

# West Calder High School Phase 1 & 2 Mining Consolidation Works.

## Project Profile

**Client:** Morrison Construction

**Designer:** Arup

Phase 1: Value: £240,000,  
Duration: 10 weeks

Phase 2 Value: £480,000,  
Duration: 9 Weeks



This mine workings consolidation scheme was carried out to facilitate a school redevelopment programme and was completed in 2 phases to tie in with the build programme and the continued operation of the school. The scheme was let as a lump sum contract.

The project was designed to consolidate abandoned workings in the 'Broxburn' and 'Fells Shale' seams below the site as shown on the mine plan below.

- Phase 1 involved treating Areas 2 and 3 to facilitate construction of a new access off the A71 and crossing of the railway line.
- Phase 2 was the stabilisation of the building footprint of the new school.

Phase 1 - Area 2 required treating the workings beneath the existing railway line. This necessitated drilling arrays of inclined boreholes from drilling positions offset from the network rail boundary. The drilling positions and angles were designed so that the overburden was not disturbed within an agreed zone of influence from the track. Maximum angle under the railway line was 42 degrees.

Abandonment plans were available for both phases of the works and once the accuracy was proven by probe drilling some of the treatment holes were deleted in areas where no workings were evident.

### Summary of Quantities;

- Phase 1—Area 2.
  - ◇ 501 boreholes (12,079m), max depth 36m
  - ◇ 670 tonnes of 10:1 PFA/OPC grout injected
- Phase 1—Area 3.
  - ◇ 207 boreholes (5,794.5m), max depth 36m
  - ◇ 840 tonnes of 10:1 PFA/OPC grout injected
- Phase 2 - Area 1.
  - ◇ 1,238 boreholes (30,100m) , max depth 46m
  - ◇ 1,480T tonnes of 10:1 PFA/OPC grout injected.

4 rotary percussive drilling rigs were resourced for phase 1 with up to 7 rigs used on phase 2. Water flush drilling was used on both phases.

