS (details in chapter 5.2.7)

5.3.4 22kV cable To LC18 Auxiliary Transformer

- 3x1x95mm² Aluminium+PE 70mm² bare copper, approximate length 40m (cable trays and TPC duct)
- Indoor Cold shrink 3M termination E3UIC RF-24-50-240 (24kV) on LC18 22kV switchgear side
- The company must install the interlock Keys type RONIS profile 201 RONIS (details in chapter 5.2.7)

5.4 External LV connections

The company must supply and install the following cables:

- Inter trip cable between B56 transformer and LC18 substation (22kV protection). The cross section will be shielded 8x4mm^2. Approximate length is 60m.
- Inter trip cable between B56-EXT transformer and LC18 substation (22kV protection). The cross section will be shielded 8x4 mm^2. Approximate length is 60m.

5.5 Auxiliary transformer

The company must supply and install an auxiliary transformer inside LC18 container:

- Dry type, IP21 envelope, class F
- 22kV/0.4kV
- Dyn11, 40kVA (minimum requested power), TNS
- Temperature protection (TECSYSTEM NT935) to be installed in the 22kV switchgear.
- 3 sets of temperature sensors (PT100)
- Cables entries from the bottom.
- Key interlock with 22kV protection (details in chapter 5.2.7)
- Protection relay temperature trip and alarm signals to be monitored through protection relays.

5.6 B56 transformer Extension

The company must supply and install a new transformer inside the extension of B56:

- Dry type, IP21 envelope, class F
- 22kV/0.4kV
- Dyn11, 1250kVA, TNS
- Temperature protection (TECSYSTEM NT935) to be installed in the LV board
- 2 sets of temperature sensors (PT100)
- 22kV Cables entries from the top.
- 0.4kV busbar/cables connection from the top
- Key interlock with 22kV protection (details in chapter 5.2.7)

The company will be responsible to design, procure and install all the accessories needed (cable trays, supports etc.)
The global room layout is given inside the reference documents [17] and [18].

5.7 Works in B56

The contractor will perform the following activities in the B56 electrical room:

- Removal of existing 15kV switchgear.
- Removal of existing 15kV cable up to S5 substation.
- Removal of existing 15kV transformer and replacement by a 22kV transformer with 1250kVA capacity.
- Removal and replacement of existing LV busbar system between the transformer and the LV distribution board.
- Installation of the new 22kV transformer described in 5.6
- LV connection between the transformer and the existing LV board
- Closing of ground openings from previous 15kV switchgear

The current room layout with the transformer and secondary busbar to replace, 15kV MV switchgear to remove, and LV main distribution is provided in attached documents from chapter 12.4.

The Figure 5 below shows a snapshot of the current B56 room layout.

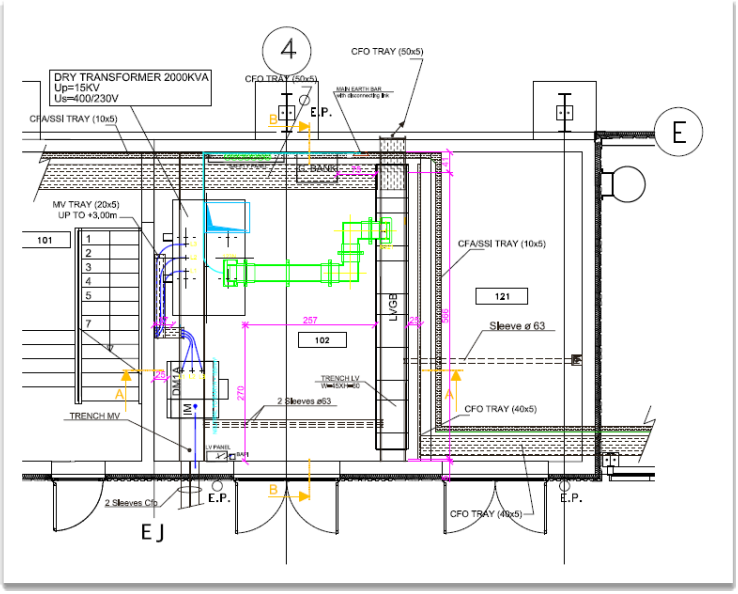


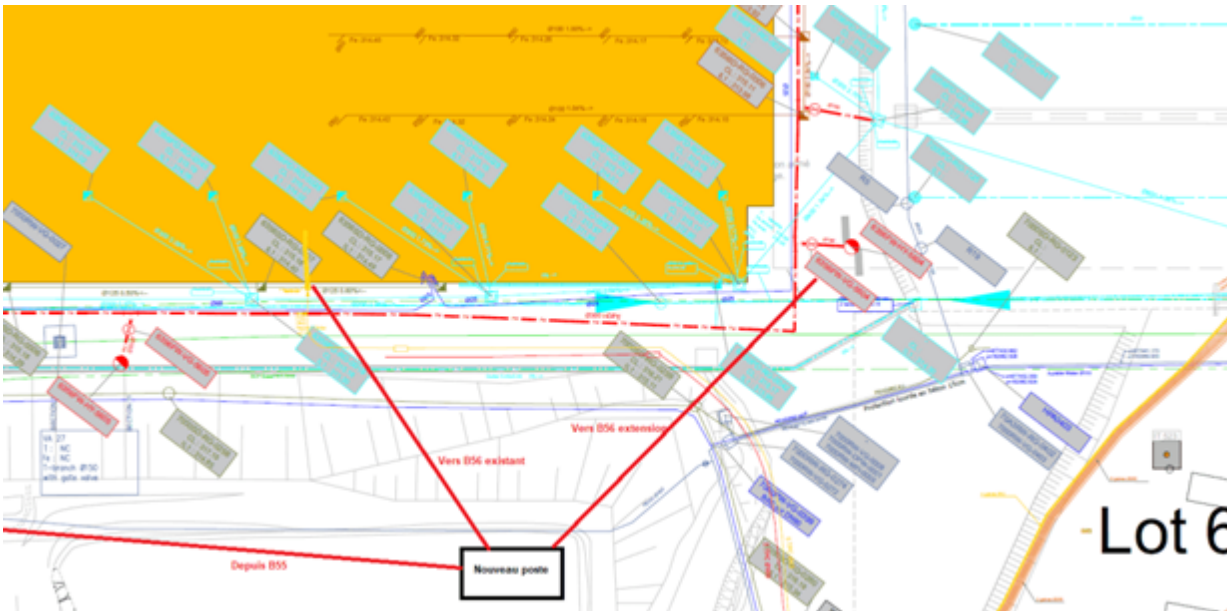
Figure 5: B56 Electrical Room current configuration

During this phase, the contractor will install and manage a mobile 400V diesel generator, 350kVA, to power B56 in Low Voltage. The size of the temporary diesel will be confirmed by EPD team, considering the existing B56 electrical distribution characteristics (CANECO calculation to be performed by EPD team)

B56 power interruptions will be reduced to the minimum and approved by IO.

6 Location for Scope of Work Execution

The works will be nearby B56 on the South area. The Load centre will be installed in the area described hereafter.



7 Project phasing

ACTIVITY	DURATION	COMPLETION
Purchasing LC18 container and associated electrical components, studies etc.	35 weeks	T0+37
LC18 civil work preparation	2 weeks	T0+37
LC18 site installation	2 weeks	T0+40
HV connections B55	4 weeks	T0+45
LV connections	2 weeks	T0+45
B56 transformer purchasing	20 weeks	T0+35
B56 work	6 weeks	T0+45
HV connections Part 3 (B56-EXT transformer)	2 weeks	TBD
HV connections part 4 (B56 transformer)	2weeks	TBD

8 List of deliverables

Deliverables and preliminary planning are listed below, reflecting the IO needs. The contractor may propose different organisation for optimizing its scope between supply and installation.

- Contract Placed: T0
- Quality plan for the related activities: T0 + 2 weeks
- PPSPS, Access request of personnel, Works authorization: T0 + 2 weeks
- Global schedule and deliverables list: T0 + 4 weeks
- Calculation notes (LC18 LV auxiliaries) and drawings: T0 + 5 weeks
- BoM including mandatory certificates (type tests, CE marking, etc….): T0 + 5 weeks
- Delivery of Load centre including electrical equipment: T0 + 40 weeks
- Installation works and cable pulling: T0 + 45 weeks
- Legal inspection of LC18, including downstream cables and B56 transformers.
- As built documentation: T0 + 48 weeks

The contractor shall provide a complete As-built documentation which should be updated and completed version of aforementioned documentation, completed with mainly:

- All the drawings in both native and pdf formats. Electrical/control drawings must be created using SEE Electrical Expert V4R3 with ITER environment (IO will provide necessary templates and procedures to deliver the drawings inside specific placeholders).
- Caneco calculation note for LC18 auxiliaries.
- Equipment datasheets and certificates.
- Warranty transfer documents from the Contractor to ITER ORG.
- Test procedures and test reports.
- Certificates of conformity and Legal inspection reports.
- Updated Civil drawings.

9 Quality Assurance requirements

[Ref 1] GM3S section 8 applies in line with the defined Quality Class.

CRITERIA	REQUIREMENT
SAFETY CLASS	Non-SR
QUALITY CLASS	QC-3
FIRE PROTECTION	R120

The organisation conducting these activities should have an ITER approved QA Program or an ISO 9001 accredited quality system.

The general requirements are detailed in ITER Procurement Quality Requirements (ITER_D_22MFG4).

Prior to commencement of the task, a Quality Plan must be submitted for IO approval giving evidence of the above and describing the organisation for this task; the skill of workers involved in the study; any anticipated sub-contractors; and giving details of who will be the independent checker of the activities (see Procurement Requirements for Producing a Quality Plan (ITER_D_22MFMW)).

Documentation developed as the result of this task shall be retained by the performer of the task or the DA organization for a minimum of 5 years and then may be discarded at the direction of the IO. The use of computer software to perform a safety basis task activity such as analysis and/or modelling, etc. shall be reviewed and approved by the IO prior to its use, in accordance with Quality Assurance for ITER Safety Codes (ITER_D_258LKL).

9.1 Meeting Schedule

As soon as the contract will be signed, a kick off meeting will be organized. During this meeting, the Contractor will confirm the schedule of the offer.

IO and the Contractor will agree on intermediate milestones, to monitor the work progress.

It could be (with possible additional points):

- Approval of material Data Sheets
- Material site delivery
- End of material installation
- End of cables installation
- End of tests and Commissioning.
- TQC delivery

9.2 CAD design requirements

This contract requires for CAD activities, [Ref 1] GM3S section 6.2.2.2 applies

The Contractor shall ensure that all designs, CAD data and drawings delivered to IO comply with the Procedure for the Usage of the ITER CAD Manual (2F6FTX), and with the Procedure for the Management of CAD Work & CAD Data (Models and Drawings 2DWU2M).

10 Safety requirements

10.1 Nuclear class Safety

No specific safety requirement related to PIC and/or PIA and/or PE/NPE components apply.

10.2 Seismic class

No specific safety requirement related to PIC and/or PIA and/or PE/NPE components apply.

11 Specific General Management requirements

Requirement for [Ref 1] GM3S section 6 applies.

11.1 Worksite Conditions

The Contractor will have to comply with the relevant IO OSH site instructions. The list is available in the PGC Annex 0 (42FYPZ). If the supplier does not have access to ITER Document Management system, the document can be sent on demand.

A safety plan (PPSPS) shall be established by the Contractor (at a minimum in French) prior to the start of the Works. Contractor will have to use the ITER template. The supplier and the potential subcontractor will have to attend to the common inspection with the relevant stakeholder.

The Contractor shall comply with environmental protection requirements and procedures applicable at the ITER Site:

- ITER Org Environmental Management System: PMAE v1 (ITER_D_97W4PN).
- Environmental requirements, (ITER_D_97WRFP).

An environmental respect plan shall be provided by the Contractor 2 weeks prior to the start of the Works, using the ITER template.

Debris and waste of all type shall be removed as work progresses.

The Contractor shall be responsible for cleaning, repairing and restoring facilities which it dirtied or damaged to their original condition, and shall remove their debris and rubbish to public rubbish tips. Should said cleaning fail to be performed, it will be done by a third party at the loss and expense of the Contractor.

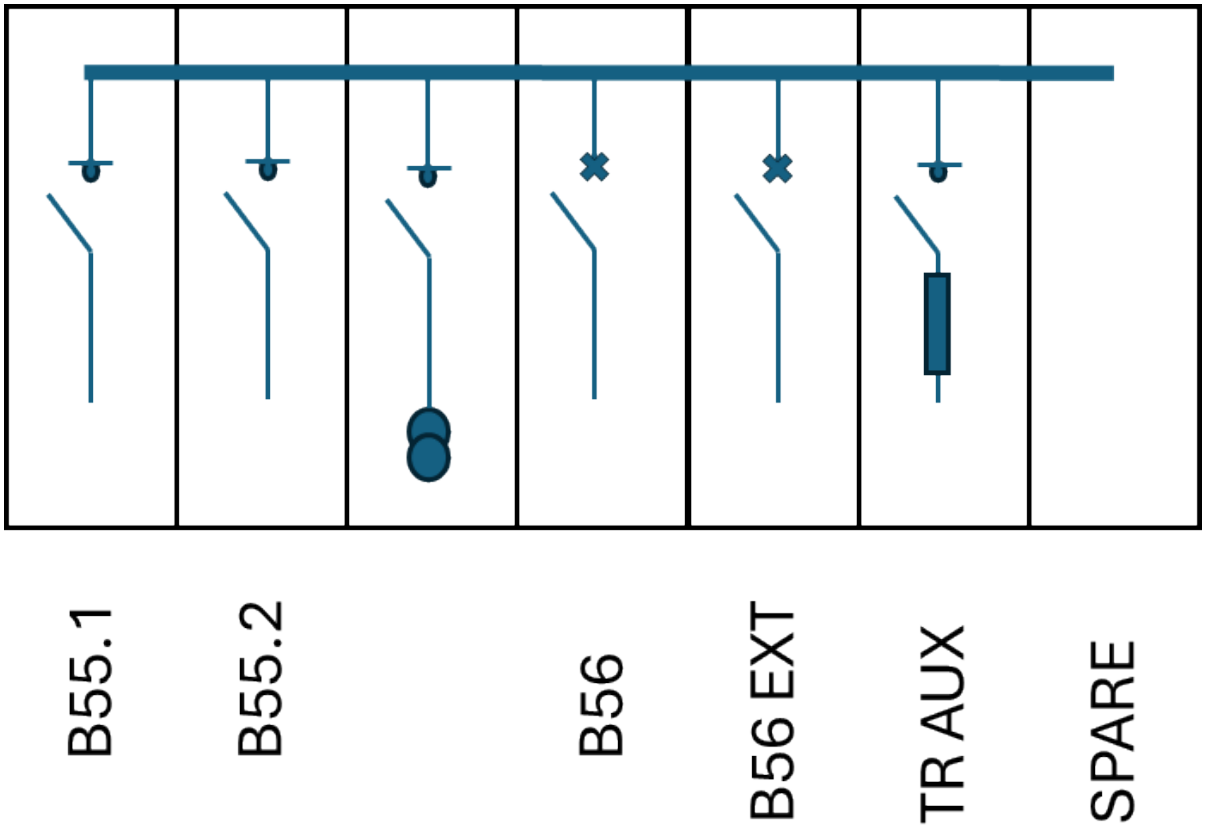
Access to the ITER Site is subject to the ITER Site Access Procedures

The Contractor shall be responsible for supplying and installing fencing protecting the worksite which shall be maintained for the duration of the works and removed after completion of the Works. The Contractor shall also display signs prohibiting entry onto the worksite.

Prior to the start of any Works on the ITER Site, a Work Authorisation must be obtained in accordance with the Work Authorisation Procedure. Permit to work will be managed by the IO. The contractor will appear in the PTW system as Acceptor.

12 Appendices

12.1 LC18 Switchgear preliminary layout and One Line diagram



12.2 LC18 Naming conventions

For electrical components, and auxiliaries' services, the following naming convention applies

43.AE.18 22kV switchgear and transformers

43.CL.18 Container infrastructures

43.CC.LV Conventional control devices

SUPPLY

The table below present a preliminary bill of materials for LC18 and its associated components. All the components below shall be procured by the contractor

Functional Reference (Tag)	Description
43AE18-TR-1000	LC18 22kV/0.4kV B56 Transformer
43AE18-TR-2000	LC18 22kV/0.4kV B56 Extension Transformer
43AE18-TR-2000	LC18 22kV/0.4kV Auxiliary Transformer
43AE18-CU-*	22kV First Incomer Cell from B55
43AE18-CU-*	22kV Second Cell from B55
43AE18-CU-*	22kV Feeder Cell to B56 Transformer 43AE18-TR-1000
43AE18-CU-*	22kV Feeder Cell to B56 Extension Transformer 43AE18-TR-2000
43AE18-CU-*	22kV Feeder Cell to LC18 Auxiliary Transformer 43AE18-TR-3000
43AE18-CU-*	22kV Spare Feeder Cell
43AE18-CU-*	22kV Measurement Cell
43AE18-CAP-*	22kV Trefoil cables from B55 LC12 Feeder 1
43AE18-CAP-*	22kV Trefoil cables from B55 LC12 Feeder 2
43AE18-CAP-1000	22kV Trefoil cables to 43AE18-TR-1000
43AE18-CAP-2000	22kV Trefoil cables to 43AE18-TR-2000
43AE18-CAP-3000	22kV Trefoil cables to 43AE18-TR-3000
43AE18-CAS-1000	Trip Signal cable from Transfo 1000 and its LV MDB.
43AE18-CAS-2000	Trip Signal cable from Transfo 2000 and its LV MDB.
43AE18-CAS-3000	PT100 measurement cable from Transfo 3000 to Protection relay
43CL18-BD-0001	LC18 Auxiliaries Distribution Board
43CL18-BP-0002	LC18 Diesel Generator Connection Panel
43CL18-EU-0001	LC18 UPS
-BR-	Protection relay for Transformer 43AE18-TR-1000
-BR-	Protection relay for Transformer 43AE18-TR-2000

** Naming will be confirmed during design phase according to final switchgear layout cell position.*

The table above is not complete and will be completed as per design that will be submitted by the contractor to IO.

12.3 B56 external existing networks

SUPPLY

DR-63.56.EW-A.3.VA.LY-3315-SBT_2.06.pdf

12.4 B56 existing electrical distribution

Equipement_electrical_room_drawing.pdf

Low_voltage_diagram.pdf

EXPRESSION OF INTEREST & PIN ACKNOWLEDGEMENT

To be returned by e-mail to: Virginie.Michel@iter.org copy Andrew.Brown@iter.org

ITER Organization / ITER Headquarters
Procurement Division, Building 81/140B
Route de Vinon-sur-Verdon
CS 90 046
13067 St. Paul Lez Durance Cedex
France

TENDER No.	**OT 10031165 – Procurement and Installation of Load Centre 18 - VML**
DESIGNATION of SERVICES:	**Design, detailed study, procurement and installation of a new 22kV Load Centre (LC18), to power B56 and B56-EXT.**
Officer in charge:	**Virginie Michel - Procurement Division, ITER Organization**

☐ WE ACKNOWLEDGE HAVING READ THE PIN NOTICE FOR THE ABOVE-MENTIONED TENDER

☐ WE INTEND TO SUBMIT A TENDER

Are you registered in Iproc (only entities registered in iPROC will be invited to tender) ?:

☐ YES
Please indicate your registration number: ……

☐ NO, but we shall register before the indicated tender launch date

.....

Company Name: ..... COMPANY STAMP

Signature:

Name: .....
Position: .....
Tel: .....

E-mail .....
Date: .....