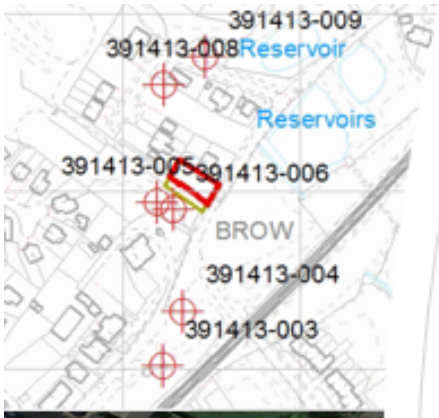







EARTH ENVIRONMENTAL & GEOTECHNICAL

Coal Mining Risk Assessment

137 Belfield Lane

Rochdale

July 2020

On behalf of

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COAL MINING RISK ASSESSMENT

137 BELFIELD LANE

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FOR

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Report No. A3539/20 **JULY 2020**

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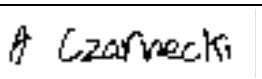
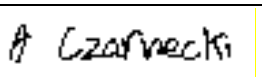
Reviewed By:	**A Czarnecki BSc (Hons) CGeol**	
Authorised By:	**A Czarnecki BSc (Hons) CGeol**	

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EARTH ENVIRONMENTAL & GEOTECHNICAL

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1.0 INTRODUCTION

Appointment

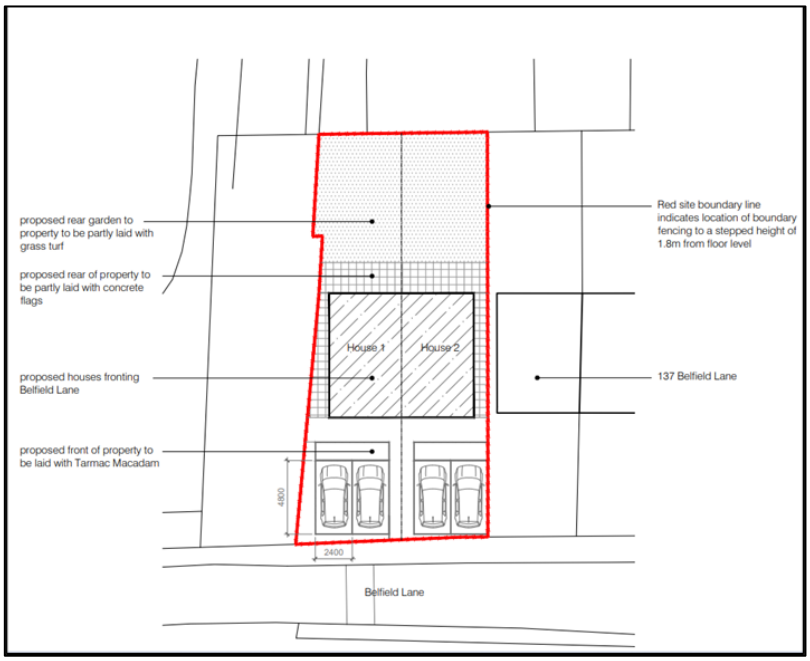
1.1 Earth Environmental & Geotechnical Ltd have been commissioned by Octopus Architects on behalf of Future Construction AA Ltd (the Client), to undertake a Coal Mining Risk Assessment for the proposed development on the land to the north west of Belfield Lane, Rochdale, Greater Manchester.

1.2 It is understood that the client wish to construct two new semi-detached properties on the 340m^2 plot adjacent to 137 Belfield Lane. The development will consist of two double storey houses, two hardstanding car parks, each with spaces for two vehicles, and a rear grass turf garden partly laid with concrete flags.

1.3 Site access will be from the south east of the site just off Belfield Lane.

1.4 A proposed development plan has been provided and is shown as Figure 1.

Figure 1 Development Layout Plan



1.5 This Coal Mining Risk Assessment is required to accompany a planning application to Rochdale Metropolitan Borough Council.

Objective

1.6 The purpose of the Coal Mining Risk Assessment is to collate available geological, mining and historical data in order to assess the potential for the site to be affected by underground mining. This report has been drafted in accordance with the Coal Authority (CA) Coal Mining Risk Assessment Template, January 2011.

Sources of Information

1.7 The Coal Mining Risk Assessment compiles a review of the following information sources:

- British Geological Survey Online Map Viewer
- British Geological Survey of England, Rochdale Sheet 76, 1/50,000, 2008 edition.
- British Geological Survey of England, SD91SW, 1/10,000, 2003 edition.
- Coal Authority Interactive Map Viewer.
- Coal Authority Mining Report.
- British Geological Survey online borehole records.
- Google Earth imagery.
- Online Historical Ordnance Survey maps.
- Site Investigations in Areas of Mining Subsidence, FG Bell, 1975.
- The threat of abandoned mines on the stability of urban areas, Barry Clarke, IAEG2006 Paper Number 379, The Geological Society of London, 2006.
- The collapse of shallow coal mine workings, Durham theses, Durham University, Garrard, 1981.
- Construction over abandoned mineworking's, CIRIA Special Publication 32, 2002.
- Abandoned Mineworking's Manual, CIRIA 2019.
- Rochdale Borough Council planning portal.

2.0 SITE LOCATION AND DESCRIPTION

2.1 The site is located at 137 Belfield Lane, Rochdale, Greater Manchester approximately 61m north of the railway line and 1.6 mile from Rochdale Town Centre. The approximate National Grid Reference for the site is SD 912136 (X: 391231, Y: 413664) with the closest postcode being OL16 2UU.

2.2 The site is vacant land approximately rectangular in shape with a perimeter of 80.7m. Current access is gained via Belfield Lane to the south east of the site. The site occupies a plot of approximately 0.03hectares.

2.3 The surrounding area comprises predominantly of residential dwellings to the north of Belfield Lane. To the north of the site boundary lies a pre-existing residential property and to the south lies a woodland area.

2.4 A location plan is shown below as Figure 2 together with a site photograph as Figure 3 (overleaf).

Figure 2 Site Location Plan



Figure 3 Site Photograph



3.0 ASSESSMENT OF DATA

Geological Information

3.1 The geology of the site has been determined from geological maps for the area and examination of Coal Authority (CA) records.

British Geological Survey Published Data Assessment

3.2 The site is underlain by superficial deposits consisting of Alluvium and Diamicton Till.

3.3 The solid geology beneath the site is shown to be the Pennine Lower Coal Measures Formation consisting of coal seams, sandstone, siltstone and mudstone.

3.4 There are BGS borehole records (Figure 4) that allow for further assessment of the local geology.

Figure 4 BGS Boreholes



3.5 Borehole SD91SW185 located 8m south east of the site, encountered the following sequence.

Made ground to 1.4m.

Firm to Stiff Clay to 3.6m.

Loose Sand to 5.5m.

Very stiff clay to the base of the borehole at 7.4m.

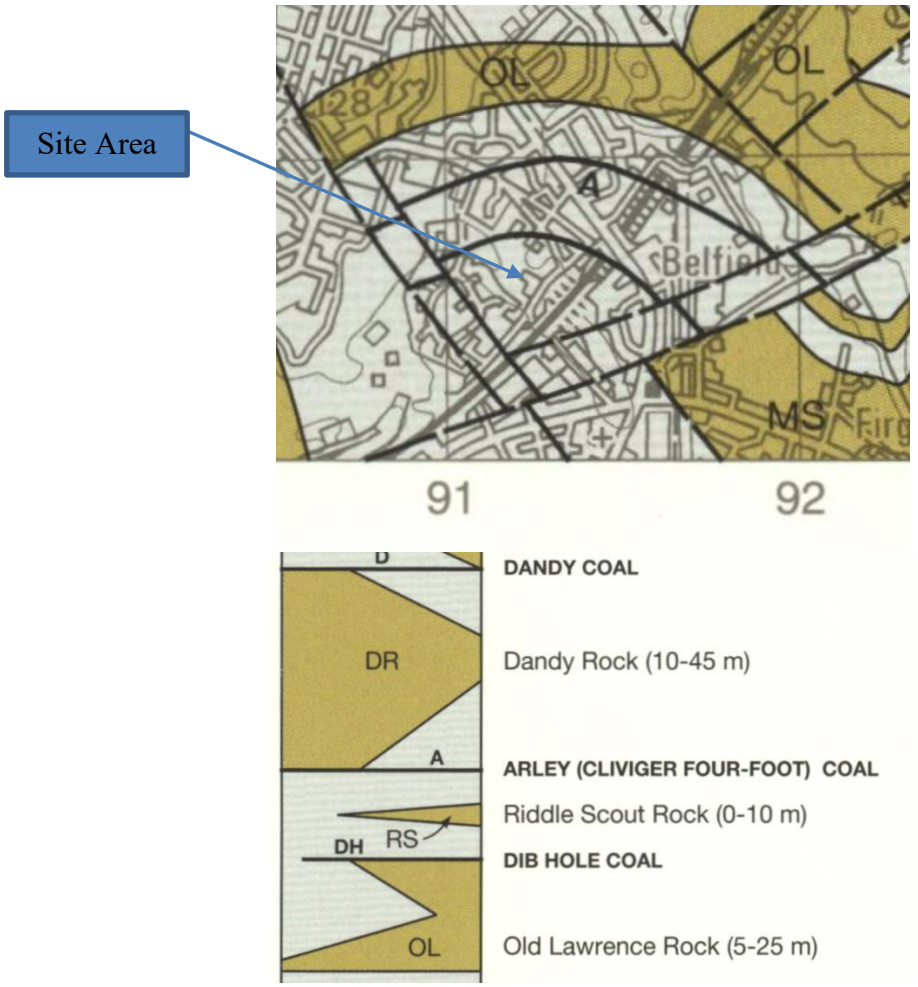
3.6 Mudstone rockhead was found in SD91SW181 at a depth of 7.3m.

3.7 Siltstone rockhead was found in SD91SW181 at a depth of 8.7m.

3.8 An extract from the most recently published geological map showing the approximate site location and key local geological features are presented below in Figure 5.

3.9 The inferred regional dip of strata is to the south, with the Arley and Dandy coal seam outcropping to the north of the site.

Figure 5 Geology Map Extract



Coal Authority Records

3.10 Reference to the Coal Authority Online Interactive viewer shows the site to be located within a Development High Risk Area but not within an area of Probable Shallow Coal Mineworkings.

3.11 The Development High Risk area is associated with the abandoned mineshafts.

3.12 A Coal Authority Mining Report (extract shown as Figure 6) has been acquired for the site and reveals that there are proven records of past underground mine workings beneath the site, with the shallowest seam beneath the site being the Arley Coal Seam. The 1.3m thick coal seam was last mined in 1877 at a depth of 85m. The seam dips at 12.5 degrees to the south.

3.13 There are no coal seams outcropping on the site.

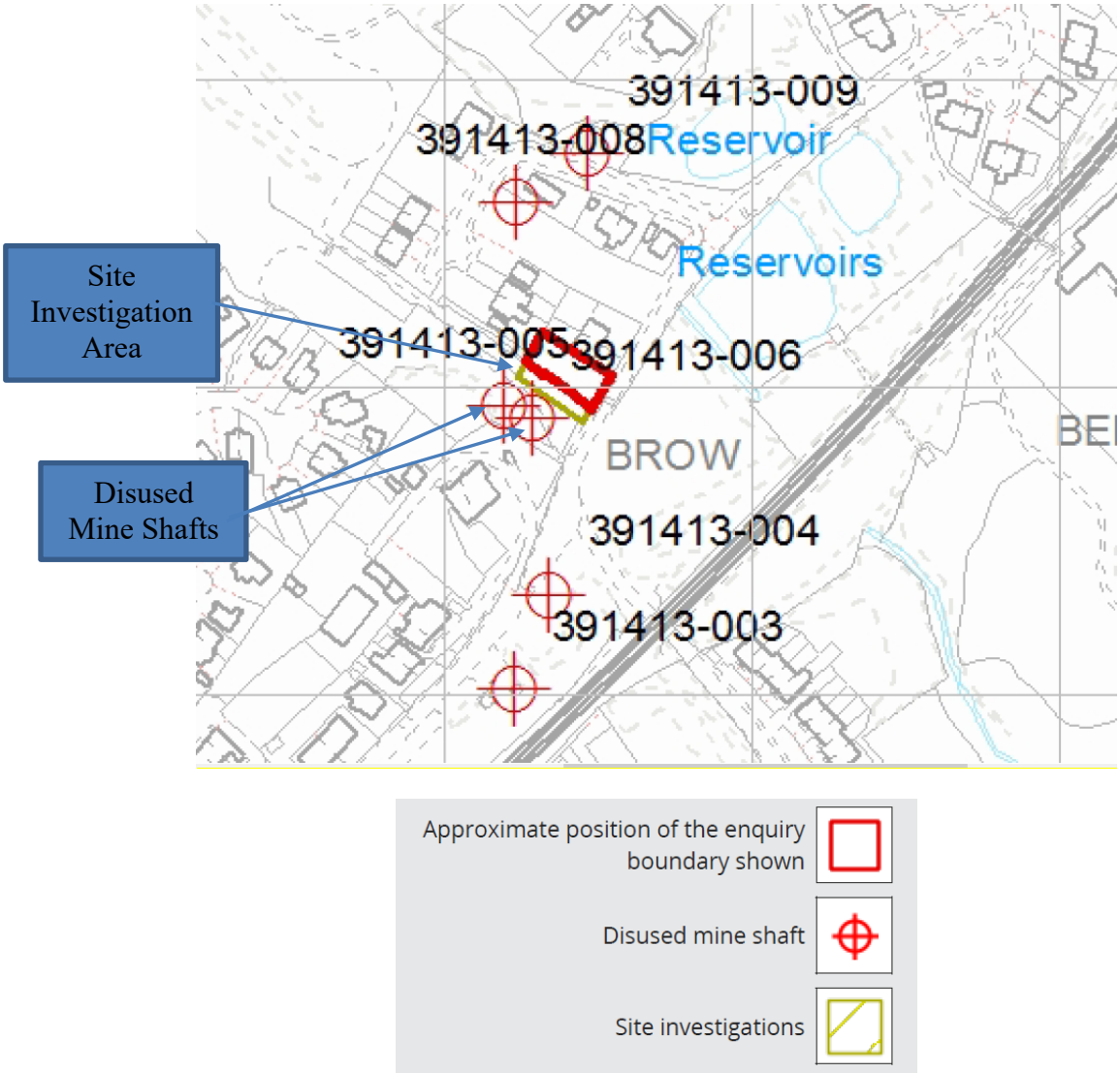
3.14 There are no records of any managed tips, remediated sites, areas of coal mining subsidence within 50m of the site.

3.15 A number of abandoned mine shafts are located close to the site, the two closest are 391413-005 and 391413-006.

3.16 391413-005 was searched for in 1976 but was not found at its plotted position. Figure 6 shows the site investigation area. The record has a departure (plotted accuracy) of 8m.

3.17 391413-006 was treated and capped in 1977 with a central pyramid marker. The mine shaft diameter is 1.5m and has a recorded depth of 30m.

Figure 6 Coal Authority Map Extract



Historical information

3.18 The available historical plans dating back to 1851 show no coal mining features on the site.

4.0 COAL MINING RISK ASSESSMENT

Scope of Coal Mining Risk Assessment

4.1 Objectives of the coal mining risk assessment are to provide a desk-based assessment of available geological and mining information relating to the site (and wider area) and to use this information so as to identify risks present to the development from the legacy of mining.

4.2 As part of the risk assessment, potential mitigation measures (if required) should be considered, including any necessary remedial works.

4.3 The outcome of the risk assessment should demonstrate to the Local Authority that the proposed development is or can be made safe (and stable) to meet the requirements of the National Planning Policy Framework (NPPF).

Data Limitations

4.4 It should be appreciated that it did not become a legal requirement to deposit coal mining abandonment plans until the 1870's and that this requirement was not rigorously enforced for some time after. Many shallow coal seams were worked prior to the introduction of first edition Ordnance Survey Maps and information on these workings is often not available. Therefore, if coal seams were accessible then there is the potential that they could have been worked by formal or informal means.

4.5 It is also possible that if unrecorded workings are present then unrecorded mine entries may be present.

Coal Mining Risks

4.6 The risks associated with coal mining are as follows:

- Collapse of relict workings beneath buildings causing damage to the building fabric and infrastructure.
- Migration of mine gases from old mine workings and mine entries resulting in accumulation of flammable and asphyxiating gases in confined areas.
- Consolidation of relict workings and overlying strata causing structural defects in building fabric and infrastructure.
- Failure of mine entries causing loss of ground beneath building and external areas.
- Spontaneous combustion of old mine workings.

Conclusions

4.7 The development area lies on the margin of a Coal Authority Development High Risk Area but not within an area of shallow probable workings.

4.8 The Development High Risk Area is due to two abandoned coal mine shafts located offsite.

4.9 391413-005 was searched for in 1976 but was not found at its plotted position. It is therefore not located on the site.

4.10 391413-006 was treated and capped in 1977 with a central pyramid marker emplaced.

Proposed Mitigation Strategy

4.11 There is no risk to the development from coal mining activity.

4.12 This report should allow for planning permission to be granted with relevant conditions.

APPENDIX 1

COAL AUTHORITY MINING REPORT

APPENDIX 2

REPORT LIMITATIONS

REPORT LIMITATIONS

This contract was completed by Earth Environmental & Geotechnical Ltd on the basis of a defined programme and scope of works and terms and conditions agreed with the client. This report was compiled with all reasonable skill, and care, bearing in mind the project objectives, the agreed scope of works, the prevailing site conditions, the budget and staff resources allocated to the project.

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The report was written in 2020 and should be read in light of any subsequent changes in legislation, statutory requirements and industry best practices. Ground conditions can also change over time and further investigations or assessment should be made if there is any significant delay in acting on the findings of this report. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of Earth Environmental & Geotechnical Ltd. In the absence of such written advice of Earth Environmental & Geotechnical Ltd, reliance on the report in the future shall be at the client's own and sole risk. Should Earth Environmental & Geotechnical Ltd be requested to review the report in the future, Earth Environmental & Geotechnical Ltd shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between Earth Environmental & Geotechnical Ltd and the client.

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The services are based upon Earth Environmental & Geotechnical Ltd observations of existing physical conditions at the site gained from a walkover survey of the site together with Earth Environmental & Geotechnical Ltd interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The findings and recommendations contained in this report are based in part upon information provided by third parties, and whilst Earth Environmental & Geotechnical Ltd have no reason to doubt the accuracy and that it has been provided in full from those it was requested from, the items relied on have not been verified.

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Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions can also be variable and as investigation excavations only allow examination of the ground at discrete locations. The potential exists for ground conditions to be encountered which are different to those considered in this report. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition, chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and Earth Environmental & Geotechnical Ltd] based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

The groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The normal speed of investigation usually does not permit the recording of an equilibrium water level for any one water strike. Moreover, groundwater levels are subject to seasonal variation or changes in local drainage conditions and higher groundwater levels may occur at other times of the year than were recorded during this investigation.

Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan but is (are) used to present the general relative locations of features on, and surrounding, the site.