

TECHNICAL AND PERFORMANCE SPECIFICATION

Asbestos Roof Removal, Insulated Roof Replacement, Solar PV, BESS and Smart Energy Control / SCADA

1. Performance Objective

The Contractor shall design and deliver one complete, coordinated and operational project through two sequential phases under a single Design and Build Works Contract. Phase 1 establishes a safe, weatherproof and PV-compatible roof. Phase 2 installs and commissions the renewable-energy, energy-storage and control systems. The Contractor remains responsible for both phases, all subcontractors and all technical and warranty interfaces.

Project Structure

Phase 1: asbestos removal and lawful disposal; removal of metal over-sheeting; structural inspection; insulated roof replacement; new gutters and downpipes; Phase 1 testing, records, warranties and Practical Completion.

Phase 2: Solar PV; BESS; Smart Energy Control / SCADA; web, desktop and smartphone interfaces; grid and generator integration; electrical works; commissioning, training and final handover.

The roof/PV interface shall be coordinated before Phase 1 materials are ordered. Roof-mounted Phase 2 work shall not commence until the Phase 1 hold point has been released in writing.

2. Verification and Measured Design Basis

The contractor shall base its tender on its own pre-tender measurements. The tender submission shall include a measured roof schedule and marked-up roof plan identifying each roof slope, roof area, ridge and verge lengths, gutter runs, downpipe locations, penetrations and principal access constraints. Approximate Club figures are 280 m² asbestos sheeting plus 550 m² asbestos sheeting beneath lightweight metal over-sheeting, giving approximately 830 m² in total.

3. Phase 1 - Asbestos Removal and Insulated Roof Replacement

3.1 Asbestos-Containing

- Remove all identified asbestos cement roof sheets, asbestos-containing gutters and asbestos-containing downpipes within the contract scope.
- Remove the lightweight metal over-sheeting above approximately 550 m² of asbestos roofing and dispose of or recycle non-asbestos materials lawfully.
- Use competent asbestos specialists and provide site-specific risk assessment, plan of work/method statement, training and competence records, notifications where legally required, emergency

arrangements and air monitoring/clearance arrangements where determined necessary by the risk assessment.

- Prevent breaking, uncontrolled release, contamination and unauthorised access. Package, label, store and transport asbestos waste in accordance with applicable requirements.
- Use an appropriately authorised waste carrier and authorised receiving facility.
- Provide an auditable chain of custody, waste transfer/consignment documentation, weighbridge or receipt records and final certificate confirming lawful disposal.
- Practical Completion will not be certified until all required asbestos and waste records are delivered.

3.2 Strip-Out

- Carefully remove existing coverings, fixings, flashings and redundant components.
- Protect the occupied premises and contents from weather and contamination.
- After exposure, inspect purlins, structural steel/timber and substrates; record corrosion, deterioration or defects and notify the Club before covering.
- Price separately any provisional allowance requested for structural repairs. Concealed defects not reasonably identifiable pre-tender shall be managed under the variation procedure.

3.3 New Insulated

- Insulated composite metal roof panel system suitable for the building use, coastal/industrial exposure as applicable and future solar PV loads.
- Minimum overall design life: 50 years, subject to stated inspection and maintenance requirements. Tenderers shall distinguish design life from manufacturer product and coating warranty periods.
- Thermal performance to meet applicable Building Regulations for the works; tenderers shall state panel thickness, insulation type, U-value and fire classification.
- Complete system to include ridge, verge, eaves, flashings, fillers, seals, laps, penetrations, fall protection interfaces and all weathering details.
- Design for applicable wind, snow, imposed and PV loads. Provide structural calculations and fixing schedules.
- Coordinate PV mounting to preserve roof and coating warranties and avoid all extra avoidable penetrations.

3.4 Gutters

- Remove and lawfully dispose of all existing asbestos-containing rainwater goods.
- Provide new gutters and downpipes generally at existing locations unless an approved improvement is necessary.
- Size the system by hydraulic calculation for the verified roof catchments and applicable rainfall intensity.
- State gutter profile, material, coating, outlet spacing, downpipe size and overflow strategy.
- Connect to existing drainage only after confirming suitability; identify any necessary changes or defects.

4. Phase 2 - Solar PV, BESS and Smart Energy Control / SCADA

4.1 Solar PV

- Maximise feasible PV capacity on the renewed principal roof, subject to structural, access, fire, shading and grid constraints.
- Provide module layout, string design, annual yield model, losses, degradation, mounting and maintenance clearances.
- Use high-quality certified modules and compatible inverters with product and performance warranties.
- Provide isolation, protection, surge protection, labelling, monitoring and safe access.

4.2 Battery

- Indicative usable capacity: 300 to 400 kWh; any alternative must be justified by load and economic modelling.
- Continuous output suitable for the approximately 120 kVA present high-load scenario with a clear modular route toward approximately 180 kVA future load.
- State nominal/usable kWh, continuous/peak kW and kVA, duration, round-trip efficiency, cycle life, degradation and end-of-warranty capacity.
- LFP chemistry preferred unless an equivalent or safer system is justified.
- Include Battery Management System (BMS), isolation, emergency stop, thermal management, fire detection/mitigation, enclosure(s) rating and relevant certification.

4.3 Load Information

Scenario	Indicative demand
Approximately 2.5 pitches	78 kVA
First pitch added	Additional 42 kVA; approximately 120 kVA total
Future astro pitch	Potential additional 60 kVA; approximately 180 kVA total
Existing generator	Maximum approximately 90 kVA

All electrical load data shall be verified during detailed design. Tenderers shall clearly distinguish kVA, kW and kWh.

4.4 Smart Energy Control and Operating Functions

- Charge from PV and configurable low-cost/night-rate grid periods.
- Pre-charge to target state of charge before scheduled training nights, taking account of calendar and forecast irradiance where available.
- Supply clubhouse base load and floodlighting, peak-shave grid demand and optimise self-consumption.

- Export when technically, commercially and contractually permissible.
- Automatically start, warm up, connect, load-manage, cool down and stop the existing generator using configurable thresholds.
- Prevent generator overload and unsafe backfeed or paralleling.
- Provide manual override, safe fallback, alarm, communications-loss and restart behaviour.
- Provide desktop and mobile phone control applications/interfaces

4.5 UI, Data

- Secure web-based dashboard and smartphone app or equivalent mobile-responsive application.
- Real-time and historic energy-flow data, alarms, event logs and exportable data.
- Role-based permissions, secure authentication, MFA preferred, TLS encryption, controlled software updates and audit logging.
- Club ownership and export of operational data; disclose hosting location, retention, subscriptions, licences and exit arrangements.
- Secure transfer of administrator credentials at handover.

4.6 Electrical

- Complete single-line diagram, protection coordination, earthing, cable sizing, metering and control architecture.
- Identify ESB Networks connection route, export limitation, application dependencies and lead times.
- Include all cabling, switchgear, protection, metering, builders work, fire stopping, labels and making good.
- Survey existing generator controls and prove the final sequence through witnessed commissioning.

5. Phase Interface and Hold Point

The Contractor shall resolve the roof/PV interface before the Phase 1 roof system is ordered or installed. The coordinated design shall identify structural loads, fixing zones, cable routes, access requirements and the method of attaching the PV system without compromising the roof system.

Phase 1 shall achieve Practical Completion before roof-mounted Phase 2 installation begins. Phase 1 Practical Completion requires a safe and weatherproof roof, completed rainwater goods, asbestos and waste records, the measured as-built roof plan, test records and applicable warranties.

The Club will release the hold point in writing when the required Phase 1 information has been accepted. Release of the hold point does not transfer design responsibility to the Club. The Contractor remains responsible for ensuring that Phase 2 does not invalidate or reduce any Phase 1 roof, coating or workmanship warranty.

6. Testing and Handover

- Phase 1: roof inspection, water-tightness checks, rainwater-goods verification, asbestos and waste records, measured as-built roof plan and warranty documents.

- Phase 2: electrical certification and commissioning test records.
- Functional tests for PV charging, grid charging, BESS discharge, floodlights, export control, alarms and generator auto-start.
- As-built drawings, measured roof plan, O&M manuals, settings, cause-and-effect schedule, datasheets, certificates, waste records, warranties and training records.
- Training for at least two Club representatives.

7. Tenderer Returnables

Tenderers shall clearly identify each returnable as Phase 1, Phase 2 or common to both phases. A separate programme, price and completion period shall be provided for each phase, together with one integrated programme and overall Contract Sum.

Returnable	Tenderer response required
Measured roof schedule and marked-up plan	Yes - provide document/page reference
Asbestos specialist details and competence evidence	Yes - provide document/page reference
Asbestos methodology and waste route	Yes - provide document/page reference
Roof panel specification and 50-year design-life statement	Yes - provide document/page reference
Roof structural/loading and PV mounting method	Yes - provide document/page reference
Gutter/downpipe hydraulic sizing basis	Yes - provide document/page reference
PV design and yield	Yes - provide document/page reference
BESS sizing and performance	Yes - provide document/page reference
SCADA control philosophy and cybersecurity	Yes - provide document/page reference
SCADA & integration expert company/companies	Yes - provide document/page reference
Generator integration sequence	Yes - provide document/page reference
Programme and handover plan	Yes - provide document/page reference
Warranty and whole-life cost schedule	Yes - provide document/page reference

8. Reference Requirements

The works shall comply with applicable Irish law, HSA requirements, Building Regulations, ESB Networks requirements, relevant EN/IEC standards and manufacturer instructions. The tenderer remains responsible for identifying all requirements applicable to its design and work methods.

Sources for Regulatory Context

Health and Safety Authority: Asbestos Removal; Asbestos FAQs; Code of Practice for Safety in Roofwork.
Environmental Protection Agency: Best Practice Guidance for Handling Asbestos. Department of Enterprise, Tourism and Employment: Safety, Health and Welfare at Work (Construction) Regulations 2013 and Exposure to Asbestos (Amendment) Regulations 2025.