



Case Study

Blyth

Project: Construction of a new high voltage substation, Northumberland

Client: Balfour Beatty

End User: EDF and Northern Power Grid

Services Provided: Civil Engineering
Building Construction

Summary:

Delivered the full civil engineering and building construction package, transforming a contaminated brownfield site into a compliant and operational high-voltage substation.

Scope of Works:

- Brownfield groundworks and remediation, managing asbestos and chromate contamination to prepare the site for safe construction.
- Construction of two new control buildings, comprising reinforced concrete and steel-framed structures with composite roofing, blockwork and full internal fit-out.
- High-voltage infrastructure works, including equipment foundations, ducting and integrated earthing systems to support transformers and associated plant.
- Environmental protection systems, incorporating oil containment drainage with separator and penstock chambers, plus surface water drainage and pumping station connection to mains sewer.
- Perimeter security and boundary works, including electrified palisade fencing and a piled retaining wall to the existing ditch.
- External infrastructure and finishes, including access roads, paths, tarmac surfacing, gravel and a full external lighting scheme.

Project complexities, simplified by Alpha:

- Severely contaminated ground conditions, including asbestos and chromate, requiring controlled excavation, safe handling procedures and compliant disposal to enable safe development of the site.
- Simultaneous compliance with three separate technical specifications (Northern Power Grid, EDF and National Grid), requiring careful coordination and reconciliation of differing requirements.
- Integration of multiple building typologies and HV infrastructure within a single live project environment, ensuring alignment between civil, structural and electrical elements.



Project Outcome:

- ✓ **Transformed a contaminated brownfield site** into a fully operational HV substation.
- ✓ **Delivered full compliance** across three independent technical standards.
- ✓ **Integrated civil, structural and HV infrastructure** without interface conflict.
- ✓ **Installed robust environmental protection systems** to safeguard surrounding land and watercourses.
- ✓ **Provided a secure, durable and operationally ready facility** for long-term grid resilience.

