

Chipperlaigan GIB Substation

Client: Iberdrola Engineering and Construction

Location: Ayrshire, Scotland

Value: £1m

Duration: 10 Months



Barhale constructed numerous pad foundations as well as the platform build up



Barhale installed over 300m of palisade fencing around the new compound

In Brief...

Barhale's team in Scotland successfully delivered all civil works, including a new access road and substation platform, at the new Chipperlaigan GIB compound in Ayrshire, Scotland for Iberdrola Engineering and Construction.

The works were required to facilitate Iberdrola's need to upgrade their Kilmarnock to Coylton circuit. This overhead line cable circuit runs north to south between Kilmarnock and Coylton with a 'tee' connection at the Chipperlaigan site, which enables the circuit to link to the town of Ayr in the west. To accommodate a required increase in load flow, the existing cable at Chipperlaigan was replaced with a 275kV Gas Insulated Busbar (GIB) arrangement.

Technical Features...

To enable Iberdrola to deliver the necessary cable replacement, Barhale's team carried out the following works:

- Bulk earthworks, including a full topsoil surface strip and granular build-up of the platform and temporary compound areas
- Construction of a new access road, stretching from the existing road to the GIB compound
- Construction of 44no. reinforced concrete foundations to house the GIB compound equipment
- Installation of new 600mm diameter pipes to extend existing culvert out with the new works
- Installation of 56m of new 600mm x 600mm pre-cast cable troughs and covers
- Oversaw the installation of a new earthing grid by a certified sub-contractor
- Installation of new 3m tall palisade security fencing for a length of 320m around the perimeter of the new compound including vehicle and pedestrian gates
- Construction of a new footpath around perimeter of the platform
- Construction of new internal access road

Live Substation Working...

All works were carried out in a live environment. Several overhead lines spanned the new platform compound, along with two towers and a separate 275kV sealing end compound which remained a live area in the centre of the new platform compound throughout the duration of Barhale's works.

To prevent the risk of damage to the existing cables and structures, Barhale employed the following steps on site:

- All works were carried out in accordance with GS6 (avoiding danger from overhead power lines) and HSG47 (avoiding danger from underground services)
- Slew and height restrictors were applied to all excavators working on site – with warning signs and hazard goal posts erected in high risk areas
- Due to the close proximity of the live overhead and underground cables, the majority of the bulk excavation works around and adjacent to Towers XY 42/XY43 and the existing sealing compound area were carried out under a limited works certificate under direction from the stand by man
- The team obtained the required SPEN training and competencies prior to works commencing



Installation of pre-cast cable troughs and covers

Customer Benefits...

The Barhale team were integral in ensuring interface with various stakeholders and third parties was successful throughout the project. The team worked closely with other contractors, including the Overhead Line Teams and Balance of Plant Contractors who each had to carry out work within the GIB compound at the same time as Barhale. The team also liaised successfully with a local farmer whose house and land was situated just a couple of hundred yards away from the compound entrance, which meant he too required constant use of the hardcore access road.

To ensure these various site interfaces ran smoothly, Barhale helped develop a collaborative programme of works designed to suit the needs of all parties and maintained communication through regular meetings and on site discussions.