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Our Ref: JC/ZEC/Grove Street Worsborough Barnsley SI

5th January 2019

The Coal Authority
200 Berry Hill
Mansfield

CC - Planning Department
Barnsley Council

Dear Sirs,

Plot of Land for 10 Dwellings - Grove Street Worsborough near Barnsley S70 4SN

Summary of Coal Mining Site Investigation November 26th to 3rd December 2018.

1.0 Introduction

1.1 The client LMW Developments Limited is applying for planning permission to build 10 houses on land that was formerly developed for housing in the past. As part of the preparation of the planning application the company have undertaken a site investigation of the coal mining risk to the development and applied for a permit to enter the coal seams beneath the site from the Coal Authority.

1.2 No planning permission has been granted yet for the erection of the dwellings and the applicant is undertaking the investigation of the site before submission of the planning application so all the details can be submitted. It would have been likely that a planning condition would be included that required an intrusive investigation is carried out on site to ascertain the depth to the shallow coal mine workings that may exist under the subject site due to the comments in the Coal Authority report appended to the MET Engineering phase 1 geo-environmental report.

1.2 It was decided to deal with the coal mining legacy issues identified in the Geo-environmental Report that concluded there are 3 coal seams that are within 30 metres of the surface which are the Meltonfield, the 2 Foot and the Winter or Abdy seam. The report contains responses from the Coal Authority and the South Yorkshire Mining Advisory Service (SYMAS) and this document discusses the outcrop of the Two Foot seam being near to the surface and the Abdy (Winter) outcropping to the south. A copy of the plan is included in appendix 3 of the coal

mining risk assessment, method statement and application for a permit to carry out a site investigation that will enter coal seams or mine workings. From the records of borings in the area the thickness of strata between the Wathwood (Meltonfield) seam and the Two Foot is 1.5 metres and the Two Foot to the Abdy is 20.6 metre and these have been taken from Wombwell Main Colliery Shaft Section that is included in appendix 4.

1.3 There was no evidence of the seams being worked as they are on the valley side falling from Bank End Road to the river Dove and West Street and the mines were located in the valley bottom to sink shafts to the Barnsley Seam and are shown on the first edition geological sheet included with the method statement.

1.4 Permission has been sought from the Coal Authority to undertake drilling into the coal seam horizons beneath the subject site for a depth of 30 metres to intersect the 2 Foot seam at 5 to 10 metres depth and then to 30 metres to check if there are deeper seams such as the Abdy / Winter (Scale) Coal as a number of seams exist close together in the Worsborough area. Geological map 274 SE in appendix B of this short report shows the shafts for Darley Dale Colliery and the depth to the Barnsley seam being 130 Yards. The Winter seam, 2 Foot and Meltonfield (Wathwood) seam are further up the hill from Darley Dale Colliery so this mine would not have worked those coal seams. There was residential development in the area between Bank End Road and Grove Street at the time which was between 1851 and 1866 so it is likely that the properties would have prevented coal mining at shallow depth due to the development and the surrounding land use which appears to be market gardening.

1.6 A permit was issued by the Coal Authority with reference number 16954 that permitted 5 boreholes to be drilled to 30 metres using water flush to investigate the ground conditions and the depth to the coal seams and whether they have been worked by pillar and stall methods. The as drilled location is shown on the plan in appendix A.

1.7 It was decided to drill the first hole to 30 metres to intersect the coal seams to that depth and if the seams were shallower then drill the other boreholes until that lower seam was drilled through into the seat earth. On site it was decided to drill the boreholes to 30 metres except for borehole number 5 as the seam was intersected at 19.5 metres, the same horizon as borehole number 4. The driller's logs are included in appendix A.

1.8 The strata beneath the site was solid and no coal mining was evident as the seams were intact in all boreholes. Mine gas readings were taken at each hole and there were no emissions of methane or carbon dioxide. The air pressure was 982 mb to 1002 mb over the period of drilling from the 26th November to 3rd December 2018. The gas readings are included in appendix C

2.0 Method

2.1 The layout of boreholes were drilled in or near the footprint of the proposed dwellings to be located on site to inspect the ground conditions and provide information to design the foundations of the houses to avoid differential settlement. The boreholes

were drilled near to the locations of the trial pits excavated for the phase 2 risk assessment on contamination and the ground conditions at foundation level.

2.2 The boreholes were drilled using water flush to prevent spontaneous combustion of the coal whilst drilling and the sample chips inspected from a small sieve to assess the type of strata. Coal tends to form a black film on the water in the tank when drilling so is easily identified. Gas readings were taken on each drill rod change to check for mine gases. Water flush was used to prevent air being introduced as flushing medium in the hole.

2.3 5 trial pits had been excavated on the site as part of the assessment of the ground conditions, the geology at the surface and any evidence of contamination due to past uses of the land as required by conditions in a planning permission. The trial pits were excavated in the footprints of the previous housing plots 7 metres from the back of the footpath on Grove Street and competent ground consisting of mudstone was found at 2 metres. The ground above was foundations for the previous houses and demolition soil.

2.4 The trial pits have confirmed the condition of the ground and there was no sign of mining as there would be a distinct difference in the ground if it has been subjected to void migration from old coal mine workings to the undisturbed ground of exposed coal measures strata.

2.5 No further assessment will be undertaken now the coal mine drilling is concluded and the seams are intact and there is no evidence of shallow mine workings in the three seams identified in the method statement and on the first edition geology sheet. From the information available it is clear no mining has taken place under the site and the coal seams are intact. Any deeper mining in the Barnsley seam and working from Barrow Colliery will have caused subsidence but this will have ceased 25 years ago.

2.7 Gas readings for methane and carbon di-oxide have been taken on site in the drains, sumps and manholes whilst site investigation works were being undertaken to assess if there is mine gas migrating to the surface from old workings through the strata to the surface. It is unlikely that mine gas will migrate through the overlying strata of mudstone and clay now that the drilling has proved the seams to be intact and there is no pathway from the seam horizons to the surface. The trial pits were not monitored for gas emissions using a gas monitor due to the rain and slight breeze on the day the trial pits were excavated, 12th October 2018.

2.8 Now the site investigation has been completed the foundations of the houses can be designed and it is likely to be strip footings as the ground is not disturbed. The clay is a stiff competent grey mudstone beneath the made ground which is demolition fines from the previous social housing development.

3.0 Conclusion

3.1 The published information for the site and the abandonment plans for Barrow Colliery have been examined of all the recorded underground workings on the 2nd October 2018 at the Mine Heritage Centre at the Coal Authority in Mansfield. The

abandonment plans show the faults either side of Grove Street that will have acted as a barrier to early working and have been proved at depth on the plans of Barrow Colliery.

3.2 The Geoennvironmental Report and advice from SYMAS informed the mining engineer of the presence of three seams within 30 metres of the surface and the site investigation was designed around that information to intersect each coal mine horizon.

3.3 Five boreholes have been drilled on site and intact 600 mm coal seams were found at 9 metres and 19 metres beneath the site. The strata is mudstone and sandstone and competent and there are no faults within the site according to the geological map and the drilling records.

3.4 In conclusion there are no ground condition problems on the site and the foundations can be set on competent coal measures strata found at a depth of 1.2 metres.

Signed

John Carlon

Eur Ing John Carlon B.Eng(Hons) C.Eng MIMMM MRICS MCIWM MIQ MCInstCES

Principal Mining Engineer.

APPENDIX – A

BLOCK PLAN OF THE SITE WITH BOREHOLE LOCATIONS AS DRILLED ON SITE ON 26th NOVEMBER 2018 & DRILLER'S LOGS

APPENDIX B – Geology Map 274

Figure 1 showing the 1st Edition Geology Sheet 274 with the site shown by the red arrow. Note the shaft to the south west of the site is possibly Darley Main Pit. Note it is130 yards to the Barnsley Coal and the Winter Coal is further up the hill from the Colliery so cannot have been worked from this colliery. Note the fault to the east that throws the Rock down and displaces the 3 seams south.

APPENDIX C – GAS MONITORING