Appendix 1: Requirements and Specifications

Tenderers must address each of the issues and requirements in this part of the RFT and submit a detailed description in each case which demonstrates how these issues and requirements will be dealt with / met and their approach to the proposed delivery of the Services. A mere affirmative statement by the Tenderer that it can/will do so or a reiteration of the tender requirements is NOT sufficient in this regard.

1. Background

In May 2026, the Minister for Climate, Energy and the Environment requested that the assessment of plug-in solar technologies be accelerated and that a pathway be identified for their safe introduction in Ireland. A cross-industry working group (the Working Group), chaired by ESB Networks, was established to examine the matter. The Working Group presented its report to the Minister in September 2026 and recommended that an Irish safety assessment be undertaken.

The timing of this work is important. Plug-in solar products have been available on the GB market since August 2026. The UK framework permits compliant devices with an AC output of up to 800 W to connect through a standard plug, subject to compliance with the UK Interim Product Specification, version 2.0. Products designed for the UK and other European markets may therefore be readily available online to Irish consumers, notwithstanding differences in national wiring practices, standards, regulatory arrangements and housing stock.

The Department requires an independent, Ireland-specific assessment to determine whether, and under what conditions:

1) plug-in solar generation products; and
2) plug-in battery products

can be safely accommodated in Irish domestic electrical installations without the need for wiring (or other) modifications. The assessments must build on relevant UK and European evidence while avoiding unnecessary duplication of completed research and testing. Testing by reputable and well-established sources may be referenced; however, cases which were developed for purely marketing purposes should be avoided. Bids shall be divided into two phases:

Phase 1 plug-in solar: this is the first phase. It will assess plug-in solar technologies and provide recommendations on whether, and under what circumstances, they may be safely used in Irish domestic electrical installations; and

Phase 2 plug-in battery: this is a separately priced and subsequent phase. It will assess plug-in battery technologies and provide recommendations on whether, and under what circumstances, they may be safely used in Irish domestic electrical installations.

DCEE will at its sole discretion decide whether and when to commission Phase 2.

2. Purpose

The Department of Climate, Energy and the Environment (DCEE) seeks to commission an independent safety assessment of:

1) Phase 1: plug-in solar technologies; and
2) Phase 2: plug-in battery technologies

Phase 2 is a separately priced phase that may be commissioned by DCEE at its sole discretion.

An Irish specific safety assessment is required in advance of the wider sale and use of these technologies in the Irish market. With the assumption of one device per user, both Phase1 and Phase 2 assessments shall consider Irish (both modern and older) electrical installations, technical standards, regulatory arrangements, housing characteristics (see Section 3.3) and foreseeable consumer-use scenarios which apply to domestic settings.

The purpose is to establish an Irish evidence base for policy, standards, network and consumer-protection decisions that will be undertaken by relevant competent authorities for plug in solar and subsequently for plug-in battery products . Testing shall be undertaken by, or under the direct control of, a laboratory accredited to ISO/IEC 17025 for the relevant activities. Each study should address in detail, and with supporting evidence and justification:

- whether the preferred connection pathway (plug-and-play) identified for each product type is supportable by successfully completing a test programme which is outlined in Section 3;
- the implications of the plug-and-play pathway with evidence and recommendations suitable for consideration by NSAI as part of the SWiFT process;
- what key inputs regarding consumer information, warnings, self-assessment guidance and safe use instructions should be made;
- what appropriate registration and notification arrangements should be put in place, taking account of existing ESB Networks processes;
- whether additional Irish safety controls are necessary beyond those adopted in the UK or other relevant European jurisdictions, and
- the circumstances in which the involvement of a Registered Electrical Contractor (REC) would be recommended or alternatively might be required. See Section 3.8.

2.1 Connection Pathway to Be Assessed

Pathway	Description
Pathway: Plug-and-Play	Phase 1 Consumer connection of a compliant plug-in solar device into a standard 3-pin domestic socket without a prior electrical assessment. Safety would be supported through product compliance, registration, clear consumer guidance and defined restrictions on use. Phase 2 Consumer connection of a compliant plug-in battery device into a standard 3-pin domestic socket without a prior electrical assessment. Safety would be supported through product compliance, registration, clear consumer guidance and defined restrictions on use

Table 1: Pathway

2.2 Required Outcomes

The successful bidder shall:

- Assess the potential safety implications of (Phase 1) plug-in solar and the subsequent phase (Phase 2) plug-in battery technologies connected to representative Irish domestic electrical installations (e.g. older installations and installations reflecting step changes in regulations).;
- Identify and evaluate electrical, fire, customer-use and product-related risks. The Tenderer shall clearly identify dependencies between the solar and battery elements where possible ;
- Assess whether additional safety measures may be required in Ireland beyond those identified within the UK framework and EU jurisdictions such as Malta;
- Assessment of the suitability of existing international product specifications and standards, including the UK IPS (Interim Product Specification) for plug-in-solar and recommendations for an Irish product specification pathway;
- Identify key inputs for a customer-focused safety guidance package for public information purposes for use by relevant competent authorities;
- Provide evidence-based recommendations to DCEE which may be shared with other stakeholders (e.g. SEAI, CRU, NSAI and ESB Networks), as appropriate;
- Identify any safety-related responsibilities and obligations that may arise for end users (homeowners, renters and other residents) under potential implementation pathways; and
- Identify circumstances where engagement with a Registered Electrical Contractor (REC) should be recommended or alternatively required.

3. Scope of Work

Tenderers shall propose a robust methodology that addresses, as a minimum, the requirements below. Tenderers may propose additional activities where these add demonstrable value but may not omit or reduce the mandatory baseline requirements without the prior written agreement of DCEE. While the tests should be predominantly similar, the tenderer should provide details where methodologies may differ between the plug-in solar and plug-in battery assessments. Where there is any constraint, plug-in solar should be prioritised.

3.1 Evidence Review and Standards Gap Analysis

The successful Tenderer shall review the available technical, regulatory and deployment evidence for (Phase 1) plug and play solar and subsequently (Phase 2) plug and play battery identifying their relevance to Ireland.

The Phase 1 plug and play solar review shall include the DESNZ (Department of Energy Security and Net Zero) safety-study material, the UK Interim Product Specification[1], relevant German DIN VDE requirements (noting that the German standard should be referenced only for the standards gap analysis), applicable IEC and CENELEC work, experience from other European jurisdictions, I.S. 10101, I.S. EN 50549-1 and relevant ESB Networks requirements. The review will also:

For each Safety Assessment undertaken (Phase 1 and Phase 2), the tenderer shall

- identify the standards and regulatory requirements applicable to the product, connection method, electrical installation and user;
- map any areas of non-compliance, uncertainty or incomplete coverage;
- map out homes that are potentially suitable for plug-in solar (Phase 1) and for plug in batteries (Phase 2), subject to appropriate consumer guidance by relevant competent authorities.
- identify homes that are potentially suitable for plug-in solar (Phase 1) and plug-in batteries (Phase 2), subject to appropriate consumer guidance by relevant competent authorities. ;

[1] Plug-In Solar Device Interim Product Specification

- identify homes that are potentially unsuitable for plug-in solar (Phase 1) and plug-in batteries (Phase 2) which should follow consumer guidance by getting advice from a REC, distinguish between product requirements, installation requirements, local network requirements and consumer-use controls;
- identify where UK or European findings can be relied upon to reduce the test effort. Otherwise, Ireland-specific testing or assessment is a reasonable requirement; and
- produce a structured standards gap register with evidence, risk significance, proposed mitigation and responsible stakeholder.

3.2 Product Safety Assessment

A Product Safety Assessment shall be completed for each Phase of Work.

The Product Safety Assessment shall determine whether (Phase 1) plug-in solar or (Phase 2) plug-in battery products likely to be marketed in Ireland can operate safely when connected to domestic installations as plug-and-play rather than requiring the involvement of external parties for building upgrades or sign-off. It will also assess whether Ireland-specific minimum product requirements are required. The assessment shall cover a minimum number of representative commercially available products (three in the case of plug-in solar and six in the case of plug-in battery), including products compliant with, or equivalent to, the UK Interim Product Specification for Plug-In-Solar; and products intended for connection through standard domestic socket-outlets. It is to be assumed that there shall be a limit of one plug-in system per user.

The assessment shall address, at a minimum:

- anti-islanding and loss-of-mains performance;
- prevention of hazardous live plug pins and accessible conductive parts;
- residual direct-current behaviour and the performance of residual-current protection;
- electromagnetic compatibility and interaction with other equipment;
- overload, short-circuit and back feed conditions;
- temperature rise, thermal endurance and fire-related hazards;
- product fault conditions and foreseeable single-fault failures;
- plug, cable, connector and inverter protection arrangements;
- labelling, user instructions, warnings and product traceability; and
- the effectiveness of any proposed current-limiting, interlocking or smart-inverter controls.

3.3. Irish Housing and Installation Safety

The purpose of the Installation Safety Assessments is to evaluate how (Phase 1) plug-in solar and (Phase 2) plug-in battery technologies interact with representative Irish domestic electrical installations, including modern and legacy wiring systems, protection devices, socket circuits and consumer units. The Phase 1 and Phase 2 assessments should consider the diversity of Ireland's housing stock and electrical installations, recognising that installation standards, equipment age and previous alterations may vary significantly between properties. Assessment should consider retrofit measures, building extensions and uncertified electrical modifications commonly encountered within Irish housing stock.

- Particular attention should be given to the suitability of existing circuits (which are not modified in any way), the operation of protection devices under reverse power-flow conditions, the interaction with other low-carbon technologies and the potential impact of customer behaviour on overall safety outcomes. The assessment should also examine whether any installation characteristics may warrant additional measures, guidance or professional assessment.

The assessment should include:

- Representative Irish domestic electrical installations;
- Customer-side wiring arrangements;

- Final circuits;
- Socket outlet circuits;
- Protection devices. (RCDs, RCBOs, etc.) that align with step changes in IS 10101: Pre-ET 101:2008 installations; ET 101 installations; I.S. 10101-compliant installations.
- Consumer units; and
- Existing low-carbon technologies (including EV charging).

The study should recognise that many of the risks identified internationally relate not only to the product itself but also to the installation into which the product is connected.

Category	Minimum coverage
Housing types	Detached, semi-detached and terraced dwellings; apartments; modular homes; and other relevant dwelling forms.
Installation age	Pre-ET 101:2008 installations; ET 101 installations; I.S. 10101-compliant installations (enabling safe deployment in Irish homes); and recently constructed dwellings, e.g. those that support EV charging.
Circuit topology	Radial final circuits; ring-final circuits where encountered; shared socket circuits; outdoor circuits (IP56 compliant and typical DIY non-compliant);
Protective arrangements	RCDs, RCBOs, MCBs, legacy protection devices, fuse-based systems and legacy consumer units.
Other technologies	Existing solar PV, batteries, electric-vehicle charging, heat pumps and other low-carbon technologies.

Table 2: Housing and Installation Characteristics

3.4 Installation and Electrical Safety Assessment

The Installation Safety Assessment(s) shall evaluate how (Phase 1) plug-in solar and (Phase 2) plug-in batteries interact with representative Irish domestic installations. Particular attention shall be given to circuit loading, reverse power flow, operation and coordination of protective devices, socket and plug conditions, earthing arrangements, customer behaviour and simultaneous operation with household loads or other low-carbon technologies.

3.4.1 Circuit-loading scenarios

These scenarios shall at a minimum include:

- normal operation across representative load profiles;
- high-load and low-load conditions;
- reverse power flow and back feed;
- simultaneous use with household appliances;
- one device per premises;
- high ambient temperature;
- one device per final circuit; and
- multiple plug-in solar or plug-in battery aggregation, including foreseeable non-compliant use.

3.4.2 Protection and fault scenarios

The minimum protection and fault scenarios shall include:

- operation of RCDs, RCBOs, MCBs and legacy protection arrangements;

- product and inverter failures;
- wiring and socket faults;
- loss of mains and anti-islanding response;
- earth faults and open-neutral faults;
- short-circuit conditions within domestic wiring;
- conditions in which conventional non-bidirectional protective devices may not provide the expected speed of response and protection action;
- residual current behaviour during normal operation and fault conditions, including earth leakage currents, DC residual currents, cumulative leakage from multiple devices and the response of protective devices (e.g. Type AC and Type A etc.) commonly encountered in Irish domestic installations; and
- Operation under representative TN-C-S, TN-S and TT earthing arrangements found in Irish domestic installations.

3.4.3 Socket and connection arrangements

The minimum arrangements for socket and connections shall include:

- radial and ring-final circuits;
- standard indoor sockets and outdoor sockets (e.g. IP56-rated) arrangements;
- shared socket circuits;
- damaged, loose or thermally degraded sockets; and
- connection accessories, adaptors and extension devices;

3.5 Mandatory Laboratory Test Programme

Testing shall be undertaken by, or under the direct control of, a laboratory accredited to ISO/IEC 17025 for the relevant activities. The Tenderer shall propose a detailed test matrix at tender stage. The final matrix will be agreed with DCEE during inception but shall not be less comprehensive than the mandatory baseline set out in this document in Appendix 2.

- commercially acquire and **test at least three representative plug-in solar** during Phase 1 and subsequently **six representative plug-in battery devices** during Phase 2 from more than one manufacturer;
- construct or configure test arrangements that replicate representative Irish radial circuits, socket-outlets, consumer units, protective devices and realistic domestic load profiles;
- test each system under normal operation and credible fault and misuse conditions;
- record complete test configurations, equipment, calibration status, raw data, measurements, observations, photographs and results;
- ensure that test procedures are repeatable and that departures from relevant standards are documented and justified;
- assess whether additional hardware, measures or operating restrictions materially mitigate identified risks; Identify under what circumstances the additional hardware becomes a necessary requirement rather than an optional extra. Outline the associated equipment and installation costs; and
- retain tested products and records for an agreed period following completion of the assignment.

Plug-In-Solar and Plug-in battery testing shall be treated as separately priced elements with each test assessment having its own minimum test matrix, deliverables and decision gate. The Tenderer shall clearly identify any dependencies between the solar and battery elements that may arise.

3.6 Customer Behaviour and Misuse Scenarios

The Phase 1 and Phase 2 assessments shall evaluate the likelihood, consequence and detectability (by home and plug-in protection) of foreseeable customer behaviour including misuse and shall identify proportionate mitigations.

While their use is not recommended, adaptors and extension cables are included for testing purposes. Scenarios shall include:

- use of extension leads, cable reels, multi-way adaptors or travel adaptors;
- connection to damaged, loose, unsuitable or poorly located sockets;
- connection of multiple devices within the same premises or final circuit;
- relocation of devices between sockets or properties;
- operation in wet, exposed, poorly ventilated or otherwise unsuitable locations;
- incorrect mounting, cable routing or mechanical restraint;
  and
- use of a product that is non-compliant, modified, counterfeit or outside its intended market.

3.7 Fire Safety Assessment

The study shall consider electrical and non-electrical fire risks associated with product location, mounting and use. The final scope of the Fire Safety Assessment will be agreed post Tender but should address balcony installations, attic, external-wall mounting, roof terraces, escape routes, photovoltaic cable routing, battery cable routing, type and chemistry of the batteries, product overheating, connection accessories, apartment developments and interaction with relevant Irish fire-safety guidance. The Tenderer shall engage with appropriate fire-safety and building-safety stakeholders where this would materially improve the assessment.

3.8 Registered Electrical Contractor (REC) Assessment

A specific output of the study shall be to identify if there are circumstances and what those circumstances are where the involvement of a Registered Electrical Contractor would be advisable or necessary.

4. Organisation of Work

The Tenderer shall conduct the workstreams separately for (Phase 1) plug-in solar and (Phase 2) plug-in battery. For Phase 2 ensure that the battery equivalent is considered.

Work -stream	Heading	Outline content
WS1	Evidence review and standards gap analysis See *Mandatory Test Matrix Tender Deliverables in the Appendix.*	DESNZ study; the suitability of the UK IPS v2.0 to be transitioned into an Irish equivalent; DIN VDE V 0126-95, IEC/CENELEC work, EU deployment evidence. I.S. EN 50549-1, ESBN conditions
WS2	Irish housing and installation characterisation. See *Mandatory Test Matrix Tender Deliverables T09*	Quantified installed base by dwelling age, earthing arrangement, consumer unit type, protective device type, circuit topology Proportion of stock per test configuration.
WS3	Laboratory test programme. See *Mandatory Test Matrix Tender Deliverables T01 to T10*	ISO/IEC 17025-accredited. Minimum three commercially procured plug-in solar devices, plus six plug-in batteries as a separate lot.

Work -stream	Heading	Outline content
		Note the Test Matrix, which is included in Appendix 2. Additional tests suggested by the tenderer may be considered.
WS4	Risk assessment and REC decision framework See *Mandatory Test Matrix Tender Deliverables T03 and T05*	Quantified risk register. Three-tier framework: self-connection acceptable / REC assessment recommended / REC assessment required. The analytical centre of the assignment.
WS5	Consumer guidance technical inputs. See *Mandatory Test Matrix Tender Deliverables T07*	Circuit identification, protective device identification and testing, prohibited uses including customer misuse scenarios, when to seek professional advice, visual guidance. For onward use by SEAI.
WS6	Standards, policy and implementation recommendations. See *Mandatory Test Matrix Tender Deliverables T6-T10*	Product specification content, registration, market surveillance, post-deployment monitoring. Stated limitations.

Table 3: Description of Workstreams

5. Deliverables and Indicative Timeline for each phase

The Tenderer shall provide the following deliverables separately for (Phase 1) plug-in solar and (Phase 2) plug-in battery. Each deliverable shall be concise, technically complete, suitable for review by the Working Group and provided in editable Microsoft Office (including Excel or other detailed results tables) formats, together with a publication-ready PDF where appropriate.

ID	Deliverable	Minimum content	Due
D1	Kick-off and inception report (WS1-WS6)	Confirmed methodology, governance, stakeholder plan, detailed programme, product-sourcing approach, risk register and agreed final test matrix.	Week 2
D2	Interim evidence and installation report (WS1-WS2)	W1 standards gap register; W2 Irish housing and installation characterisation; status, risks and dependencies for the remaining work packages.	Week 6
D3	Emerging findings presentation (WS3-WS6)	Structured presentation to the Working Group covering emerging findings.	Week 10

ID	Deliverable	Minimum content	Due
D4	Draft Technical Safety Report (WS3-WS5)	Laboratory methods and findings; full test data and rig schematics; product, installation, misuse and fire-risk assessment;	Week 16
D5	Final report packages and presentation (WS1-WS6)	Final integrated report(s); technical annex and raw data; Irish Housing and Installation Assessment; final risk register; REC decision framework; key recommendations for customer guidance documentation, standards and policy recommendations; executive presentation.	Week 20

Table 4: Description of Deliverables

The final report(s) should be issued in the successful Tenderer's name, signed by an appropriately qualified person preferably a Chartered Engineer and suitable for publication, subject to DCEE approval and any necessary redactions. The Irish Housing and Installation Assessment shall include documented input and sign-off from the appropriately qualified person. Technical findings shall remain the responsibility of the successful Tenderer. The phase 1 report (plug-in solar assessment)is the priority and should be completed first. The final report package shall include key inputs for customer guidance written in plain English.

5.1 Reporting and Ways of Working

- an initial kick-off meeting with DCEE and nominated stakeholders;
- fortnightly progress meetings, supported by a short written status report;
- maintenance of live action, decision, assumption, issue and risk log;
- timely escalation of matters that could affect safety, scope, programme or cost;
- structured stakeholder engagement agreed with DCEE; and
- a final presentation and question-and-answer session.

6. Mandatory Qualification Criteria

The following are mandatory pass/fail conditions. A Tender that does not demonstrate compliance may be excluded from further evaluation.

Requirement	Minimum condition
Project Director	A named and appropriately qualified person preferably a Chartered Engineer with at least 10 years' relevant experience in low-voltage electrical safety, protection, power systems or a closely related field.
Test Manager	Named specialist with at least five years' experience of relevant work in an accredited test laboratory.
Laboratory capability	Access to an ISO/IEC 17025-accredited laboratory, whether in-house or through a named subcontractor, with a scope appropriate to the proposed LV safety, protection, thermal and EMC activities.
Relevant experience	At least two reasonably comparable assignments completed within the previous five years, including at least one assignment that resulted in a published technical report.

Requirement	Minimum condition
Independence and publication	Acceptance of named attribution, professional sign-off and publication of the final report, subject to the contract and DCEE approval.
Conflicts of interest	Full declaration of actual, potential or perceived links to plug-in solar, battery, inverter, electrical-equipment, supply or installation interests, together with proposed mitigation measures.

Table 6: Qualification Criteria5

6.1 Core Skills and Expertise

- electrical engineering and low-voltage protection;
- domestic wiring systems and Irish electrical-installation practices;
- solar PV, microinverters and inverter-based generation;
- accredited laboratory testing, measurement and data analysis;
- product safety, electromagnetic compatibility and conformity assessment;
- fire, thermal and risk assessment;
- technical standards and regulatory compliance;
- consumer behaviour, human factors and safety communication; and
- project management and stakeholder engagement.

7. Quality and Performance Requirements

Performance measure	Target
Representative plug-in solar products tested	Minimum of three products, unless DCEE agrees a justified alternative during inception. (sourced at the cost of the contractor)
Representative plug-in battery products tested (if included as a separate lot)	Minimum of six products, unless DCEE agrees a justified alternative during inception. (sourced at the cost of the contractor)
Relevant requirements mapped	All standards and regulatory requirements identified as relevant in the agreed evidence plan.
Test arrangements validated	All test configurations validated for safety, repeatability and relevance before product testing begins.
Core safety categories completed	Each product tested against all applicable categories in the agreed mandatory test matrix.
Evidence traceability	All material conclusions linked to test evidence, published evidence, professional judgement or an explicitly stated assumption.
Issue escalation	Safety-critical findings notified to DCEE promptly and not deferred until a scheduled report.

Performance measure	Target
Deliverable quality	All deliverables quality-assured, internally reviewed and submitted by the agreed dates.

Table 6: Performance Requirements

8. Key Delivery Risks

Tenderers shall address the following known risks in their methodology and project risk register:

Risk area	Required consideration
Technical complexity	Testing may identify risks that cannot be mitigated without product modification, installation work or professional intervention.
Product sourcing	Delay, market change or inconsistent documentation may affect the procurement of representative products.
Test-rig and test-method validity	Test arrangements may fail to represent material features of Irish installations unless carefully designed and validated.
Regulatory uncertainty	Relevant standards or policy positions may evolve during the assignment, or stakeholder consensus may take longer than anticipated.
Consumer interpretation	Guidance may be misunderstood or may create false assurance unless usability, limitations and escalation routes are clear.
Programme and cost	Additional fault scenarios, repeat testing or stakeholder engagement may place pressure on the agreed programme and budget.

Table 7: Delivery Risks

9. Use of Artificial Intelligence

Any use of artificial intelligence in delivering the Services shall be disclosed to DCEE and documented in the relevant deliverable. Artificial intelligence shall not replace competent professional judgement in the design, conduct or interpretation of testing, in risk assessment, or in the formulation of technical or safety recommendations. The successful Tenderer shall verify all AI-assisted outputs and remain fully responsible for their accuracy, confidentiality, intellectual property compliance and fitness for purpose.

10. Tender Response Requirements

Tenderers shall submit a clear, self-contained response that demonstrates how the Services will be delivered. At a minimum, the response shall include the following for (Phase 1) plug-in solar and, if included, (Phase 2) plug-in battery:

- understanding of the Irish policy, technical, standards and market context;
- a detailed technical methodology mapped from Sections 3 to 10;
- the proposed products, test environments, test standards and test matrix;
- the rationale for the selected approach and any proposed additional activities;
- a project plan showing work packages, milestones, dependencies and decision points;
- team structure, named personnel, roles, effort and relevant experience;
- details of laboratories, facilities, equipment and subcontractors;
- quality assurance, data management, health and safety and project-control arrangements;
- a project risk register, including the three most significant delivery risks;

- a stakeholder-engagement plan;
- a clear statement of assumptions, exclusions and dependencies; and
- a separate price for Phase 2. Any proposed departure from this specification shall be identified explicitly and supported by reasoned technical justification.
- Qualifications and training of the proposed team

□□

Appendix 2: Mandatory Minimum Test Matrix

The purpose of the test matrix is to assess the interaction of (Phase 1) plug-in solar and then subsequently (Phase 2) plug-in battery technologies with representative Irish domestic electrical installations under normal operation, foreseeable misuse conditions and fault conditions.

The matrix represents the minimum testing requirement. Tenderers may propose additional testing but shall not omit any scenario contained within this matrix. For the (Phase 2) plug-in battery response , replace the plug-in solar below with plug-in batteries.

1 Installation Types

The following representative installation types shall be assessed.

Installation A - Modern Installation

- I.S. 10101 compliant installation.
- RCBO protected circuits.
- EV-ready dwelling.
- Modern consumer unit.

Installation B – ET 101 Installation

- Typical housing stock installed under previous ET 101 requirements.
- RCD and MCB based protection.

Installation C - Legacy Installation

- Older domestic installation.
- Older RCD technologies.
- Older protective devices.
- Representative wiring methods still encountered in Irish homes.

Installation D - Apartment Installation

- Apartment board arrangements.
- Shared metering environments.
- Apartment distribution arrangements.

2. Protection Device Assessment

For each installation type, evaluate:

RCD Types

- Type AC
- Type A
- Type F
- Type B (where applicable)

Assess:

- Tripping performance.
- Nuisance tripping (e.g. high local network voltage scenarios).
- DC blinding susceptibility.

- Bidirectional current effects.

3. Device Configurations

Test Configuration 1

- Single Plug-in Solar Device
- 300 W

Test Configuration 2

- Single Plug-in Solar Device
- 800 W

Test Configuration 3

- Multiple Devices
- One device per circuit.

Test Configuration 4

- Multiple Devices
- Multiple circuits in same premises.

Test Configuration 5

- Existing rooftop PV + plug-in solar.

Test Configuration 6

- Existing EV charger + plug-in solar.

Test Configuration 7

- Existing heat pump + plug-in solar.

4. Normal Operating Conditions

Assess:

No Household Load

- Minimum demand conditions.
- Export conditions.

Typical Household Load

Representative:

- Fridge.
- Internet router.
- Lighting.
- Electronic devices.

High Household Load

Representative:

- Kettle.
- Oven.
- Immersion.

- Appliances.
- High DC electronic loads

Measurements:

- Current flow.
- Voltage rise.
- Protective device behaviour.
- Conductor temperatures.
- Power quality.

5. Foreseeable Customer Misuse Scenarios

The following scenarios shall be tested.

Extension Lead

- Domestic extension lead.

Cable Reel

- Fully wound.
- Partially unwound.

Multi-way Adaptor

- Typical domestic adaptor.

Travel Adaptor

- Representative imported adaptor.

Damaged Socket

- Worn socket.
- Loose contacts.

Incorrect Outdoor Use

- Exposure scenarios.

Multiple Devices

- Same circuit.
- Multiple circuits.

Unapproved Accessories

- Consumer modifications.
- Third-party leads.

6. Fault Conditions

Loss of Mains

The following should be assessed under a loss of main condition:

- Anti-islanding performance.
- Shutdown times.

- Open Neutral
- Earth Fault
- Short Circuit
- RCD Failure
- Protective Device Failure
- Connector Failure
- Product Internal Fault
- Damaged Cable
- Residual current behaviour
- Earth leakage

7. Metering Assessment

There is a need to assess interaction with:

- Smart Meters
- Legacy Digital Meters
- Analogue Meters

Including:

- Reverse power flow.
- Meter behaviour.
- Meter safety.

8. Thermal Assessment

The following thermal assessment is required:

- Socket temperatures.
- Plug temperatures.
- Conductor temperatures.
- Protective device temperatures.
- Consumer unit temperatures.

Under:

- Normal operation.
- Sustained export.
- High ambient conditions.
- Misuse scenarios.

9. Product Assessment

At minimum assess the following needs to be assessed

- UK IPS-Compliant Product
- DIN VDE Product
- Representative Commercial Products

Including:

- Anti-islanding.
- Live pin protection.
- Residual DC leakage.
- Harmonics.
- EMC.
- Product fault behaviour.

10. Assessment of consumer-led plug-and-play Installation Option

Assess and confirm that the option is:

- Supported.
- Supported subject to conditions.
- Not supported.

And identify:

- Required mitigations.
- Residual risks.
- Customer guidance requirements.
- REC involvement requirements.

Mandatory Deliverables from Testing

- Full raw test results.
- Risk register.
- Traffic-light customer suitability framework.
- REC decision framework.
- Product requirements recommendations.
- Customer guidance recommendations.
- Recommendations on suitability of references to the UK IPS for Ireland.