



# **Project OBELISC**

## **Requirements Overview Report**

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# Project OBELISC

## Requirements Overview Report

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# 1 Project OBELISC Overview

## 1.1 Introduction

The On Boundary Enhanced LCT Integrating Service Cabinet (OBELISC) Project, is an NIA funded project run by National Grid Electricity Distribution (NGED), to develop an innovative product for 3 phase (ph) upgrade of customers, so they can adopt Low Carbon Technologies (LCTs) to achieve net zero.

These technologies, such as Electric Vehicle (EV) charging points and heat pumps, while beneficial to net zero goals, add significant additional domestic load. This can lead to the increased risk of phase imbalance across the grid as the numbers of LCT connections grow. Installing a domestic 3 phase supply helps to reduce grid instability, as well as allowing a greater electrical supply to properties for systems like heat pumps and EV chargers. Upgrading to 3ph is a one-touch approach, the customer connection is future proofed for significant load growth, in addition to whole system benefits of reduced reinforcement and losses

Project OBELISC aims to develop a new type of meter cabinet, that will be installed near the boundary edge of domestic properties to serve as the 3ph domestic connection point. This would serve as an alternative to the present method of retrofitting 3 phase cables and meters, which can be expensive, disruptive, and lead to technical issues such as heat losses within properties. As the OBELISC system will be installed on the property boundary, it allows maintenance and inspection of meters and the cabinet without having to enter a domestic property, reducing disruption.

## 1.2 OBELISC Use Case

The primary use case for the OBELISC system is an alternative to the existing 3 phase retrofit solution of domestic properties from single phase supplies. The requirements in this document therefore only cover this use case for the OBELISC system. This use case was selected as it has the most prescriptive requirements, such as the need to ensure compliance with consumer cable ownership regulations. This does not preclude the system from being deployed in use cases other than this, such as on new build properties, looped supply removals, or obsolete meter cabinet replacements, amongst others. These use cases will not be used to inform requirements at this stage.

The use case was described to the steering review panel, and key stakeholders, at the project launch event and at steering panel meetings. The key benefits of this alternative method of retrofitting were shared, including:

- Remove the need to resize existing meter cabinets to enable the connection,
- Remove the need to continue to access properties during services, which can be difficult particularly in older homes where these are in the middle of the property,
- May reduce the need to drawing new 3ph service cables across existing properties,
- Reduces the risk of heat rise in well-insulated properties under higher maximum current ratings,
- Removes the potential heat loss from new domestic cabinets in properties.

Retrofits of this nature are likely to be required in future by more customers to cover the increased power draw of LCTs, which would necessitate an upgrade by NGED.

## 1.3 Project Design Stages

The OBELISC Project is being run in stages, which are detailed below. This document, and the first iteration of the requirements, has been produced as part of stage 1. They may be updated at a later stage.

### 1.3.1.1 Stage zero: Initiation and buy-in

This stage was focussed on obtaining end-user buy in for the project concept. This involved an initial definition of the use case and reach out to customers and representative groups through presentations at events. Suitable stakeholders buy-in for the project, including an initial list of key people to develop a steering review panel, was

developed as part of this stage. This was critical to ensure that the project will design a product customer's want and will accept on their properties. These key people were engaged in stage one to develop the requirements.

#### 1.3.1.2 Stage one: Requirements of the solution

This stage is focussed on capturing the internal and external stakeholder requirements for the solution, including standards compliance, regulatory compliance, operational requirements, distribution system integration, consumer connection technical requirements, amenity and cosmetic requirements and installation requirements.

The requirements capture method is detailed more in Section 2 has included a legislative review and engagement with the stakeholder review panel. This stage will also develop a functional specification for partners to use to develop technical designs, based on the requirements.

#### 1.3.1.3 Stage two: Solution design

A design process will be agreed separately between the partners for development of the solution against the functional specification. The solution design will be delivered as per the agreed process.

This stage will also define the functionality and compliance test regime for the solution. This will include estimating the number of prototypes of the final design that will be required to be manufactured to deliver this test regime.

#### 1.3.1.4 Stage three: Validating the designed solution

This stage will produce prototypes of the final design and carry out functionality and compliance testing as defined in the previous stage to ensure the solution meets all requirements defined within this document, as well as any that have been developed over the course of the project.

Assuming testing is passed, a trial installation of the prototype will be carried out at an NGED training school site to develop the techniques for installation on the network.

Cost-benefit analysis will be performed throughout the project for all stakeholders of the deployment of the solution on NGED / Distribution Network Operator (DNO) networks.

These activities will inform a final review to evaluate the project's success and decide whether to accept the new product into NGED business as usual procurement and operations.

## 1.4 Aim of this document

The goal for this document is to provide NGED, and the OBELISC Project Partners with User and System requirements to inform the design of the OBELISC, considering electrical, environmental, mechanical, security and functional factors. This document has been produced following stakeholder engagement through workshops allowing requirements elicitation. This document forms part of the pre-design stage of the system. The requirements within this document only cover the design of the OBELISC. Implementation and installation of the eventual design will not be covered within the scope of this set of the requirements, as they have not yet been determined.

The requirements have been captured based on examination of existing electrical legislation and regulations, as well as elicitation workshops that have been held over the course of the project thus far. The requirements elicitation workshops have been held with the Project OBELISC steering review panel, who will also provide a review of the requirements. This panel are taken as a representative group of end users and key stakeholders, to provide approval of the requirements and input to the development of non-technical requirements. More detail is given in Section 2.2.

The requirements are non-prescriptive and design agnostic but provide functional necessities, design constraints, technical and environmental considerations for the design teams. This set of requirements is for the OBELISC system only and not for any surrounding systems, or the installation of the system.

The complete set of requirements have been captured in an excel format to allow for easier structuring, verification and validation, and version control and has been embedded into a Word Document for delivery to the customer. This document will be up-issued periodically to capture changes to the requirements as the project solution matures.

## 2 Requirements Capture

The purpose of the requirements capture is to define a set of mandatory and other requirements that the product "OBELISC" must meet. A requirement is:

" a statement that identifies a product or process operational, functional, or design characteristic or constraint, which is unambiguous, testable or measurable, and necessary for product or process acceptability " [1]

It is important that the requirements generated do not restrict any possible solution in the design of the innovative product. Therefore, as far as reasonably practicable, solution engineering has been avoided to not impose any restrictions on the design process whilst capturing the requirements that OBELISC must meet.

### 2.1 Methodology

To create the list of requirements; a list of applicable technical standards, legislation and regulations were reviewed. The details of which are outlined in Table 1 below.

Table 1 List of Reviewed Literature

|                                    | Technical Standard                                                                                                              | Description                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Energy Networks Association (ENA)  | <a href="#">Technical Specification 37-1: 400 V A.C. Switchgear, Control gear and fuse gear assemblies</a>                      | This Specification covers the technical requirements for 400 V a.c. switchgear, controlgear and fusegear assemblies for use by Energy Networks Association (ENA) Member Companies and identifies those functions and characteristics that should be defined when specifying such assemblies. The switchgear and controlgear assemblies covered by this Specification shall comply with BS EN IEC 61439-2. |
| <a href="#">Retail Energy Code</a> | <a href="#">Consolidated Metering Code of Practice (CoMCoP)</a>                                                                 | The Consolidated Metering Code of Practice (CoMCoP) specifies the minimum requirements that apply to the undertaking of installation, operation and maintenance of Metering Equipment.                                                                                                                                                                                                                    |
| Balancing and Settlement Code      | <a href="#">CoP 9 – The Metering of Import and Export Active Energy via Low Voltage Circuits for Non-Half Hourly Settlement</a> | This Code of Practice only applies to whole current and current transformer operated Metering Equipment for Import and Export Active Energy measured in kWh. No provision is made for the measurement of Reactive or Apparent Energy or any Maximum Demand.                                                                                                                                               |
|                                    | <a href="#">Cop 8 - The Metering of Import Active Energy via Low Voltage Circuits for Non-Half Hourly Settlement Purposes</a>   | Code of practice for the metering of import active energy via low voltage circuits for non-half hourly settlement purposes                                                                                                                                                                                                                                                                                |
|                                    | <a href="#">Section L - Metering</a>                                                                                            | Section L contains the rules for installing, commissioning, operating and maintaining Metering Equipment under the BSC, plus the associated functions of the Technical Assurance Agent (TAA). It also covers: compliance with the Codes of Practice (CoPs); Metering Dispensations; Meter Technical Details; ownership, access to and use of metering data; and right of access to Metering Systems.      |

|                   | Technical Standard                                                                                                                                             | Description                                                                                                                                                                                                                                                                                   |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UK Legislation    | <a href="#">Electrical Safety, Quality and Continuity Regulations (ESQCR) 2002</a>                                                                             | ESQCR 2002 are UK regulations that ensure the safe and reliable operation of electricity networks. They apply to electricity distributors, suppliers, and other network operators enforced by the Health and Safety Executive (HSE)                                                           |
|                   | <a href="#">Electricity at Work Regulations (EAWR) 1989</a>                                                                                                    | The purpose of the Regulations is to require precautions to be taken against the risk of death or personal injury from electricity in work activities.                                                                                                                                        |
| National Grid     | <a href="#">SD5D/5</a>                                                                                                                                         | This Standard Technique specifies standard Low Voltage (LV) cut-out arrangements for metering purposes.                                                                                                                                                                                       |
| British Standards | BS 7671 IET Wiring Regulations                                                                                                                                 | Requirements for LV electrical installations within the UK covering consumer installations                                                                                                                                                                                                    |
|                   | <a href="#">BS EN 61439-1:2021 - Low-voltage switchgear and controlgear assemblies - General rules</a>                                                         | BS EN 61439-1 is a British standard as a part of the IEC 61439 series that lays down the definitions and states the service conditions, construction requirements, technical characteristics, and verification requirements for low-voltage switchgear and control gear assemblies            |
|                   | <a href="#">BS EN 61439-2:2021 - Low-voltage switchgear and controlgear assemblies - Power switchgear and controlgear assemblies</a>                           | Part 2 of BS EN 61439-2:2011 contains specific requirements for power switchgear and controlgear assemblies.                                                                                                                                                                                  |
|                   | <a href="#">BS EN 61439-3:2024 - Low-voltage switchgear and controlgear assemblies - Distribution boards intended to be operated by ordinary persons (DBO)</a> | This part of BS EN 61439-2:2011 defines the specific requirements for distribution boards intended to be operated by ordinary persons (DBO).                                                                                                                                                  |
|                   | <a href="#">BS EN 61439-5:2023 - Low-voltage switchgear and controlgear assemblies - Assemblies for power distribution in public networks</a>                  | BS EN 61439-5 defines the specific requirements for public electricity network distribution assemblies (PENDAs).                                                                                                                                                                              |
|                   | <a href="#">BS 8567:2012 Specification for outdoor meter cupboards</a>                                                                                         | This British Standard specifies requirements for outdoor electricity meter cupboards. It is intended to accommodate the Electricity Supply Industry's service termination and metering equipment, in particular cut-outs, single and polyphase meters, isolators and communication equipment. |
|                   | <a href="#">BS EN 60529:1992+A2:2013</a>                                                                                                                       | BS EN 60529 on the degrees of Ingress Protection (IP) provided by enclosures (IP Code) applies to the classification of degrees of protection provided by enclosures for electrical equipment with a rated voltage not exceeding 72.5 kV                                                      |
| British Standards | <a href="#">BS EN 62262:2002+A1:2021</a>                                                                                                                       | This British Standard refers to the classification of the degrees of protection provided by enclosures against external mechanical impacts when the rated voltage of the protected equipment is not greater than 72.5 kV                                                                      |

After reviewing the applicable literature an initial list of requirements was developed outlining what standards, regulations and legislation the OBELISC product must comply with in the form of 'constraints'.

## 2.2 Stakeholder Engagement

### 2.2.1 Initial Stakeholder Engagement

On the 13<sup>th</sup> of March 2025 EQ Communications Ltd facilitated a stakeholder engagement event hosted by National Grid Electricity Distribution. The purpose of this event was to understand stakeholder's thoughts on the OBELISC concept; identify barriers to the delivery; to capture initial design requirements from stakeholders; and to inform stakeholders about the next phase of the project.

A total of 49 stakeholders participated in the event out of 1247 potential invitees, representing 46 different organisations. A report compiled by EQ Communications Ltd summarises the stakeholder engagement event [2]. Figure 1 is a graph from the report compiled by EQ Communications Ltd displaying the percentage representation of the type of stakeholder present at the event.

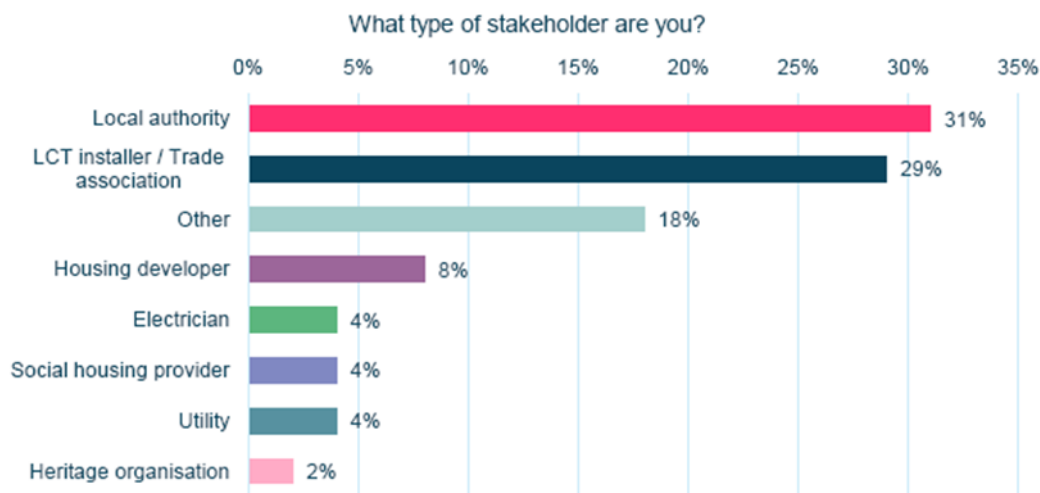


Figure 1 Graph of Stakeholder Representation [2]

The event was split into two discussion sessions, the overall project concept and design requirements. EQ Communications Ltd organised the feedback from the stakeholders during the sessions and Frazer-Nash Consultancy used these findings to initially develop the requirements document.

This session was also used to develop the steering review panel stakeholder list.

### 2.2.2 Steering review panel development

Following the initial launch event, EQ Communications led targeted engagement of a group of stakeholders to form a steering review panel. This panel would be formed to develop representative requirements for customers and other key groups. The list of people to involve in the panel came from volunteers from the initial launch event and aimed engagement at sectors identified as key at the launch event or in internal project discussions with the project partners.

This panel were invited to a steering review panel meeting on June 4<sup>th</sup>, 2025, to discuss the aims of the panel, expected workload, and define terms of reference.

The panel consists of 17 members, covering the following stakeholder categories:

- LCT Installers
- Trade Associations
- Housing developers



- Electricians
- Heritage organisations
- Local authorities
- Social housing providers
- Consultants
- Manufacturers

The panel were invited to requirements capture sessions on July 15<sup>th</sup> of 2025.

### 2.2.3 Requirements Capture Session

Requirements capture session was run by EQ Communications Ltd and Frazer-Nash Consultancy with the steering review panel members on July 15<sup>th</sup>, 2025. In this session, the panel were shown using mural boards the user stories developed based on the existing requirements set.

These covered a number of topics, including:

- Sizing
- Electrical components
- Connections
- Access
- Security
- Maintenance
- Safety
- Environment

They were also shown generated illustrative designs of what the OBELISC system could look like once deployed. Throughout the session, they were given an opportunity to agree or disagree with the stories and underlying assumptions and provide input as part of discussions or entered on the call. All member feedback was captured by EQ Communications and summarised in the meeting minutes [3]. These were reviewed in an internal project workshop and used to update or develop additional requirements.

## 3 Requirements Overview

The requirement document in Appendix A.1 is a live document that will be periodically updated as requirements are developed and as the project progress will be populated with verification status.

The requirements are divided into two broad types, user requirements and system requirements. The user requirements are requirements that the user (NGED, or the customer) require OBELISC to achieve. The system requirements are the technical requirements that allow the user requirement to be achieved.

### 3.1 System Breakdown Structure

A system breakdown structure was developed to describe, at a high level, what functions the system must perform. Figure 2 describes the functions of the overall system, while

Figure 3 shows in more detail the specific functions, as well as the split for consumer, meter operator and DNO owned systems. This breakdown was used to inform functional and user requirements, as the requirements are split between consumer derived, and DNO derived. Figure 4 shows in more detail the functions of the DNO Cable termination system. Figure 5 shows an example of the current methods for upgrading a single phase system without the use of the OBELISC and Figure 6 illustrates the advantages of the OBELISC system will have when upgrading to a 3 phase supply. Both Figure 5 and Figure 6 have been taken from the Project Launch Presentation.

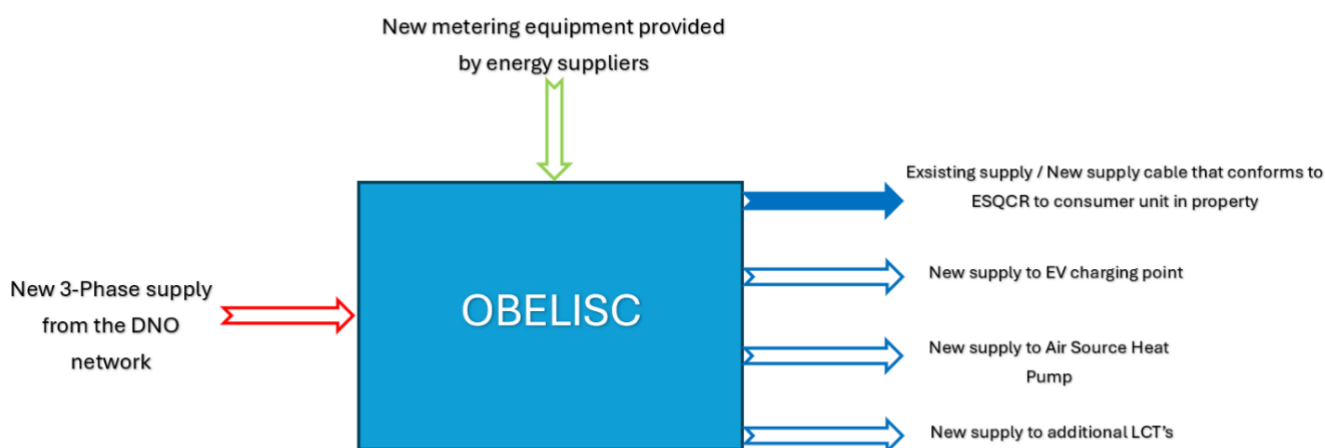


Figure 2 - OBELISC System Functional Breakdown

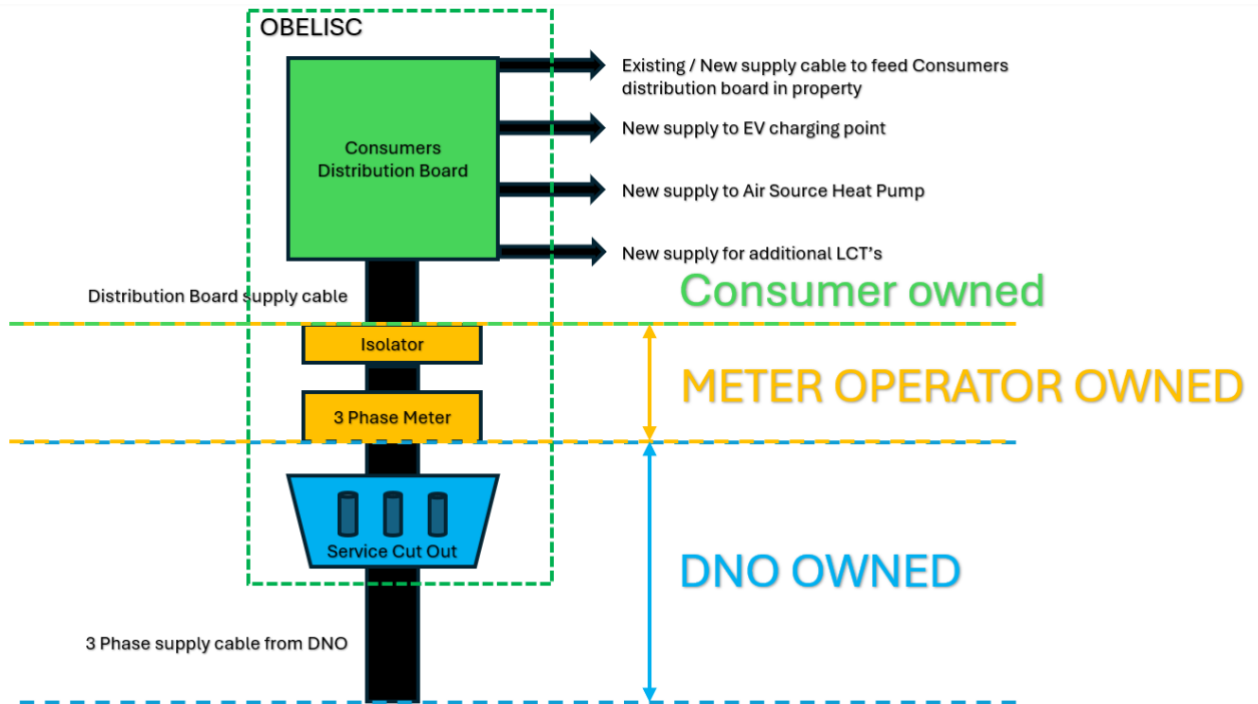


Figure 3 - OBELISC Detailed Ownership Functional Breakdown

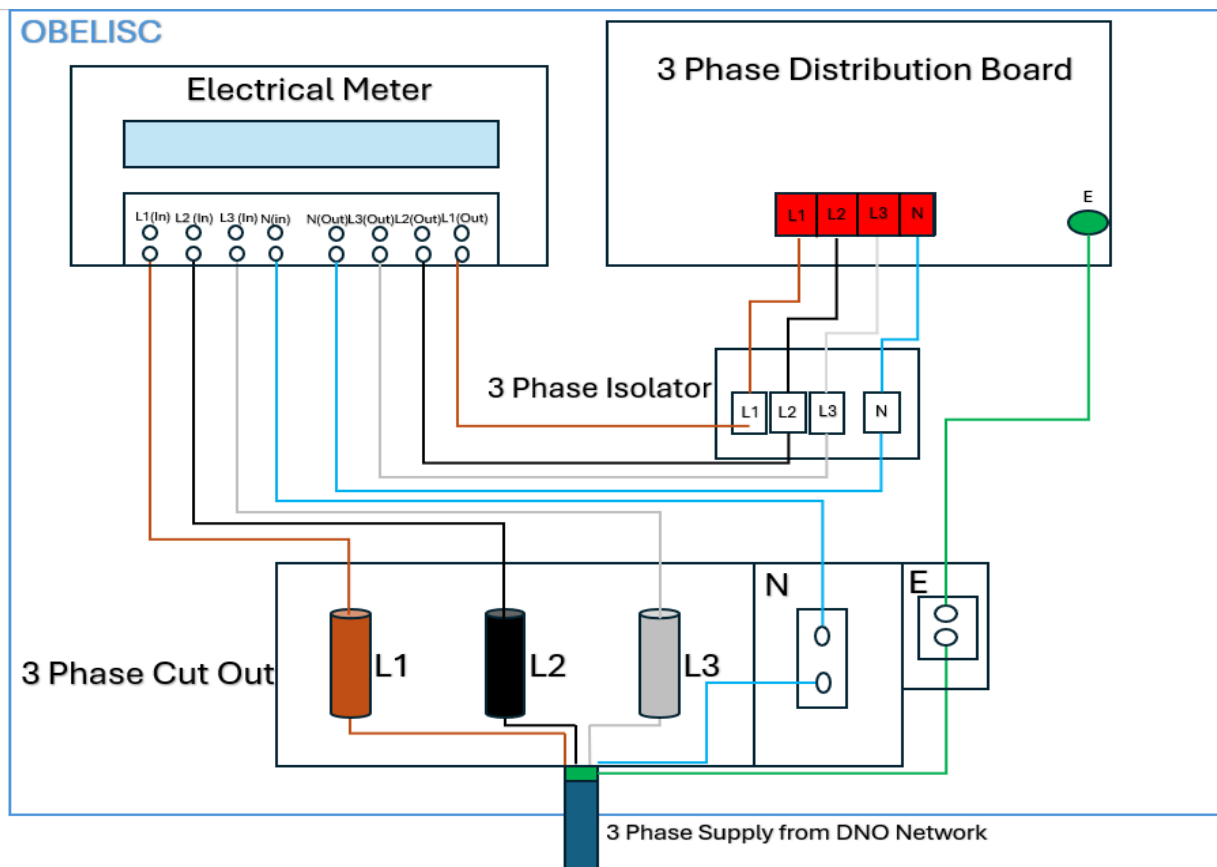


Figure 4 - OBELISC Cable Entry Functional Breakdown

## How does National Grid carry out three phase retrofit today?



Customer wishes to install a **Electric Car Charge Point** and **Heat Pump**

Large house, so a three phase retrofit is required

Remove existing **Single Phase**

Dig trench for new **Three Phase** service cable

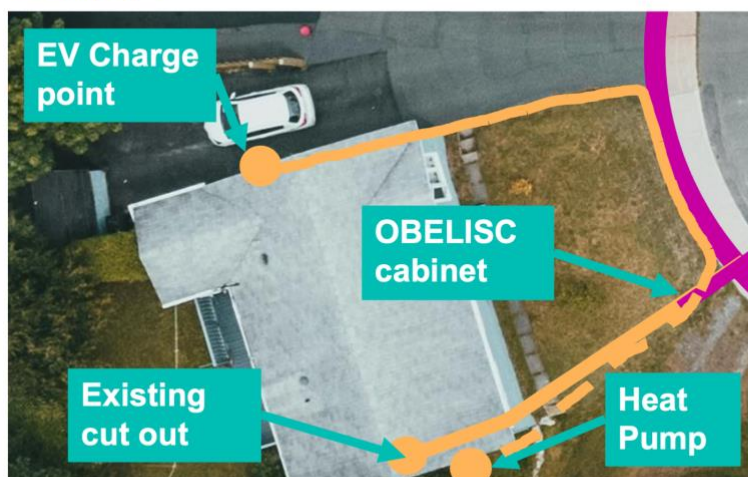
Single phase supply from existing meter to EVCP and HP

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Figure 5 Current methods for updating supply

## How can OBELISC make it easier to connect a 3 phase supply?



Customer wishes to install a **Electric Car Charge Point** and **Heat Pump**

Isolate house by removing section of **single phase cable**

Install OBELISC boundary cabinet, moving meter point

Connect using **three phase cable**

Install new **single phase cables** to heat pump and EV charger

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Figure 6 Proposed solution for updating supply

The functional breakdowns were shared with the partners and steering review panel during the requirements capture session in July 2025, and accepted as a high-level description of what the OBELISC system must do.

## 3.2 Requirements Table

The requirement document is split into 13 columns:

- **Category:** Each requirement is organised into categories such as Electrical; Mechanical; Environmental; Security; and Functional,
- **Req ID:** Each requirement has a unique number ID for traceability that will include its category, requirement type (user/system) and a unique number,
- **Trace to/Trace From:** Each requirement will be traceable either to or from other requirements. All system requirements will be traceable from a user requirement and all user requirements will be traced to a system requirement,
- **Requirement:** This is the requirement statement, this statement will be verified against the OBELISC to determine if it has been met or not,
- **Requirement Type:** A requirement type will be allocated to each requirement, the various types are Functional; National Grid Standards; British Standards; Design Characteristic; Constraint; Energy Network Association; Stakeholder; Objective; International Standard; Regulatory and System,
- **Justification:** The justification is to identify the 'parent requirement(s)' & provide a short description of the rationale/need for the requirement & its background,
- **Accompanying Standards:** This is a list of accompanying standards that apply to the requirement,
- **Priority:** Identify the priority of the requirement from the following list Mandatory; Low; Medium; High,
- **Verification Method:** Identifies the approach that will be used to confirm that the final OBELISC product is verified against the stated requirements as per section 3.5 . Relevant standards, regulations and supporting documentation will be derived and applied to the OBELISC design.
- **Verification Criteria:** Bound expectations regarding the verification method. This can include when the verification is conducted, this will confirm that the requirements and associated regulations and standards have been agreed by all parties
- **Remarks:** Record additional information or context pertinent to the requirement.
- **Req. Status:** Tracking of the requirement status from the following list: draft, candidate, accepted, deleted.
- **Verification Status:** Identify the associated Verification Status from the following list: Un-Verified, Partially Verified, Fully Verified. These will be applied as the developed design is assessed

## 3.3 Requirements

The user and system requirements are essential in the development and design of the OBELISC system, with the user requirements defining what the end user needs the system to achieve and the system requirements that are derived from the user requirements to show how the system shall fulfil them through technical guidance, the table below summarises the difference between the two:

|                        | User Requirements                                                      | System Requirements                                                                                 |
|------------------------|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| <b>Definition</b>      | Define what user (i.e. NGED or Public) needs the OBELISC to achieve.   | Defines how the system will achieve the user requirements through functional and technical guidance |
| <b>Focus</b>           | This will be focused on the user's needs and operational requirements. | This will be focused on performance and compliance with all relevant standards and guidance.        |
| <b>Information</b>     | The information was gathered from stakeholders and customer's needs.   | Derived from regulations, user requirements and design tolerances.                                  |
| <b>Level of Detail</b> | Descriptive and high level.                                            | Detailed and defines how this is achieved.                                                          |
| <b>Purpose</b>         | Communicates the stakeholder and customer needs.                       | Allows for engineering design and verification.                                                     |

### 3.4 User Requirements

The user requirements is a comprehensive list of requirements that the user (NGED or the customer) require the OBELISC to do, such as allowing the connection of Low Carbon Technology (LCT), allowing the existing cable from a consumer's property to be terminated into the OBELISC, allow Metering Equipment Mangers (MEM) to install their equipment as an example.

#### 3.4.1 Electrical Requirements

Given the OBELISC is heavily reliant on electrical engineering, a comprehensive set of electrical requirements have been considered. The electrical requirements for the OBELISC will only surround the assembly itself, and the requirements do not cover any methods of installation or equipment that could be connected to the cabinet.

The requirements cover the connections of the EV charge point and heat pump, to the existing DNO cable, to the supply from a bidirectional meter and the storage or generation; these connections can be single or three phase.

It should be noted that the existing DNO cables supplying the domestic consumer unit may need to be replaced to comply with current ESQCR 2002 and BS7671 regulations when the ownership boundary is changed. Flowcharts for a TN-S (Figure 7), TN-C-S (Figure 8) and TT system (Figure 9) earthing systems illustrate the high-level decision process to replace existing cables that supply the households. This could represent a significant impact in terms of cost and installation disruption and should be considered in the overall implementation of the OBELISC system. The removal or reposition of the existing metering would remain the responsibility of the electricity supply company to ensure connection to the property is not interrupted.

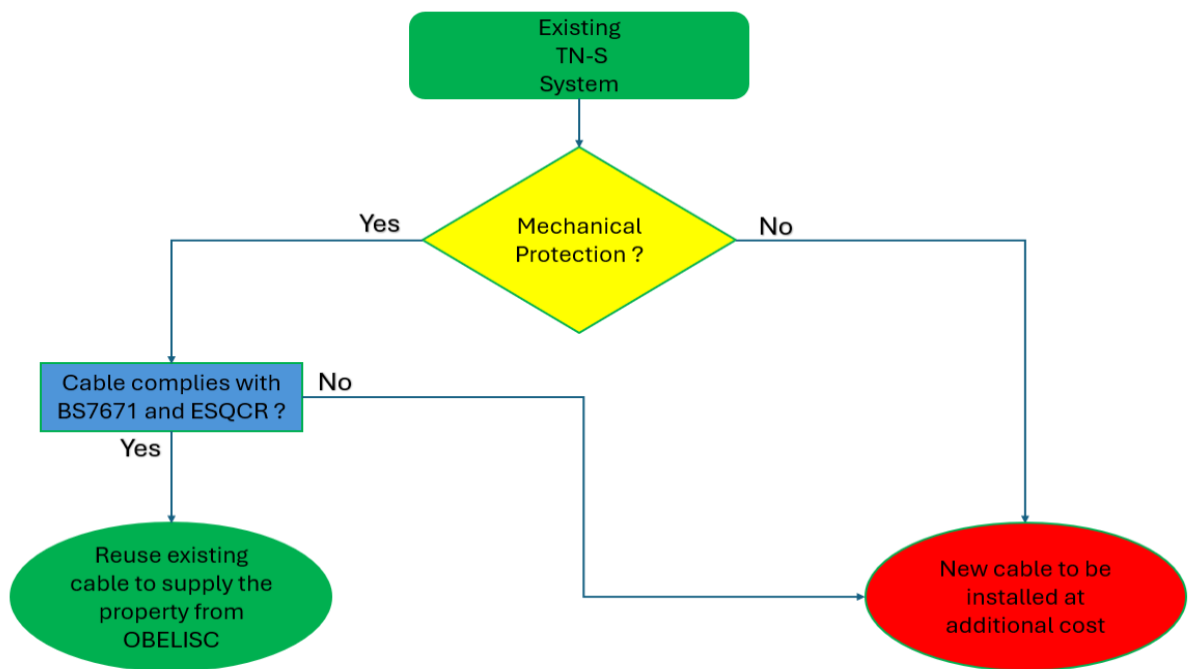


Figure 7 Existing TN-S Potential cable replacement

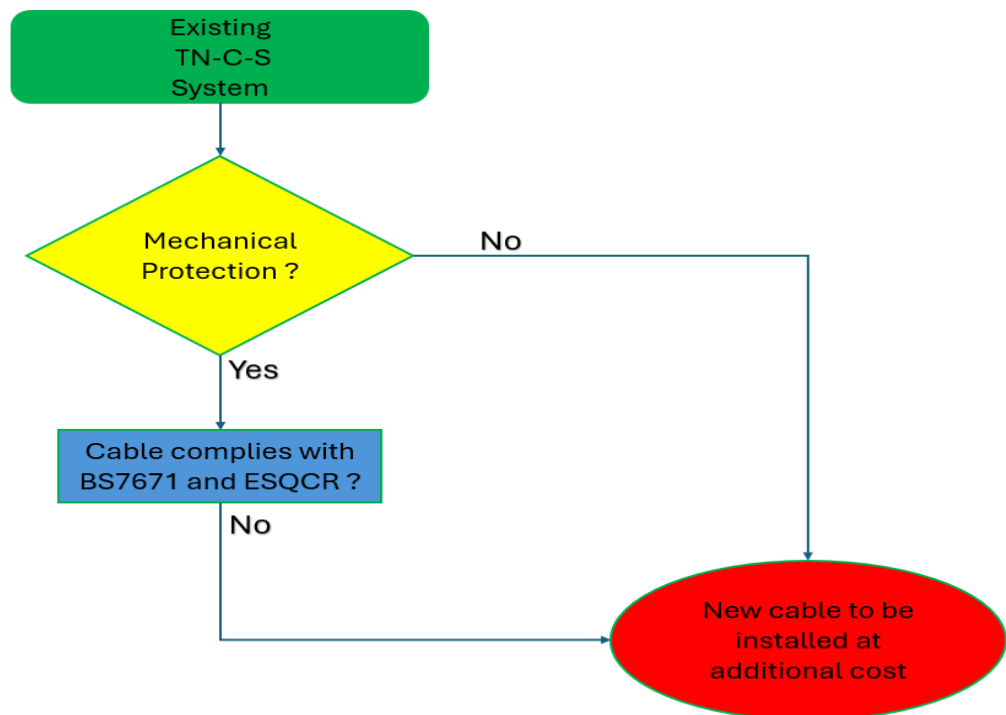


Figure 8 Existing TN-C-S Potential cable replacement



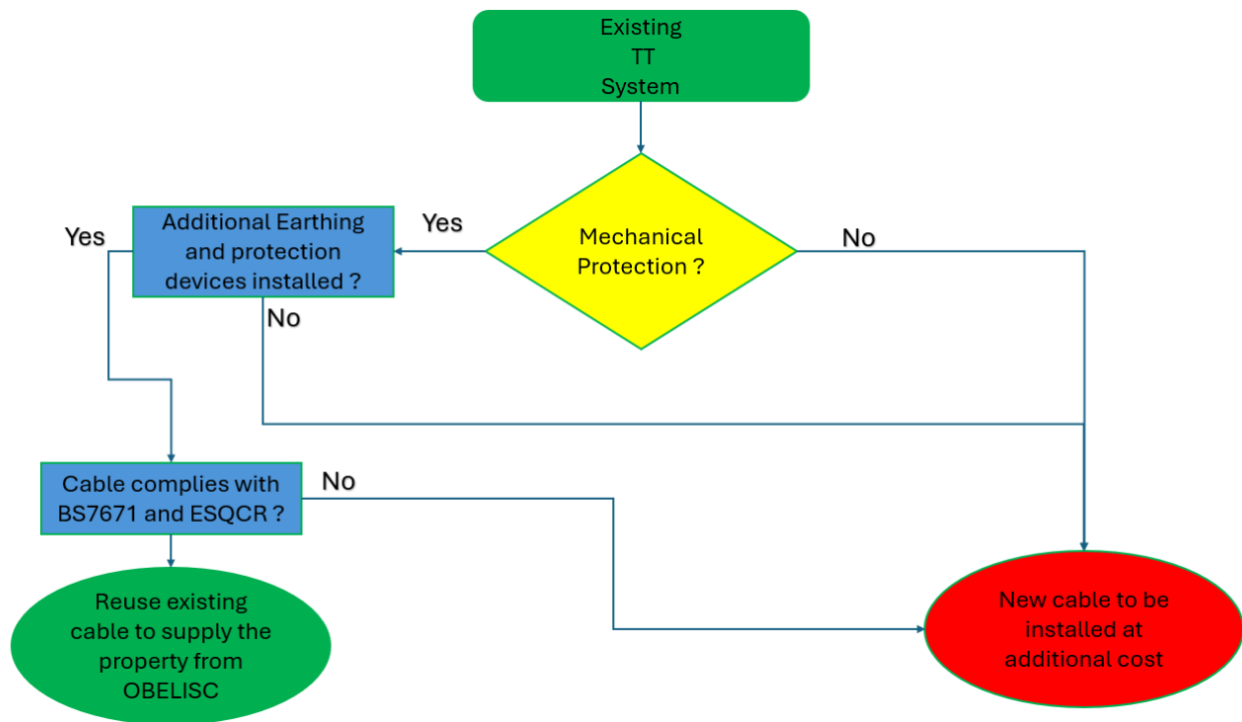


Figure 9 Existing TT Potential cable replacement

### 3.4.2 Environmental requirements

In this section the requirements consider different elements of the environment surrounding the OBELISC, such as it protecting the internal components from external influences like the weather, it being environmentally friendly and using as much recycled material as reasonably practicable but also visual pollution of the consumer with it being aesthetically pleasing.

However, these are design choices that will have cost and manufacture implications, and as such the requirements are not prescriptive to any preferences beyond reasonably practicable or compliance with legislation.

### 3.4.3 Mechanical

The mechanical requirements are limited to withstand damage only, material selection would become a design decision based on cost trade-off, security and strength; therefore will not be made here.

As above, these are design choices that will have cost and manufacture implications, and as such the requirements are not prescriptive to any preferences beyond reasonably practicable or compliance with legislation.

## 3.5 System Requirements

System requirements are derived from the user requirements and contain detail on how the system shall achieve each of the user requirements. An example of this can be seen below:





### 3.5.1 Electrical

The electrical system requirements focus on what the system shall do in order to achieve the electrical user requirements, as the user requires three phase connections, there is a system requirement to have suitable protective devices, specifying that the DNO protective devices shall not be the sole means of fault protection for the consumers electrical installation. Based on a discussion from a workshop, there is a desire to futureproof the design therefore there is a system requirement to ensure smart meters can be used.

The system requirements state the regulations and standards the system must comply with such as BS 8567:2012, ESQCR, ENA technical specification TS 37-1, Electricity at Work Regulations and also the National Grid Standards which include supplying a minimum of 60A and up to 100A depending on the specific needs of the consumer. The consumer accessible components and associated wiring shall comply with BS 7671 in addition to other relevant regulations and standards.

### 3.5.2 Security

Security system requirements will cover access to the internal system within the OBELISC with respect to the consumer owned and non-consumer owned equipment. This is based on a discussion with stakeholders regarding where the point of ownership of keys was raised and system requirements around making the design as secure as possible, reducing the risk of unauthorised entry and vandalism to comply with BS 7671 and BS EN 61439.

However, these are design choices that will have cost and manufacture implications, and as such the requirements are not prescriptive to any preferences beyond reasonably practicable or compliance with legislation.

### 3.5.3 Environmental & Functional

Environmental system requirements cover accessibility to the system for persons with disabilities, the ability for the NGED engineers to install the system without the use of specialist tools and the reduction in risk of damage caused by external influences like weather and the general aesthetics of the OBELISC. The system aesthetics are a design choice that, at time of writing, have not been fully discussed with representative stakeholders so the system requirement is currently a placeholder.

### 3.5.4 Mechanical

The Mechanical system requirements cover the mechanical design of the OBELISC such as size, design life and material selection. The spatial envelope that the system occupies is an aesthetic choice that requires designer and stakeholder input. At the time of writing the current preference of the stakeholders is for the system to be smaller than the maximum legal size of 1.8m, as small as reasonably possible, and the preference is to increase width of the system over height.

The rest of the system requirements in this section cover ensuring mechanical design of the system does not create wider potential risks if other stakeholders interact with or damage the cabinet.

## **Annex A - Requirements Document**

## A.1 Requirement Document

COMMERCIAL IN CONFIDENCE



**FNC 021921-152891V**

# **NGED OBELISC Requirements Document**

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COMMERCIAL IN CONFIDENCE

# Project OBELISC Requirements Table



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| NGED                        |
| NGED                        |
| Frazer-Nash Consultancy Ltd |

## 1. Introduction

This document contains the requirements for the On Boundary Enhanced LCT Integrating Service Cabinet (OBELISC) Project. The requirements have been drafted by Frazer-Nash Consultancy, for review by the project partners and steering review panel

## 2. Requirements

**Table 1: Attribute descriptions**

| Attribute              | Description                                                                                                             |
|------------------------|-------------------------------------------------------------------------------------------------------------------------|
| User/System Req ID     | Unique identifier.                                                                                                      |
| Trace To/From          | Shows the relation between user and system requirements                                                                 |
| Requirement            | The requirement text.                                                                                                   |
| Requirement Type       | Categorisation highlighting the different types of requirements. Table 5 provides a full list of types.                 |
| Justification          | Reasoning behind development of requirements.                                                                           |
| Accompanying Standards | Standard or regulation relevant to requirement or source for requirement derivation (if relevant).                      |
| Priority               | A measure of the requirement importance. Table 2 defines the different priorities.                                      |
| Verification Method    | The method used to verify the requirement has been met. Can be analysis, inspection, test, demonstration or evaluation. |
| Verification Criteria  | A statement describing the criteria used to assess verification.                                                        |
| Remarks                | Any additional information on the requirement.                                                                          |
| Requirement Status     | Maturity of the requirement. Table 3 defines the different statuses.                                                    |
| Verification Status    | The status of the verification of the requirement. Table 4 provides the verification status descriptions.               |

**Table 2: Priority descriptions**

| Priority      | Description                                                                                                                                         |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Mandatory (M) | Legislative, regulatory or critical safety requirement, which cannot be traded.                                                                     |
| High          | High priority requirement, with low potential for trading. Typically permission would be required as a key stakeholder requirement may be impacted. |
| Medium        | Medium priority requirement, which should be traded with care as stakeholder requirements may be impacted.                                          |
| Low           | Low priority requirement. This is a desirable feature of the system, which is not essential for operations and may be the first choice for trading. |

**Table 3: Status descriptions**

| Status    | Description                                                                                                                                                                                                                                      |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accepted  | Indicates that a requirement has been added to the list and formally accepted through the review process.                                                                                                                                        |
| Draft     | Indicates that a requirement has been added to the list but has not been formally accepted through the review process.                                                                                                                           |
| Candidate | Indicates that a requirement has been reviewed and is awaiting endorsement to full accepted status.                                                                                                                                              |
| Deleted   | Indicates that a requirement had been initially included in the document but had been deemed not to be necessary during the review process. Specifications are retained in the list to show requirements that have been considered and rejected. |

**Table 4: Verification descriptions**

| Status             | Description                                                                                                         |
|--------------------|---------------------------------------------------------------------------------------------------------------------|
| Un-Verified        | Indicates that a requirement that has not been verified for the final prototype.                                    |
| Partially Verified | Indicates that a requirement has been some criteria verified but does not completely satisfy the requirement as is. |
| Fully Verified     | Indicates that a requirement has been verified for the final prototype.                                             |

**Table 5: Status descriptions**

| Status                      | Description                                                                                                                    |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| National Grid Standards     | Indicates that a requirement has been generated referencing National Grid standards.                                           |
| British Standards           | Indicates that a requirement has been generated referencing British Standards.                                                 |
| Regulatory                  | Indicates that a requirement has been generated referencing a specific regulation.                                             |
| Objective                   | Indicates that a requirement is an objective for the system but is not mandatory.                                              |
| Stakeholder                 | Indicates that a requirement has been generated referencing a specific stakeholder need.                                       |
| Functional                  | Indicates that a requirement states a function of the system.                                                                  |
| Design characteristic       | Indicates that a requirement states a design characteristic of the system, the specifics of which are left to the design team. |
| Constraint                  | Indicates that a requirement is a constraint on the system design.                                                             |
| System                      | Indicates that a requirement is a required system feature.                                                                     |
| Energy Networks Association | Indicates that a requirement has been generated referencing Energy Networks Association documentation.                         |

## OBELISC Requirements Matrix

### A.1.1 User Requirements Matrix

| Category      | User Req ID  | Trace To                                                                                                     | Requirement                                                                                                                                                | Requirement Type      | Justification                                                                                                                                                                      | Accompanying Standards | Priority | Verification Method | Verification Criteria | Remarks                                                                                                                                | Req. Status | Verification Status |
|---------------|--------------|--------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------|---------------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------------|
| Heading       |              |                                                                                                              | Electrical Requirements                                                                                                                                    |                       |                                                                                                                                                                                    |                        |          |                     |                       |                                                                                                                                        |             |                     |
| Electrical    | ELECT-UR-101 | ELECT-SR-201<br>ELECT-SR-202<br>ELECT-SR-203<br>ELECT-SR-204                                                 | The consumer shall be able to connect an Air Source Heat Pump (ASHP) circuit                                                                               | Functional            | No direct standards apply, this is a desired design requirement of the product.                                                                                                    | N/A                    | High     |                     |                       | The loads could either be 1ph or 3ph                                                                                                   | Candidate   | Un-Verified         |
| Electrical    | ELECT-UR-102 | ELECT-SR-201<br>ELECT-SR-202<br>ELECT-SR-203<br>ELECT-SR-204                                                 | The consumer shall be able to connect an Electrical Vehicle charge point                                                                                   | Functional            | No direct standards apply, this is a desired design requirement of the product.                                                                                                    | N/A                    | High     |                     |                       | Note that it is possible for EVs to be operating in vehicle-to-grid (V2G) mode                                                         | Candidate   | Un-Verified         |
| Electrical    | ELECT-UR-103 | ELECT-SR-201<br>ELECT-SR-202<br>ELECT-SR-203<br>ELECT-SR-204                                                 | The installer shall be able to connect the existing DNO cable supplying the consumer unit within the property                                              | Functional            | BS 7671 & ESQCR should be adhered to when ownership boundaries change to ensure installation is compliant.                                                                         | BS 7671 & ESQCR        | Low      |                     |                       |                                                                                                                                        | Candidate   | Un-Verified         |
| Electrical    | ELECT-UR-104 | ELECT-SR-201<br>ELECT-SR-202<br>ELECT-SR-203<br>ELECT-SR-204                                                 | The consumer shall be able to connect a micro-generation technology and/or storage technology                                                              | Functional            | No direct standards apply, this is a desired design requirement of the product.                                                                                                    | N/A                    | High     |                     |                       | Micro-generation includes PV or wind turbines; storage includes stationary batteries or EV operating in vehicle-to-grid (V2G) mode     | Candidate   | Un-Verified         |
| Security      | SECU-UR-101  | SECU-SR-201<br>SECU-SR-201<br>SECU-SR-201                                                                    | The means of access to the product shall prevent unauthorised access                                                                                       | Functional            | Requires that the metering and cut out be segregated from consumer equipment                                                                                                       | BS EN 61439 & BS7671   | High     |                     |                       |                                                                                                                                        | Candidate   | Un-Verified         |
| Electrical    | ELECT-UR-105 | ELECT-SR-212<br>ELECT-SR-213<br>ELECT-SR-214                                                                 | The product shall enable all consumer owned circuits to be supplied via a meter suitable for bidirectional power flow                                      | Functional            | LCT equipment intended to be connected to the system will be consuming power. However, small scale generation such as PV systems must be able to export power to the DNO network   | Retail Energy Code     | High     |                     |                       |                                                                                                                                        | Candidate   | Un-Verified         |
| Electrical    | ELECT-UR-108 | ELECT-SR-217<br>ELECT-SR-218<br>ELECT-SR-219<br>ELECT-SR-220<br>ELECT-SR-221                                 | The DNO shall be able to install a three-phase cable into the assembly                                                                                     | Functional            | A three-phase supply is required to be installed by the DNO to provide three-phase power to the system for connection of the LCT                                                   | N/A                    | High     |                     |                       |                                                                                                                                        | Candidate   | Un-Verified         |
| Electrical    | ELECT-UR-109 | ELECT-SR-223                                                                                                 | The product shall not be installed on a looped DNO supply                                                                                                  | Constraint            | A looped supply between dwellinghouses is not suitable for the system as more than one dwelling shares the same supply from the DNO.                                               | N/A                    | High     |                     |                       |                                                                                                                                        | Candidate   | Un-Verified         |
| Electrical    | ELECT-UR-110 | ELECT-SR-225<br>ELECT-SR-226<br>ELECT-SR-227<br>ELECT-SR-228<br>ELECT-SR-224<br>ELECT-SR-216<br>ELECT-SR-229 | This assembly shall comply with legislation and standards                                                                                                  | Functional            | The assembly must follow relevant legislation and standards relevant to its design                                                                                                 | N/A                    | High     |                     |                       |                                                                                                                                        | Candidate   | Un-Verified         |
| Heading       |              |                                                                                                              | Environmental Requirements                                                                                                                                 |                       |                                                                                                                                                                                    |                        |          |                     |                       |                                                                                                                                        |             |                     |
| Environmental | ENVI-UR-101  | FUNC-SR-201<br>ENVI-SR-201                                                                                   | The product shall be accessible to those with differing abilities                                                                                          | Objective             | Approved Document M1 of English Building Regulations                                                                                                                               | N/A                    | Medium   |                     |                       | Guidance can be sought from BS 7000-6:2005 for managing inclusive design and from Approved document M1 of English building regulations | Candidate   | Un-Verified         |
| Environmental | ENVI-UR-102  | ELECT-SR-222                                                                                                 | OBELISC product shall be as aesthetically pleasing as possible for minimal impact to surrounding environment and reduce the possibility of planning issues | Design characteristic | External stakeholders have noted concerns around the aesthetics of the product and possible impact on planning. A survey can be carried out to assess the aesthetics of the system | N/A                    | Low      |                     |                       | This could be achieved through the construction of the product itself, or allowing a façade/housing to be installed over               | Candidate   | Un-Verified         |

## OBELISC Requirements Matrix

|               |             |                            |                                                                                                                                  |                       |                                                                                                                                                                                                     |                                           |        |  |  |                                                                                                                   |           |             |
|---------------|-------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|--------|--|--|-------------------------------------------------------------------------------------------------------------------|-----------|-------------|
|               |             |                            |                                                                                                                                  |                       |                                                                                                                                                                                                     |                                           |        |  |  |                                                                                                                   |           |             |
| Environmental | ENVI-UR-103 | MECH-SR-201                | The assembly shall fit within an estimated spatial envelope [1.25 m x 0.75 m x 0.5 m]                                            | Design characteristic | External stakeholders have noted concerns around the size of the product and possible impact on planning                                                                                            | N/A                                       | Medium |  |  |                                                                                                                   | Candidate | Un-Verified |
| Environmental | ENVI-UR-104 | MECH-SR-203<br>ENVI-SR-202 | The assembly shall protect the internal components from any external influences in the location it is installed in               | Design characteristic | There are various external influences that the assembly may be subjected to including rain, hail, snow, wind, dust, animals etc                                                                     | N/A                                       | High   |  |  |                                                                                                                   | Candidate | Un-Verified |
| Environmental | ENVI-UR-105 | FUNC-SR-202                | The product shall not require more than 1 person to install                                                                      | Objective             | No direct standards apply, this is a desired design requirement of the product.                                                                                                                     | N/A                                       | Low    |  |  | Installation should not require any special tools or equipment.                                                   | Candidate | Un-Verified |
| Environmental | ENVI-UR-106 | MECH-SR-204                | The system shall reduce the risk of injury where reasonably practicable                                                          | Constraint            | Product will be accessible to householders, members of public, DNO workforce and others.                                                                                                            | N/A                                       | High   |  |  | No sharp edges, hot surfaces etc                                                                                  | Candidate | Un-Verified |
| Environmental | ENVI-UR-107 | MECH-SR-205                | The assembly shall not pose a fire risk                                                                                          | Constraint            | The assembly shall have thermal stability, be resistant to abnormal heat and fire and where reasonably practicable have internal separation to limit the spread of fire between internal components | BS EN 61439, BS EN 60695 & ENA G81 part 3 | High   |  |  |                                                                                                                   | Candidate | Un-Verified |
| Environmental | ENVI-UR-109 |                            | Where reasonably practicable, the assembly shall be constructed of a material that can be recycled at the assemblies end-of-life | Design characteristic | For efforts toward sustainability, where reasonably practicable the material used the assembly constructions should be recyclable                                                                   | N/A                                       | Medium |  |  |                                                                                                                   | Candidate | Un-Verified |
| Environmental | ENVI-UR-111 |                            | The location of the installation of the assembly shall not negatively impact access to consumers property                        | Constraint            |                                                                                                                                                                                                     | N/A                                       | High   |  |  | It was noted during stakeholder engagement that there were concerns to impacts to people accessing their property | Candidate | Un-Verified |
| Environmental | ENVI-UR-112 |                            | The location of the installation of the assembly shall not negatively impact public access to footpaths                          | Constraint            |                                                                                                                                                                                                     | N/A                                       | High   |  |  | It was noted during stakeholder engagement that there were concerns to impacts to access to public footpaths      | Candidate | Un-Verified |
| Heading       |             |                            | Mechanical Requirements                                                                                                          |                       |                                                                                                                                                                                                     |                                           |        |  |  |                                                                                                                   |           |             |
| Mechanical    | MECH-UR-101 | MECH-SR-202                | The assembly enclosure shall be of sufficient mechanical strength to withstand accidental damage                                 | Functional            | The enclosure shall provide a minimum of IK07 impact protection to withstand accidental damage and prevent vandalism                                                                                | BS EN 61439-3                             | Medium |  |  |                                                                                                                   | Candidate | Un-Verified |



## OBELISC Requirements Matrix

### A.1.2 System Requirements Matrix

| Category   | System Req ID | Traced From                                                  | Requirement                                                                                                         | Requirement Type      | Justification                                                                                                                                                                                                             | Accompanying Standards                                                             | Priority  | Verification Method | Verification Criteria | Remarks                                                                                                                                                                                | Req. Status | Verification Status |
|------------|---------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------|---------------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------------|
| Heading    |               |                                                              | Electrical Requirements                                                                                             |                       |                                                                                                                                                                                                                           |                                                                                    |           |                     |                       |                                                                                                                                                                                        |             |                     |
| Electrical | ELECT-SR-201  | ELECT-UR-101<br>ELECT-UR-102<br>ELECT-UR-103<br>ELECT-UR-104 | The system shall ensure that the consumer can connect a single phase load                                           | Design characteristic | To ensure compatibility with domestic single phase supplies and consumer equipment in line with DNO connections                                                                                                           | N/A                                                                                | High      |                     |                       |                                                                                                                                                                                        | Candidate   | Un-Verified         |
| Electrical | ELECT-SR-202  | ELECT-UR-101<br>ELECT-UR-102<br>ELECT-UR-103<br>ELECT-UR-104 | The system shall ensure that the consumer can connect a three phase load                                            | Design characteristic | Ideally the consumer shall be able to connect a three-phase load for future proofing and efficiency                                                                                                                       | N/A                                                                                | Medium    |                     |                       |                                                                                                                                                                                        | Candidate   | Un-Verified         |
| Electrical | ELECT-SR-203  | ELECT-UR-101<br>ELECT-UR-102<br>ELECT-UR-103<br>ELECT-UR-104 | The system shall facilitate the installation of consumer owned protective devices to protect the consumers circuits | System                | Primary protective devices for the consumer circuits must be a part of the consumer owned installation                                                                                                                    | N/A                                                                                | High      |                     |                       |                                                                                                                                                                                        | Candidate   | Un-Verified         |
| Electrical | ELECT-SR-212  | ELECT-UR-105                                                 | The consumer circuits shall be supplied via a bidirectional meter                                                   | Regulatory            | Any electricity supply provided to domestic properties must go through a meter. All consumer circuits must be supplied in this manner                                                                                     | Electricity Act 1989; Balancing and Settlement Code CoP 8 & 9, Retail Energy Code. | High      |                     |                       | Product is intended for a "Prosumer" installation, refer to BS7671 Part 8                                                                                                              | Candidate   | Un-Verified         |
| Electrical | ELECT-SR-213  | ELECT-UR-105                                                 | Smart meter communication shall not be impeded                                                                      | Objective             | Smart meters communications cannot be impacted.                                                                                                                                                                           | SDSA/6                                                                             | Medium    |                     |                       |                                                                                                                                                                                        | Candidate   | Un-Verified         |
| Electrical | ELECT-SR-214  | ELECT-UR-105                                                 | The OBELISC assembly shall comply with COMCOP for the installation of metering equipment                            | Regulatory            | COMCOP document outlines responsibilities by MEMs and DNOs with regards to metering equipment installation                                                                                                                | Consolidated Metering Code of Practice (COMCOP)                                    | High      |                     |                       |                                                                                                                                                                                        | Candidate   | Un-Verified         |
| Electrical | ELECT-SR-215  | ELECT-UR-110                                                 | Once the system has been installed the consumers installation shall not be in breach of IET Wiring Regulations      | Constraint            | Due to the assembly potentially moving the boundary of ownership of the existing supply to the dwelling. This modification shall not result in the consumer inheriting an installation that is non-compliant with BS 7671 | BS:7671 Requirements for Electrical Installations                                  | Mandatory |                     |                       | It is desirable to avoid replacement of the existing single-phase service cable, but this is likely to be non-compliant for a PME/TN-C-S system                                        | Candidate   | Un-Verified         |
| Electrical | ELECT-SR-216  | ELECT-UR-110                                                 | Once the system has been installed the consumers installation shall not be in breach of ESQCR                       | Constraint            | Due to the assembly potentially moving the boundary of ownership of the existing supply to the dwelling. This modification shall not result in the consumer inheriting an installation that is non-compliant with ESQCR   | Electricity Safety, Quality and Continuity Regulations 2002, as amended (ESQCR)    | Mandatory |                     |                       | It may not be possible to reuse existing cable supplying the dwelling                                                                                                                  | Candidate   | Un-Verified         |
| Electrical | ELECT-SR-217  | ELECT-UR-108                                                 | The system shall have a supply capacity of 100A per phase from the DNO                                              | Objective             | Standard Technique: SD5D/D                                                                                                                                                                                                | N/A                                                                                | Medium    |                     |                       | It is noted that there are other sizes of supply available from the DNO incl 60A, 80A etc. However, 100A will future proof the installation and allow higher rated LCT to be installed | Candidate   | Un-Verified         |

## OBELISC Requirements Matrix

|            |              |              |                                                                                                                                         |                             |                                                                                                                                                                                                                                                                  |                                                                                               |           |  |  |                                                                                                                                                                        |           |             |
|------------|--------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------|
| Electrical | ELECT-SR-218 | ELECT-UR-108 | The system shall have a supply capacity of 80A per phase from the DNO                                                                   | Objective                   | Standard Technique: SD5D/D                                                                                                                                                                                                                                       | N/A                                                                                           | High      |  |  |                                                                                                                                                                        | Candidate | Un-Verified |
| Electrical | ELECT-SR-219 | ELECT-UR-108 | The system shall have a supply capacity of 60A per phase from the DNO                                                                   | Objective                   | Standard Technique: SD5D/D                                                                                                                                                                                                                                       | N/A                                                                                           | low       |  |  | Minimum Requirement                                                                                                                                                    | Candidate | Un-Verified |
| Electrical | ELECT-SR-220 | ELECT-UR-108 | The DNO protective devices shall not be the sole means of fault protection for the consumers electrical installation                    | Constraint                  | BS7671 applies - During normal operation of the installation, the DNO cut-out fuses within the DNO cable head must not operate.                                                                                                                                  | N/A                                                                                           | Mandatory |  |  | It is important that the maximum demand of the installation with the addition of the new LCT do not operate the protective devices supplied by the DNO                 | Candidate | Un-Verified |
| Electrical | ELECT-SR-221 | ELECT-UR-108 | The electrical assembly shall allow for the inclusion of an appropriate cut-out that complies with National Grid company directives     | National Grid Standards     | Cut outs will be derived from the desired amperage per phase of the supply that is required for the installation                                                                                                                                                 | Standard Technique: SD5D/D                                                                    | Mandatory |  |  | The cut-out that would be installed by the DNO within the system has dimension that must be followed associated with it and the system must allow the DNO to meet them | Candidate | Un-Verified |
| Electrical | ELECT-SR-223 | ELECT-UR-109 | The existing cable from the distribution network that is supplying the building shall not be used if it forms part of a 'looped' supply | Constraint                  | Dwellings that share a looped supply shall not have the system installed as there will be a meter located within the system. The system must be un-looped before installation of the new cable                                                                   | N/A                                                                                           | High      |  |  |                                                                                                                                                                        | Candidate | Un-Verified |
| Electrical | ELECT-SR-224 | ELECT-UR-110 | The OBELISC as a low-voltage switchgear assembly shall comply with the relevant parts of BS EN IEC 61439                                | British Standards           | All low voltage assemblies within the UK must comply with the following parts of the standard BS EN 61439                                                                                                                                                        | BS EN 61439-1:2021;<br>BS EN 61439-2:2021;<br>BS EN 61439-3:2024;<br>BS EN 61439-5:2023;      | Mandatory |  |  |                                                                                                                                                                        | Candidate | Un-Verified |
| Electrical | ELECT-SR-225 | ELECT-UR-110 | The electrical installation within the assembly shall comply with ESQCR                                                                 | Regulatory                  | Mandatory that electrical installations follow this legislation                                                                                                                                                                                                  | ESQCR - Part 2<br>ESQCR - Part 4<br>ESQCR - Part 7                                            | Mandatory |  |  |                                                                                                                                                                        | Candidate | Un-Verified |
| Electrical | ELECT-SR-226 | ELECT-UR-110 | The electrical installation shall comply with Electricity at Work Regulations                                                           | Regulatory                  | Mandatory that electrical installations follow this legislation                                                                                                                                                                                                  | EAWR Guidance 1-9<br>EAWR Guidance 11-16                                                      | Mandatory |  |  |                                                                                                                                                                        | Candidate | Un-Verified |
| Electrical | ELECT-SR-228 | ELECT-UR-110 | The assembly shall comply with ENA technical specification TS 37-1                                                                      | Energy Networks Association | This Specification covers the technical requirements for 400 V a.c. switchgear, control gear and fuse gear assemblies for use by ENA Member Companies and identifies those functions and characteristics that should be defined when specifying such assemblies. | Technical Specification - 37-1 - 400 V A.C. Switchgear, Control gear and fuse gear assemblies | Mandatory |  |  |                                                                                                                                                                        | Candidate | Un-Verified |
| Electrical | ELECT-SR-229 | ELECT-UR-110 | The assembly shall comply with relevant parts of BS 8567:2012                                                                           | British Standards           | This British Standards pertains to the specification for outdoor electricity meter cupboards                                                                                                                                                                     | BS 8567:2012 Specification for outdoor meter cupboards                                        | Mandatory |  |  |                                                                                                                                                                        | Candidate | Un-Verified |
| Heading    |              |              | Security Requirements                                                                                                                   |                             |                                                                                                                                                                                                                                                                  |                                                                                               |           |  |  |                                                                                                                                                                        |           |             |
| Security   | SECU-SR-201  | SECU-UR-101  | The system shall be secure to prevent unauthorised access                                                                               | Objective                   | Access to consumer owned equipment must be secured in such a manner to reduce the risk of vandalism and unauthorised entry. Minimum of IK07 for impact resistance to prevent vandalism                                                                           | BS EN 61439-3                                                                                 | High      |  |  |                                                                                                                                                                        | Candidate | Un-Verified |
| Security   | SECU-SR-202  | SECU-UR-101  | The system shall be secure such that unauthorised persons shall not have access to the non-consumer owned equipment                     | Constraint                  | Access to consumer owned equipment must be secured in such a manner to reduce the risk of vandalism and unauthorised entry                                                                                                                                       | N/A                                                                                           | High      |  |  |                                                                                                                                                                        | Candidate | Un-Verified |

## OBELISC Requirements Matrix

|               |             |             |                                                                                                                                                  |                       |                                                                                                                                                                                                                                                                                             |                                   |           |  |  |  |           |             |
|---------------|-------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------|--|--|--|-----------|-------------|
| Security      | SECU-SR-203 | SECU-UR-101 | The system shall be secure such that unauthorised persons shall not have access to the consumer owned equipment                                  | Constraint            | Access to consumer owned equipment must be secured in such a manner to reduce the risk of vandalism and unauthorised entry. Minimum of IK07 for impact resistance to prevent vandalism                                                                                                      | BS EN 61439-3                     | High      |  |  |  | Candidate | Un-Verified |
| Heading       |             |             | Environmental Requirements                                                                                                                       |                       |                                                                                                                                                                                                                                                                                             |                                   |           |  |  |  |           |             |
| Environmental | ENVI-SR-201 | ENVI-UR-101 | The system equipment owned by the consumer shall have provisions to assist persons with vision impairments                                       | System                | The protective devices feeding electrical equipment in the home will be housed in the system. The system ensure critical components are easily distinguishable for visually impaired users                                                                                                  | N/A                               | Low       |  |  |  | Candidate | Un-Verified |
| Environmental | ENVI-SR-202 | ENVI-UR-104 | The assembly shall be capable to be installed in such a manner that it reduces the risk of damage from flooding                                  | System                | A minimum IP56 rating is recommended for outdoor use, however this alone does not ensure complete weatherproofing. Additional sealing and materials protection may be required                                                                                                              | SD5D/5 & BS EN 60529:1992+A2:2013 | Medium    |  |  |  | Candidate | Un-Verified |
| Environmental | ENVI-SR-203 | ENVI-UR-102 | The product shall achieve a minimum average score [TBD] on an aesthetic survey completed from [TBD] external stakeholders.                       | Stakeholder           | External stakeholders have noted concerns around size and aesthetics of the product and possible impact on planning. This requirement will be refined once stakeholder aesthetic opinions are known and the design is further progressed.                                                   | N/A                               | Medium    |  |  |  | Candidate | Un-Verified |
| Heading       |             |             | Functional Requirements                                                                                                                          |                       |                                                                                                                                                                                                                                                                                             |                                   |           |  |  |  |           |             |
| Functional    | FUNC-SR-201 | ENVI-UR-101 | The system equipment owned by the consumer shall be accessible to persons with lower levels of mobility                                          | System                | The protective devices feeding electrical equipment in the home will be housed in the system. The system shall incorporate features that support users with limited mobility, such as accessible reach zones and ergonomic access for those with reduced dexterity and unobstructed access. | N/A                               | Low       |  |  |  | Candidate | Un-Verified |
| Functional    | FUNC-SR-202 | ENVI-UR-105 | The systems installation shall not require any specialist tools                                                                                  | Constraint            | The installation should not require specialist tools not usually carried by NGED installers                                                                                                                                                                                                 | N/A                               | Low       |  |  |  | Candidate | Un-Verified |
| Heading       |             |             | Mechanical Requirements                                                                                                                          |                       |                                                                                                                                                                                                                                                                                             |                                   |           |  |  |  |           |             |
| Mechanical    | MECH-SR-201 | ENVI-UR-103 | The system shall fit within the spatial envelope of [1.25 m x 0.75 m X 0.5 m] to be large enough to house all the necessary electrical equipment | Design characteristic | The system must be large enough to house all the required electrical equipment including room for allowing sufficient bending radius for any cables                                                                                                                                         | N/A                               | Medium    |  |  |  | Candidate | Un-Verified |
| Mechanical    | MECH-SR-203 | ENVI-UR-104 | The enclosure shall offer a degree of ingress protection suitable for the environment in the location of the installation.                       | British Standards     | The OBELISC enclosure/assembly will be exposed to adverse environments                                                                                                                                                                                                                      | BS EN 60529:1992+A2:2013          | Mandatory |  |  |  | Candidate | Un-Verified |
| Mechanical    | MECH-SR-204 | ENVI-UR-106 | The system shall not have any sharp edges                                                                                                        | Constraint            | The assembly should not cause injury to persons during normal operation due to sharp edges                                                                                                                                                                                                  | N/A                               | High      |  |  |  | Candidate | Un-Verified |

## OBELISC Requirements Matrix

|            |             |             |                                                                                                                          |                       |                                                                                                                          |               |           |  |  |  |           |             |
|------------|-------------|-------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------|---------------|-----------|--|--|--|-----------|-------------|
| Mechanical | MECH-SR-205 | ENVI-UR-107 | The assembly shall not be constructed of flammable material                                                              | Constraint            | Material of the assembly must not be prone to combustion                                                                 | N/A           | High      |  |  |  | Candidate | Un-Verified |
| Mechanical | MECH-SR-206 | ENVI-UR-110 | The assembly shall be operational for its specified design life                                                          | Design characteristic | 25 years minimum is mandatory, >25 years is the objective                                                                | N/A           | High      |  |  |  | Candidate | Un-Verified |
| Mechanical | MECH-SR-209 | MECH-UR-101 | The assembly must be rated to withstand $\geq 12\text{KJ/m}^2$ amount of force and have a minimum impact rating of IK07. | British Standards     | The assembly is at risk to being damaged and must be designed to be able to withstand damage that may occur from impacts | BS EN 61439-3 | Mandatory |  |  |  | Candidate | Un-Verified |

## References

- [1] J. Dick, E. Hull and K. Jackson, "Requirements Engineering, Fourth Edition".
- [2] EQ Communications Ltd, "National Grid Electricity Distribution - On boundary Enhanced LCT Integrating Service Cabinet: OBELISC - Project Launch," London, 2025.
- [3] EQ Communications Ltd, "NATIONAL GRID ED: PROJECT OBELISC Steering Review Panel Minutes 15 July 2025," EQ Communications Ltd, 2025.



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