



Coal Mining Risk Assessment

Wood Walk, Barnsley

For Cornell Group

Delta-Simons Project No. 16-0406.01

Issued: June 2016



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**COAL MINING RISK ASSESSMENT
WOOD WALK, BARNSELEY
FOR CORNELL GROUP
DELTA-SIMONS PROJECT NO. 16-0406.01**

1.0 INTRODUCTION

1.1 Authorisation

Delta-Simons Environmental Consultants Limited ("Delta-Simons") was instructed by Cornell Group (the "Client") to carry out a Coal Mining Risk Assessment for land located off Wood Walk, Barnsley, S73 0NB (hereafter referred to as the "Site").

1.2 Context & Purpose

The purpose of this Report is to provide a Site-specific coal mining risk assessment to assess the Site and associated risks and hazards relating to potential coal mining activities.

1.3 Limitations

Delta-Simons obtained, reviewed and evaluated information in preparing this Report from the Client, BGS, Coal Authority and others. Delta-Simons' conclusions, opinions and recommendations have been determined using this information. Delta-Simons does not warrant the accuracy of the information provided to it and will not be responsible for any opinions that Delta-Simons has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

2.0 COAL MINING RISK ASSESSMENT

2.1 Information Sources

The following information sources have been obtained and reviewed:

- Δ 1:10,000 geological map (Sheet SE30SE BGS);
- Δ The Coal Authority Mining Report (Ref: 51001165113001 dated 18th May 2016, included as Appendix I);
- Δ Coal Authority review of Abandonment Plans (Cat. No. NE853, NE556, 16596 included as Appendix II and Appendix III); and
- Δ Coal Authority list of coal seams with a history of spontaneous combustion.

2.2 Ground Model

The 1:10,000 BGS mapping indicates that the Site is directly underlain by the Wooley Edge Rock (sandstone) in the east of Site and the Pennine Middle Coal Measures Formation (mudstone, sandstone and siltstone) across the remainder of the Site. The mapping shows that the Meltonfield coal seams, approximately 1.07 m to 1.30 m thick, outcrop centrally on the Site, trending north-west to south-east, dipping towards the north-east.

The mapped outcrop suggest the regional dip in the strata may be in the order of 2-5°; which would put the depth of the underlying Two-Foot Coal Seam, shown on the 1:10,000 BGS map, at approximately 6 m below ground level (bgl). This seam is indicated to be approximately 0.91 m to 1.45 m thick. A summary of the shallowest mapped coal seams recorded beneath the site is shown in Table 1.

A review of Coal Authority Abandonment Mine Plans revealed that opencast mining occurred in a central and northern area of the Site. The plan for Wood Head Farm (Cat No. 16596), dated 25th June 1994, shows that the Meltonfield Coal Seam and an Un Named Coal Seam were mined using open cast methods. The location of the mines are included as Figure 2 and the Coal Authority Plan is included as Appendix III.

Table 1: Approximate Depth of Shallow Coal Seams beneath Site

Seam Name	Approximate Depth Calculated at 5° Dip from 1:10,000 BGS Map (M - BGL)		Approximate Seam Thickness (M - BGL)	Potential Influence to Site Surface
	Minimum	Maximum		
Meltonfield Coal	Surface	4	1.07 -1.30	Y - opencast
Two-Foot Coal	9	22	0.91 -1.45	Y
Winter Coal	15	28	0.79 - 0.86	Y
Top Beamshaw Coal	29	42	0.30	Y
Low Beamshaw Coal	47	60	0.51 – 0.64	N
Kents Thin Coal	59	72	0.56 – 0.66	N

Two faults are located on Site in the north-east and south-west. Both faults are shown to trend north-west to south-east with the throw to the north-east.

Coal Authority Abandonment plans reviewed (Cat. No. NE853) recorded the Fenton Seam present approximately 386 m bgl and (Cat. No. NE556) recorded the Parkgate Seam approximately 506 m bgl at Site.

It is possible that significant Made Ground may be present on-Site associated with previous land use, associated with opencast operations, at the Site for which planned intrusive works at the Site should confirm the presence of and depths.

2.3 Identification and Assessment of Specific Coal Mining Risks

2.3.1 Underground Coal Mining

According to Coal Authority records the property is in the likely zone of influence of historic workings of eleven (11 No.) seams of coal between depths of 130 m and 500 m, last worked in 1976.

A review of the Coal Authority abandonment plans revealed that two seams (for which abandonment plans exist) likely to have been worked within the influence of the Site surface are the Top Fenton Seam, dated 1977 (Cat. No. NE853) and the Parkgate Seam dated 1965 (Cat. No. NE556). According to the abandonment plan,

the Top Fenton Seam has been worked below the central and western parts of the Site and the Parkgate Seam was worked below the eastern part of the Site. However, it cannot be discounted that subsequent unrecorded working of shallower seams may have taken place across the Site.

The Site is not in the zone of influence of present or future underground coal workings. However, reserves of coal exist in the local area which could be worked at some time in the future.

2.3.2 Mine entries (shafts and adits)

The Coal Authority report indicated there are no known coal mine entries within the Site or within 20 m of the Site boundary.

According to the Coal Authority abandonment plan (cat. No. NE853), the Siltstone, Thorncliffe and Lidgate Shaft's associated with Hoyland Silkstone Colliery are located approximately 200 m south-west with roadways leading to the Top Fenton and Parkgate seams beneath the Site.

The likelihood of any unrecorded shafts being present is low, as access has been indicated to be through roadways from the Hoyland Silkstone Colliery.

2.3.3 Coal Mining Geology

The Coal Authority is not aware of any damage arising due to geological faults or lines of weakness that may have been affected by coal mining.

2.3.4 Mine Gas Emissions

The Coal Authority has no record of gas emissions for the Site, due to mining activity that required remedial action.

2.3.5 Coal Mining Subsidence

The Coal Authority reports that they have not received a damage notice from subsidence or claim for any property within 50 m since 31st October 1994.

2.3.6 Opencast Mining

The Site is within the boundary of an opencast site from which coal has been removed by opencast methods.

The Site does not lie within 200 m of the boundary of an opencast site from which coal is currently being abstracted.

There are no licence requests outstanding to remove coal by opencast methods within 800 m of the Site.

The Site is not within 800 m of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

A review of Coal Authority Abandonment Mine Plans revealed that opencast mining occurred in a central and northern area of the Site. The plan for Wood Head Farm (Cat No. 16596), dated 25th June 1994, shows that the Meltonfield Coal Seam and an Un Named Coal Seam were mined using open cast methods. The location of the mines are included as Figure 2 and the Coal Authority Plan is included as Appendix III.

The base of the opencast pit for the Meltonfield Coal Seam lies at approximately 125 m Above Ordnance Datum (AOD). Given that the topographic elevation of the Site is approximately 140 m AOD there is potentially 15 m of infilled ground present, although this may need accurately plotting with a topographical survey.

2.3.7 Withdrawal of Support

The Site is not within an area for which a notice of entitlement to withdraw support has been published. The Site is not in an area for which a notice has been given under section 41 of the Coal Industry Act 1994, revoking the entitlement to withdraw support.

2.3.8 Coal Seams with a History of Spontaneous Combustion

There is one coal seam present in the area which is included within the list of seams on the Coal Authority website that have been known to suffer from occurrences of spontaneous combustion; specifically the Parkgate Seam; and are consequently regarded as at 'high risk' of succumbing to spontaneous combustion when being entered, worked or disturbed. Appropriate precautions should be put in place when disturbing this seam during investigation/treatment.

However, given the depth of this seam, it is not considered likely to represent a risk to future development or investigation.

2.4 Mitigation Strategy Proposed and Conclusions

Based on the published records, accounts of coal mining activity with regards to the Meltonfield Coal Seam outcropped at the Site. Opencast mining of this seam occurred in the central and northern areas with the base of the pit at approximately 125 m AOD (approximately 15 m bgl). Delta-Simons considers the risks associated with coal mining and ground stability beneath the Site to be high, and recommend further exploratory intrusive investigation comprising excavated trial trenching and three to five rotary open boreholes utilising water flush to a maximum depth of 30 m below the rockhead, which lies at approximately 15 m bgl, (i.e 45 m in depth approx.) to:

- △ Assess the depth and state of shallow coal seams;
- △ Identify the excavation edge of the opencast pit to determine the location and state of any highwall;
- △ Investigation the depth and type of infilled material in the vicinity of previous opencast mining; and
- △ Determine the depth of rockhead.

Other coal seams with potential for having been worked are located at significant enough depths to be considered to have inconsequential influence to the Site.

Whilst risks associated with coal mining are considered high, subject to appropriate investigation and assessment, there are likely technically and economically viable solutions which could be implemented which could successfully facilitate development.

3.0 LIMITATIONS

The recommendations contained in this Assessment represent Delta-Simons' professional opinions, based upon the information referred to in Section 1.3 of this Assessment, exercising the duty of care required of an experienced Environmental Consultant. Delta-Simons does not warrant or guarantee that the Site is free of hazardous or potentially hazardous materials or conditions.

This Assessment was prepared by Delta-Simons for the sole and exclusive use of the Client and for the specific purpose for which Delta-Simons was instructed as defined in Section 1.0 of this Assessment. Nothing contained in this Assessment shall be construed to give any rights or benefits to anyone other than the Client and Delta-Simons, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, Delta-Simons does not intend, without its written consent, for this Assessment to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the Assessment by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this Assessment, other than the Client, agrees by virtue of its use to indemnify and hold harmless Delta-Simons from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by the Consultant.

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Date 23rd June 2016

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Date 23rd June 2016