

14th April 2021

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Our Ref: 41847R4/Issued/RevA

Wickersley Homes Limited
10 Fairleigh Drive
Moorgate
Rotherham
S60 2AX

Dear Sirs,

**FURTHER ASSESSMENT OF COAL MINING RISKS
209 HIGH STREET, ECCLESFIELD, SHEFFIELD, S. YORKSHIRE, S32 9XB**

Peak Environmental Solutions Limited (PESL) has been commissioned by Wickersley Homes Limited to assist with assessing coal mining legacy risks associated with a proposed additional bungalow dwelling at an ongoing residential development at 209 High Street in Ecclesfield, Sheffield, S32 9XB ('the site'). The site location is shown in the attached Figure 1.

A coal mining risk assessment (CMRA) and a probe drilling investigation have been previously undertaken by PESL and these works are reported in documents 41847R2/RevA/March2017 and 41847R3/RevA/March2019. These past two reports must be read in conjunction with this report.

Following the CMRA and drilling investigations, the development layout was extended to include a detached bungalow dwelling (Plot 6) in the eastern corner of the site. The amended proposed development layout is shown in the attached client supplied drawing.

A further assessment of the coal mining risk was required for Plot 6 as the probe drilling investigation detailed in 41847R3 did not include the eastern site area and there was a concern that the Mickley Thin Coal [known to be at a relatively shallow depth (<30m) beneath the site area] was at a very shallow depth (<10m) under the eastern end of the site. Although the probe drilling reported in 41847R3 did not identify any workings in the Mickley Thin Coal at ~20m depth in the western part of the site, there was the potential for a shallower seam at the eastern end of the site to have been worked.

This report provides the findings of two additional probe holes drilled in the vicinity of Plot 6 and provides an assessment of coal mining legacy risk for Plot 6, taking into account the findings of 41847R2 and 41847R3.

Summary of Limitations and Exceptions

The reader is assumed to be conversant with the development scheme, site investigation work, planning requirements and geological setting. Details of the work to date are provided in previous reports and detailed information on these aspects are not repeated in this report.

The report should only be used by competent persons for its intended purpose within the planning regime; no liability is accepted for any reliance placed upon it for any other uses or for use by any other parties unless specifically agreed in writing.

The report was finalised in April 2021 and should be read in the light of any subsequent changes in legislation, statutory requirements, statutory and non-statutory guidance, relevant research and industry practices. Information provided to or obtained by Peak Environmental Solutions has been relied upon in good faith. Drawings reproduced with permission. This report is subject to the our standard 2021 terms of business, our standard limitations & exceptions and the site-specific limitations & exceptions detailed in previous PESL reports.

Probe Drilling

The probe drilling was undertaken on the 7th/8th April 2021 by Stratigraphy Ground Engineers Limited and comprised two rotary water-flushed boreholes (BH-1 to BH-2) to depths of 20m below ground level (mbgl).

The drillers logs and a borehole location plan are provided in the Appendix, along with copies of the Coal Authority permit documentation to enter mining interests. The locations available for drilling were restricted by safe access being limited to the due to site levels along the northern boundary and services along the eastern boundary. No elevated ground gases were detected by the driller at the rig or borehole during drilling. On completion, the boreholes were backfilled by the driller with returns and sealed with bentonite pellets.

Ground Conditions and Associated Risks

Ground conditions at the two borehole locations were as expected and comprised ~1.2m of 'clay fill' overlying brown sandy clay to ~2 mbgl; the clay overburden is considered to represent either drift deposits and/or weathered Coal Measures. These overburden materials were underlain by between 5.2m to 6.5m of brown mudstone.

A single 0.3m thick intact coal seam (the expected Mickley Thin Coal) was encountered in both boreholes at depths between 7.2 mbgl and 8.7 mbgl. This is consistent with the expected shallowing of the seam eastwards across the site. Grey mudstone was identified beneath the coal in both boreholes extending to 20 mbgl.

No open voids were encountered, and there was no evidence of collapsed former mine workings ('broken ground') in any of the boreholes. The potential for ground/mine gas to be generated from the identified intact coal seam and to affect the development is considered to be negligible.

Proposed Mitigation Strategy

The following recommendations for the proposed mitigation strategy for Plot 6 mirrors the recommendations in 41847R3 and supersede the recommendations provided in 41847R2.

A thin (~0.3m) intact coal seam was identified at depths of 7 to 9 mbgl and there was no evidence of workings in the seam. The seam is considered to be the expected Mickley Thin Coal.

Given the identified absence of shallow workings in the Mickley Thin Coal across the whole site area, there are no specific requirements for mitigation measures to address potential risks in the revised development scheme with respect to surface ground movement from shallow workings or from mine gas.

As the site is located within a development high risk area, it is recommended that foundations for the Plot 6 structure be reinforced as a precautionary protective measure such that they are able to span 3.0m and cantilever 1.5m without support.

If coal is exposed in foundation excavations it should be blinded with concrete or sand cement mortar as soon as practicable after excavation.



The possibility of old un-recorded mine entries being present on-site cannot be ruled out. Care should be taken during ground works to observe conditions encountered. Any local areas of unusually deep made ground or other evidence of potential shafts or adits, such as brick or timber lining materials, should be investigated. If any unrecorded shafts or adits are encountered, following further risk assessment, the potential need for some further precautions, such as drilling and stabilisation of the entry and/or possible relocation of structures, should be assessed by a suitably qualified engineer.

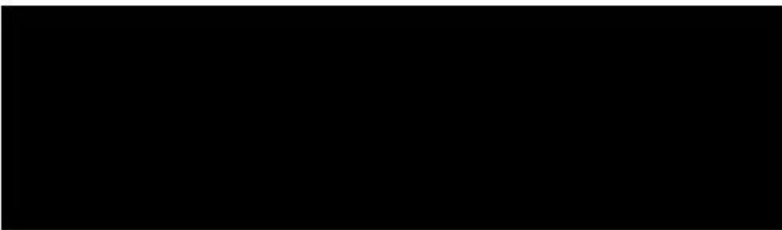
Providing the precautions outlined above are successfully implemented, the additional probe drilling works have shown no reason why shallow mining conditions would preclude safe development of the site for the proposed usage.

Closure

If you require any further information, please do not hesitate to contact us.

Yours sincerely,

For and on the behalf of Peak Environmental Solutions Limited



Christopher Dainton
Technical Director