Contaminated Land Appraisals
Brownfield Remediation Solutions
Site Investigation Services
Earthworks Design and Control
Flood Risk Assessments

Mr Simon Fish
Cape Site Services Ltd
Unit 2
Rear of Castle Buildings
Carlton Road
Carlton
Barnsley
S71 3HX

27th July 2018

Ref C220/04/GS

Dear Simon,

Ref: Intrusive Mining Investigation on land off Bismarck Street, Worsbrough Common, Barnsley.

1. Introduction

On the instructions of Mr David Barlow, Cape Site Services Ltd (Cape) has carried out an intrusive investigation to assess possible historical mining on land off Bismarck Street, Worsbrough Common, near Barnsley. The work was carried out in general accordance with the findings of the mining risk assessment prepared by Rogers Geotechnical Services Ltd, Report Ref J3943/17/E, dated June 2017.

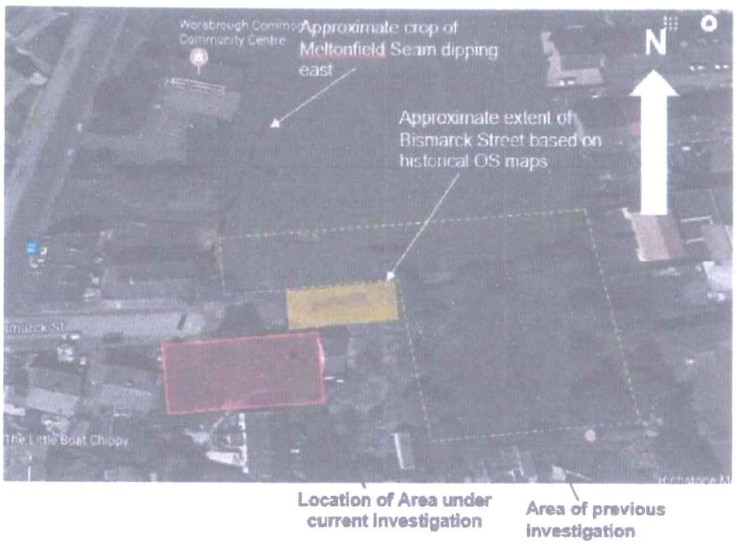
The site is located in Worsbrough Common, approximately 1km south of Barnsley town centre, South Yorkshire. The site is accessed off Bismarck Street, which runs adjacent to the northern boundary of the site, as shown below. The site is a disparate part of a larger area, where it is understood that a submission for planning is to be made for residential development; at the time of writing of this report, a proposed layout drawing is unavailable, and therefore comments/recommendations contained herein may be subject to review and change in due course.

G&M Consulting Ltd (G&M) was present on site during the fieldwork, and this report presents the findings of the investigation, prepared by G&M.

The comments and opinions presented in this report are based on the findings of a review of available information and ground conditions encountered during the intrusive investigation work. There may be other conditions prevailing on the site which have not been disclosed by this investigation and which have not been taken into account by this report. Responsibility cannot be accepted for conditions not revealed by the investigation. Any diagram or opinion of the possible configuration of ground conditions between exploratory holes is conjectural and given for guidance only and confirmation of intermediate ground conditions should be considered if deemed necessary.

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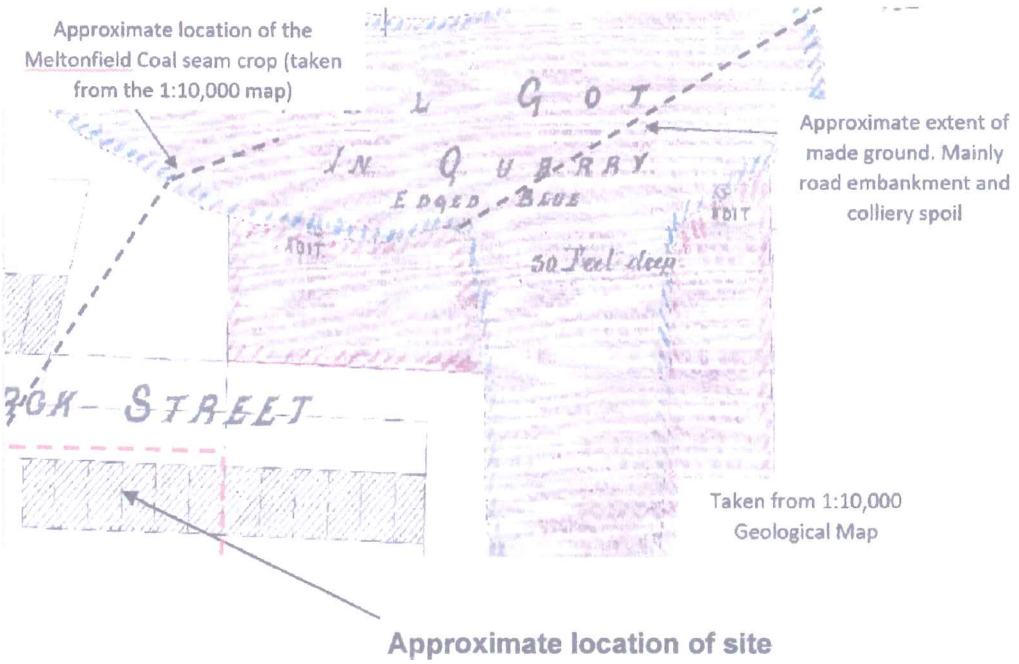
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2. Background Information

Intrusive investigation work of the larger area (shown outlined by the yellow dotted line, above) has previously been carried out, and reported by G&M under separate cover, Report Ref C220/02/GS, dated 10th September 2017. This current report should be read in conjunction with the historical report, the latter of which provides more extensive details of the mining risk assessment and available geological information, which are penitent to both parcels of land. However, for completeness, a summary of information relevant to the current investigation is presented below.

Information kindly supplied by the Coal Authority, included an abandonment plan (Ref 5002), shown below, which appears to indicate that a brickpit/quarry extended in close proximity to the site under current investigation extending past the line of houses along Bismarck Street (now partially demolished), towards the eastern boundary of the site. It is understood that the blue hatching indicates where coal was removed from the quarry face and that the red hatching possibly indicates shallow workings. These indicate that the shallow workings do not extend beneath the part of the site under current investigation.



The 1:10,000 geological map indicates that the Meltonfield Coal seam crops to the north west edge of the site (shown above) and dips, probably at a shallow angle towards the east; i.e beneath the site.

The stratigraphic column of the map shows the Meltonfield seam (recorded as between 0.69m to 0.89m in thickness) to be underlain by the Two-Foot coal (between 0.56 to 0.63m in thickness), approximately 12m below; which is itself underlain by the Winter or Abdy seam (between 1.22m to 1.42m in thickness), approximately a further 16m below.

The previous investigation identified, to some extent, the limits of the clay pit, which also appears to have extracted the Meltonfield Coal, including the probable removal of two adits recorded on historical records. Where the Meltonfield was encountered it was found to be intact.

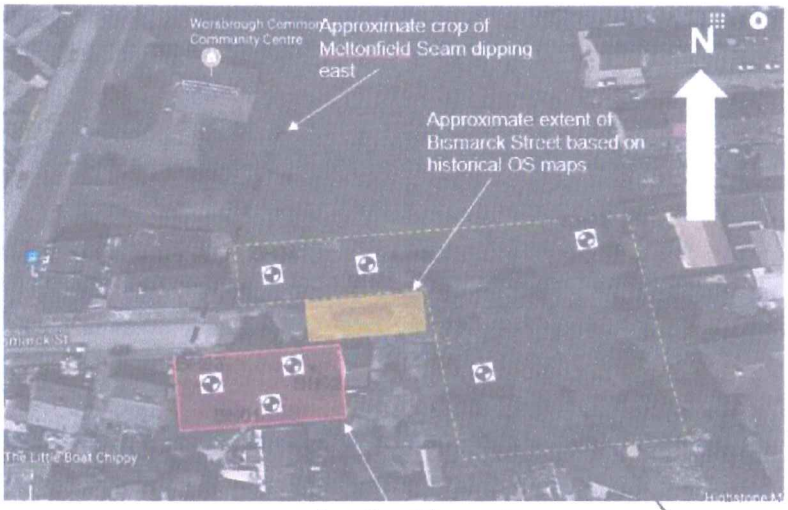
3. Fieldwork

The fieldwork was carried out on 24th July 2018 in accordance with the requirements of the CA Permit No 14655 and the recommendations of the risk assessment. A copy of this Permit is presented in Attachment A of this report. The drilling works were undertaken by Cape using a Beretta T25 tracked rotary rig, and comprised the drilling of three boreholes, referenced BH1 to BH3 inclusive to depths of between 7m to 20m below ground level (bgl) to allow logging of soils and solid strata through examination of water flush returns and rate of penetration of the drill bit.

In accordance with the CA permission, each of the boreholes, at surface, was monitored for gases during drilling. The gases comprised methane, carbon monoxide, hydrogen sulphide and oxygen. No significant concentrations of gas, or depleted oxygen, were recorded during the works.

Drilling was progressed initially through the superficial deposits on site using hollow stem augers on to the underlying bedrock. This allowed temporary steel casing to be set into the underlying solid strata. Once the casing had been installed the rotary open-hole drilled part of the borehole was advanced using water as the flushing medium. The driller's logs are presented in Attachment B of this report.

A plan showing the exploratory hole locations in the area of current investigation (highlighted in red), is shown below.



4. Ground Conditions

The boreholes generally encountered made ground or superficial clay soils over mudstone with coal seams.

A thin veneer of made ground was encountered in BH1 and BH3 to a depth of 0.8m bgl. The made ground was underlain by clay subsoil to a depth of 2.6m bgl; the subsoil was encountered from the surface in BH2.

The made ground and subsoil deposits were underlain by Coal Measures bedrock in all of the boreholes to the full depth of each borehole and predominantly comprised mudstone.

Within the depth of the boreholes one or two coal seams were recorded, depending on the depth of the borehole, as detailed below;

Borehole No	Depth (m)	Depth to top of coal (m)	Thickness (mm)	Likely Seam
1	20.0	5.4	900	Meltonfield
		17.4	600	Two-Foot
2	20.0	5.3	900	Meltonfield
		17.3	600	Two-Foot
3	7.0	4.7	900	Meltonfield

5. Conclusions and Recommendations

In general terms the ground conditions encountered on site accord with the geological maps for the area. The boreholes confirmed the presence of up to two seams of coal, considered to be the Meltonfield and Two-Foot coals. The Meltonfield coal is shown to outcrop immediately to the east of the properties located on the northern side of Bismarck Street. Based on a review of stratigraphic column, and the depth of the Two-Foot encountered in the boreholes, the next coal in the geological sequence (the Winter or Abdy seam), is likely to underlay the site at a depth of approximately 33m bgl.

The drilling works were carried out in accordance with the CA permission 14655.

No evidence of soft or voided strata, or loss of flush was noted during the drilling.

Based on the evidence of the three boreholes drilled it is considered unlikely that the site is adversely affected by shallow mine workings within 20 m of the ground surface, at the locations investigated, that would warrant any further ground treatment, particularly in view of the proposed development which comprises a fishing pond.

We trust this report and the attachments meet with your approval. This report should be submitted to the various regulatory bodies for their consideration.

Yours sincerely

Graeme Swinbourne
For and on behalf of **G&M Consulting Ltd**

Attachments



ATTACHMENT A – CA PERMIT

The Coal Authority

Permit to Enter or Disturb Coal Authority Mining Interests

Permit Reference Number 14655

Name and Address of Permit Holder:

G Fisher
36 Westfield Avenue
Thurlstone
Sheffield
S36 9RL

Site Location:

Land off
Bismark Street
Worsborough Common
Barnsley
S70 4NA

This certificate hereby grants the above named Permit Holder a Permit to carry out:-

Investigation of shallow mine workings by four boreholes to 30m bgl

Investigation of mine entries 434405-008 and 009 by trial trenching

within the Authority's mining interests at the identified site location for the period of 12 months from the granted date shown below. The granting of this Permit does not constitute advice given by the Authority in relation to the proposed operations. It is the Applicant's responsibility to obtain appropriate health, safety, environmental, technical and legal advice.

Signed: Paul Heap Granted Date: ***29/08/2017***

For and on behalf of The Coal Authority

Nominated Representative: Paul Heap, Permitting Manager;
The Coal Authority, Permitting Office, 200 Lichfield Lane, Mansfield, Notts, NG18 4RG
Tel: 01623 637339; E-Mail: permissions@coal.gov.uk



ATTACHMENT B – DRILLER'S LOG

Client: David Barlow	Site: Bismark Street, Barnsley. S70 4NA	Cape Site Services Ltd Unit 2, Rear of castle buildings, Carlton Road, Barnsley, South Yorkshire, S71 3HX	
Date: 24/7/18	METHOD Rotary Waterflush		

Measurements In Meters

BH no	FROM	TO	THICKNESS	Description
BH 1	0.0	0.8	0.8	Made ground
	0.8	2.5	1.7	Clay brown /grey
	2.5	5.4	2.9	Mudstone grey very soft
	5.4	6.3	0.9	Coal
	6.3	14.9	8.6	Mudstone grey silty
	14.9	17.4	2.5	Mudstone black
	17.4	18.0	0.6	Coal
	18.0	20.0	2.0	Mudstone grey
				Cased to 1.8m No water loss
BH 2	0.0	2.5	2.5	Clay brown/grey
	2.5	5.3	2.8	Mudstone grey very soft
	5.3	6.2	0.9	Coal
	6.2	14.7	8.5	Mudstone grey silty
	14.7	17.3	2.6	Mudstone black
	17.3	17.9	0.6	Coal
	17.9	20.0	2.1	Mudstone grey
				Cased to 1.8m No water loss
BH 3	0.0	0.4	0.4	Made ground
	0.4	2.6	2.2	Clay brown/grey
	2.6	4.7	2.1	Mudstone grey very soft
	4.7	5.6	0.9	Coal
	5.6	7.0	1.4	Mudstone grey silty stopped
				Cased to 1.5m No water loss
				No gases recorded on all holes

Driller Ian Wiles	Driller's Assistant Deven Robson + Simon Fish
Driller's Signature	Page ……1…… of ……1……