



Highbarns Chalk Mines Project

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Design Phase Ground Investigation



To date the following tasks have been completed for the design phase ground investigation works:

- a specification and tender documents have been prepared
- the works have been tendered
- a topographic survey has been undertaken across the site
- a Health and Safety Plan has been prepared



Design Phase Ground Investigation



- we have liaised with the Environment Agency and Veolia Water
- a Traffic Management Plan has been prepared
- condition surveys have been undertaken of those properties where exploratory holes are programmed either within their gardens or within immediately adjacent gardens
- a ground investigation contractor is currently being appointed



Design Phase Ground Investigation Fieldworks



The fieldworks is programmed to commence in early March and last for six weeks. The ground investigation is required to:

- refine the anticipated mine layout including the perimeter of the mine
- confirm conditions within the workings including the extent of open voids and collapsed ground
- refine the grouting drilling layout by confirming mine linkages
- install groundwater monitoring installations
- establish baseline groundwater quality as the site lies within a Groundwater Source Protection Zone



Design Phase Ground Investigation Fieldworks



The fieldworks will consists of:

- sinking approx 171 No dynamic probes to depths of approx 25m
- sinking 19 No boreholes to depths of approx 25m with downhole CCTV surveys
- sinking 4 No boreholes to depths of approx 35m with groundwater monitoring installations
- a grouting trial to confirm the treatment methodology



Design Phase Ground Investigation Fieldworks



A detailed method of working has been prepared to minimise disruption to residents:

- condition surveys have been undertaken and further condition surveys will be undertaken in April after the fieldworks
- the contractors' site compound will be located in the triangular area of public open space situated beside Pond Road
- holes will generally be located away from houses



Design Phase Ground Investigation Fieldworks



- close consultation with local residents as part of the scheme communications strategy
- no temporary evacuations of properties will be required
- access will be maintained as far as possible
- there will be no further road closures, only temporary partial lane closures in East Green and Pond Road



Design Phase Ground Investigation Fieldworks



- work will only be permitted between the hours of 0800 and 1800 hours, Monday to Friday
- the contractor will have a full time crew on site to carry out access works and reinstatement at each exploratory hole position
- where appropriate the contractor will use combinations of matting and boarding to protect gardens
- any unavoidable damage caused to properties will be reinstated



Design Phase Ground Investigation



Following the fieldworks the contractor will undertake laboratory testing and produce a factual report within a period of approx 5 weeks.

Hyder will interpret the findings of the ground investigation in May and produce a Geotechnical Interpretative Report and develop a 3-D Mine Model.



Remedial Works Design



Detailed design of the remedial works will take place in June and July and will include preparation of:

- a specification and construction drawings
- a Traffic Management Plan
- a H & S Plan and Designers Risk Assessment
- environmental plans

Environment Agency and Veolia Water agreement will also be obtained.



Contractor Procurement



Procurement of the remediation contractor will take place between June and September 2012 and will include:

- preparation of the tender documents
- issue of tenders
- tender evaluation
- appointment of the contractor



Treatment Works



The treatment works are programmed to start on site in late October 2012.

The main site works are expected to last 16 weeks and should be completed in March 2013.

Reinstatement, final validation and demobilisation will take a further month so all on-site works should be completed in April 2013.



Scheme Objectives



The principal project objectives are to:

- address the known H & S risks posed by the presence of shallow mineworkings
- allow the safe occupation of houses and to remove the need for monitoring
- remove the blight of the area due to the presence of shallow mineworkings to allow house sales and normal development



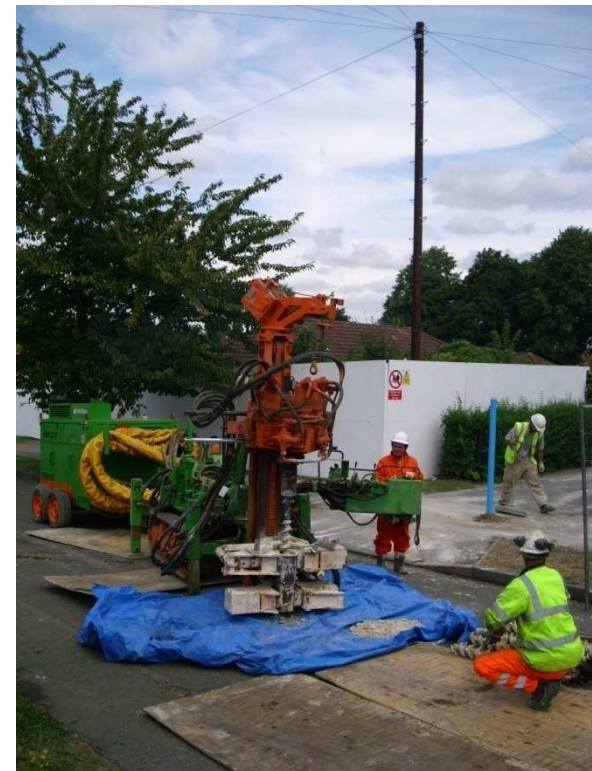
Proposed Treatment Works



Our Feasibility Study Report issued in July 2010 considered bulk infilling of open voids and compaction grouting of collapsed ground to be the only feasible solution.

Based on the risk assessment undertaken the proposed treatment is intended to address all significant long-term risks associated with the known mineworkings including:

- collapse of voids
- collapse settlements
- untreated shafts



Proposed Treatment Works



Disruption to residents will be minimised by:

- close consultation with local residents as part of the scheme communications strategy
- maintaining access as far as possible
- minimising the extent of any temporary evacuations, road closures or damage to the site
- adopting measures to control noise, vibration and dust by implementing an Environmental Management Plan



Proposed Treatment Works - Reinstatement



Condition surveys of properties will be undertaken before and after the treatment works to determine the extent of reinstatement required, such as:

- the cleaning of any grout damage to buildings
- reinstatement of gardens
- repairs to highways and pavements



Proposed Treatment Works - Validation



Detailed validation of the treatment works is proposed based on the 3D Mine Model.

- This model will be reviewed on site against drilling and grouting data in near real time to evaluate the treatment works in combination with validation tests
- This data will form the basis of the Validation Report for the site confirming that the works have met the objectives of the scheme
- A brief Validation Report will be produced for each property confirming treatment of the workings adjacent to the property



Summary



- The ground investigation fieldworks should last 6 weeks and should be complete in April.
- The extent of the mine should be known by the end of June.
- The site works for the main treatment works should last 16 weeks and should be complete by the end of March 2013.
- Reinstatement, final validation and demobilisation will take one further month so all site works should be complete by the end of April 2013.
- Brief validation reports should be issued in June 2013.

