

Mons Hill Limestone Mine Infilling, Dudley

Project Profile

Client: Dudley MBC

Value: £3.95m



This contract was negotiated with Dudley MBC/English Partnerships under a 'best value' approach following the successful completion of a series of similar competitively tendered contracts. The success of these contracts was assessed in an independent report for EP and measured tender cost, tender margin, outturn cost, methods of work, innovation, minimal disruption, environmental management, public relations, 'teamwork & partnering' and contract relationships.

The scheme involved infilling of 7 No. open and partially collapsed limestone galleries mined in Upper and Lower Wenlock Limestone. Mons Hill is a National Nature Reserve, Site of Special Scientific Interest (SSSI) and a Site of Importance for Nature Conservation (SINC) and this presented significant environmental considerations and access problems during the work which included;

- Drilling 125 No. high tolerance infill holes up to 90m deep, hole diameters 140mm and 200mm.
- Bulk infilling with 185,000 tonnes (dry weight) PFA paste to both dry and flooded galleries.
- Maintain mine water levels during infilling by pumping out displaced mine water from abstraction boreholes, re-using some of mine water in mixing process, the remainder being treated to remove suspended solids and discharged to sewer.
- Extensive use of angled holes (up to 60o) to accommodate the difficult terrain and areas of exclusion.
- Infill, grout and cap 4 No. mineshafts.
- Infill an access adit to the workings and a section of redundant underground canal which accessed some of the workings and was also partially collapsed.
- Site investigation to conjectured areas of mine by drilling 25 probe holes to prove the extent and condition of any workings.
- Use of down hole ultrasonic survey equipment to monitor mine condition, extent and infill progress.
- The main office and mixing compound were situated remotely from the works site. Infill paste and grout were mixed using computer controlled, continuous mixing plant and pumped up to 1,100m to injection points using three high output concrete pumps. All pipelines were laid on the surface in unobtrusive locations. 3 x 125mm dia. concrete pumping lines and 2 No. 125mm dia. mine water pumping mains returning to the mine water treatment facilities at main compound were used.



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Access to areas of the site were severely restricted and only two prepared access routes were allowed across the area with designated and prepared positions for drill holes. Specialist dual head drilling rigs were used to ensure accurate, clean hole drilling with all drill cuttings collected through cuttings collection systems for both dry and wet product (dust collector or enclosed skip).

Continuous liaison was carried out prior to and during the contract with the Client, English Nature, Dudley Metropolitan Borough Council Environment and Leisure Services department resulting in agreed sequences of work, drill hole and pipeline positioning, access routes construction and reinstatement to ensure minimal disturbance to existing flora, fauna, paths, tracks and badger setts and to generally keep to a minimum the intrusive impact of the scheme.

Extensive temporary infrastructure was required for the works compound which was fully tarmacadam surfaced, in order to cater for up to 80 nr 40 tonnes articulated vehicles per day delivering pfa & cement. This also required strict traffic management. The compound was surrounded by steel shipping containers, stacked 2 high, equipped with wheel wash and overhead water spray system to allow complete dust control. The PFA storage area allowed up to 3,000 tonnes to be stockpiled if necessary. PFA deliveries were managed to allow only minimal overnight or weekend storage.



The teamwork approach by Client, Client's Engineer and Contractor together with continuous involvement of key stakeholders ensured that this potentially difficult and sensitive contract was completed within budget and programme.