CASE STUDY

CORYTON BESS DEVELOPMENT PROJECT

CLIENT:
Green BESS Development Services

Since early 2024, Arthian has supported our client, Green BESS Development Services (GBDS), on the substantial works required to facilitate the installation of a new 11-22MW (tbc) Battery Energy Storage System (BESS) adjacent to upper-tier COMAH sites. Our involvement is ongoing and includes a wide range of services relevant to our SPEN framework appointment.

1 DEMOLITION OF STORAGE TANKS

- Preparation of a Pre-Construction Information (PCI) package for tendering to demolition contractors, including site walkover, reconnaissance and engineering review of existing site infrastructure.
- Production of demolition drawings highlighting scope, access, and laydown requirements.

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- Swept path analysis for site access planning.
- Preparation of a detailed Demolition Scope of Works, including:
    - Defined scope and extent of demolition.
    - Proposed construction sequence.
    - Client safety and site protocols.
    - Required documentation and contractor deliverables.
    - Isolation and clean-down requirements.
- Coordination of site visit with demolition contractor to refine the demolition strategy and outline programme.

2 NEW WORKSHOP BUILDING

RIBA Stage 1 – Preparation & Briefing

- Develop and refine GBDS's requirements in consultation with stakeholders.
- Assess availability and capacity of existing utilities (drainage, power, telecoms, water).
- Deliver a RIBA Stage 1 Briefing Report outlining building function and design intent.
- Collate existing site data and produce PCI documentation for the new build.

RIBA Stage 2 – Concept Design

- Architectural concept and layout design in line with RIBA Stage 1 findings.
- Development of a temporary workshop scheme.
- Produce a Basis of Design report for civil and structural elements, with hold points defined.
- Civil and structural scheme design, considering:
    - Blast-resistant structural performance.
    - Overhead gantry crane integration.
    - External works including drainage, hardstanding, and road tie-ins.
    - Re-use of existing foundations/pile caps where feasible.
- Generate scheme-level drawings and specifications.
- Designer's Risk Assessment (DRA) production.
- Geotechnical and geoenvironmental desk studies to inform design feasibility and planning.

3 EXISTING WORKSHOP – DEMOLITION & MODIFICATIONS

RIBA Stage 1 – Preparation & Briefing

- Site walkover, reconnaissance and engineering review of existing site buildings.
- Engage stakeholders to define demolition and modification requirements.
- Review utilities and identify necessary alterations.
- RIBA Stage 1 Briefing Report to establish scope, function, and design requirements.
- Collation of existing building data and PCI preparation.

RIBA Stage 2 – Concept Design

- Architectural concept layout addressing required modifications.
- Basis of Design report for civil and structural works with defined hold points.
- Scheme design for required structural modifications.
- Define scope for modification to building services (fire, power, lighting, telecoms, water).
- Scheme drawings, specifications, and DRA preparation.
- Supporting geotechnical/geoenvironmental studies.

4 SUPPLEMENTARY SCOPE OF WORKS

- Planning support and development of planning drawings for GIS Building and enlarged stores.
- Production of Heads-of-Terms drawings, including lease areas, site/CDM boundaries.
- Storage optimisation study, including moveable racking assessment and comparison with existing building.
- Site inspection to verify current storage and confirm dimensions for proposed alterations.
- Order of Magnitude (OOM) cost estimate for all planned construction activities (+/- 50%).

Tank Inspections and Clean-Down Preparation

- Structural inspection of tank access ladders for rooftop access.
- Dip level measurements to assess residual volumes in 2 tanks and associated bunds.
- Sampling and testing of materials to determine cleaning scope and costs.

Drainage Study

- Review of existing drainage arrangements and proposed design constraints.
- Identification of planning considerations, including local climate change allowances (Thurrock Council & EA).
- Establishment of permeable/impermeable areas and runoff rate calculations.
- Outline SuDS treatment strategy and preliminary drainage network design.
- Feasibility report summarising conclusions and recommendations.

5 SITE SURVEYS AND GROUND INVESTIGATION

- **PAS 128 Topographical and Utilities Survey** covering the BESS site and cable route.
- **Ground Investigation for Cable Route and Coryton Power Station**
    - Principal Designer Role during tender and GI phases.
    - GI scope definition and tendering to three specialist contractors.
    - Contractor selection recommendation to GBDS.
    - Onsite supervision, lab testing schedules, and review of factual reports.

Geotechnical Reporting

- Interpretative Geotechnical Investigation Report (GIR) for new GIS Substation (in line with Eurocode 7 and BS5930:2015):
    - Ground and groundwater profiling.
    - Derivation of characteristic soil parameters.
    - Recommendations for pile types and lengths.
    - Scaled exploratory hole plan and geological cross-sections.
    - Geotechnical risk assessment.
- Technical Note summarising GI and pile testing for New Store Building.
- Combined Geotechnical and Geo-environmental GIR for 400kV cable route:
    - Ground profiling and waste classification.
    - Assessment for HDD feasibility and in-situ resistivity testing.
    - Three detailed cross-sections and exploratory hole plan.
    - Geotechnical risk assessment.