Report No: C398 Rev A
Date: September 2022

LAND OFF PADDOCK ROAD, STAINCROSS, BARNSLEY, SOUTH YORKSHIRE
MINING INVESTIGATION REPORT

Prepared for

Andrew Bailey Architects

Prepared by
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REPORT NUMBER:	C398	**REPORT STATUS:**	Final – Rev A
REPORT TYPE:	Mining investigation Report		
REPORT DATE:	September 2022		
SITE:	Land off Paddock Road, Staincross Barnsley, South Yorkshire		
PREPARED FOR:	Andrew Bailey Architects		
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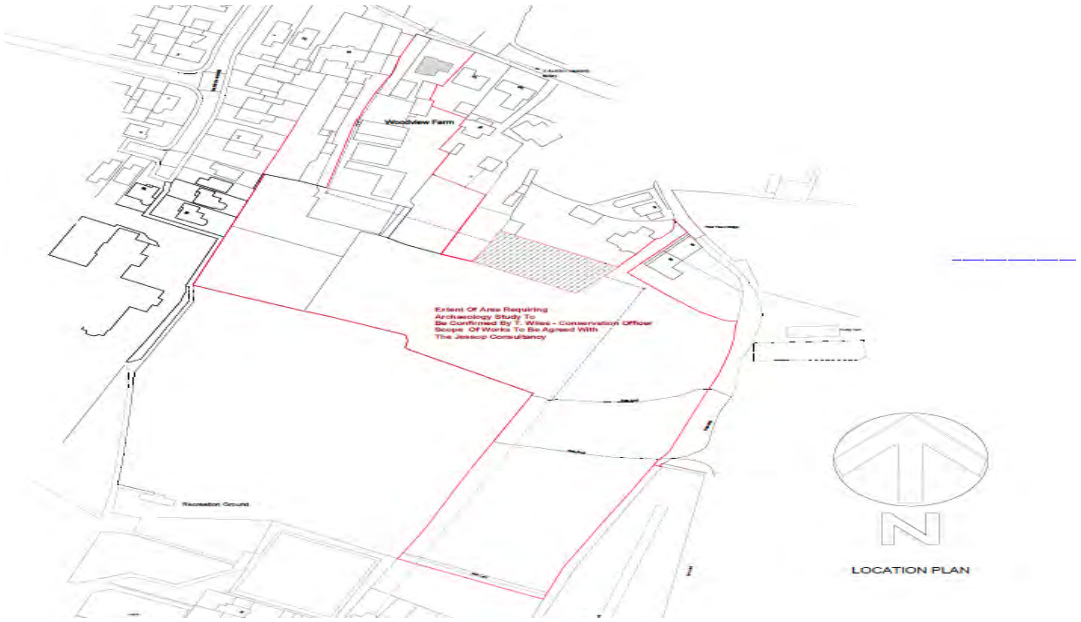
LAND OFF PADDOCK ROAD, STAINCROSS, BARNSLEY, SOUTH YORKSHIRE

MINING INVESTIGATION REPORT

1.0 INTRODUCTION.

G&M Consulting Ltd (G&M) was commissioned by Andrew Bailey Architects to carry out a ground investigation and geotechnical appraisal of a site off Paddock Road, Staincross, Barnsley, South Yorkshire. Part of the work is an investigation into the effects of historical mining on the site. This report deals with the historical mining element.

It is understood that outline planning approval (2017/1387) has been granted by Barnsley Metropolitan Borough Council for the demolition of existing dwelling and outbuildings and erection of up to 6 dwellings. The proposed development layout is shown on Drawing No RB2/2020- PA 02D, prepared by Andrew Bailey Architects; a copy of this drawing is shown below.



This investigation also covers the area of proposed development to the south of the above permission, as shown on the red line boundary above. The proposed development layout of this area is shown on Drawing No RMH-P02Rev J dated June 2022, prepared by Andrew Bailey Architects, a copy of which is presented in Appendix A of this report.

The objective of this work was to establish the ground profile by means of an intrusive ground investigation in across the site and to determine the possible risk from shallow mine workings. The work comprised the excavation of trial pits and trial site scrape and the drilling of rotary boreholes. and the preparation of this report, which contains a description of the site and the works carried out, and the exploratory hole logs.

The scope of the ground investigation was based on a Coal Mining Risk Assessment (CMRA) prepared by G&M Ref C398 dated October 2020. This report should be read in conjunction with the CMRA, however, salient points from the CMRA are presented in Section 2.3 of this report.

The ground investigation has been carried out using intrusive ground investigation techniques in general accordance with the recommendations of BS5930: 2015 + A1: 2020 *Code of practice for ground investigations,* which maintains compliance with BS EN 1997-1 and 1997-2 and their related standards. Whilst every attempt is made to record full details of the strata encountered in the exploratory holes, techniques of hole formation and sampling will inevitably lead to disturbance, mixing or loss of material in some soils and rocks.

All information, comments and opinions given in this report are based on the ground conditions encountered during the site work, and on the results of laboratory and field tests performed during the investigation.

However, there may be conditions at the site that have not been taken into account, such as unpredictable soil strata and water conditions between or below exploratory holes. It should be noted that groundwater levels usually vary due to seasonal, atmospheric and/or other effects and may at times differ to those measured during the investigation.

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2.0 BACKGROUND INFORMATION.

2.1 Site Description

The site is located approximately 4 km North of Barnsley Town centre. It is within the village of Staincross on the northern side of the valley of the River Dearne. The National Grid Reference for the approximate centre of the site is SE 334102.

The site is an irregular plot of land covering an area of approximately 2.3 hectares. It fronts to the north on to Paddock Lane where it is only a narrow plot of land approximately 20 m wide and running south for approximately 90m before widening out into a larger L shape plot of land. One limb of the L is approximately 190 m by 70 m with the long axis aligned east west. The second limb is at the eastern end of the first and extends to the south, it is approximately 175 m by 55 m with the long axis aligned north south. The narrow stripe off Paddock Lane is occupied by a number of buildings associated with Woodview Farm. The remaining area of the site is open fields / scrub land.

The overall fall in ground level across the site from Paddock Lane to the most southerly point is approximately 20 m and that from Paddock Lane to the southern edge of the east west trending section of the site 12 m.

The site is bordered to the north by the gardens of residential properties that front on to Paddock Lane or associated side roads, to the west and south by a mixture of open spaces and residential properties and to the east by fields and allotments.

2.2 Geology

Information on the geology of the site was obtained from the following sources published by the British Geological Survey (BGS):

- BGS map (England & Wales 1:50,000 Scale, Sheet 87 – Barnsley, Bedrock & Superficial Edition, 2008).
- BGS online Geoindex - http://mapapps2.bgs.ac.uk/geoindex/home.html
- The BGS Lexicon of Named Rock Units, which provides typical descriptions for most geological units (www.bgs.ac.uk/lexicon).

The above geological records for the area, show the site to be underlain by strata of the Pennine Middle Coal Measures Formation (PMCM) which comprises interbedded mudstone, siltstone and sandstone with coal seams.

The northern edge of the site is shown underlain by the Wooley Edge Rock a named sandstone within the PMCM. To the south two coal seams are shown to outcrop within the site. The outcrops are aligned generally east west with a dip to the north east. The most northerly of the two seams is the Meltonwood Coal. The second seam which outcrops further south is the Two Foot Coal.

The stratigraphic column from the 1:50,000 geology map shows the following descending sequence of coal seams likely to affect the site:

Coal Seam	Seam Thickness (m)	Estimated Thickness between seams (m)	Comments
Meltonwood Coal	0 - 2.3		Discontinuous
		5	
Meltonfield Coal	0 - 1.4		Discontinuous
		10	
Two Foot Coal	0.1 - 2.1		
		30	Discontinuous
Abdy (Winter) Coal	0 - 1.9		

Three of the seams are shown discontinuous across the area of the map. The estimated thickness of strata between the seams is based on the stratigraphic column.

The Abdy Coal is shown to outcrop in the valley side to the south of the site.

Areas of infilled ground are shown associated with the outcrops of the Two Foot Coal and the Abdy Coal to the east and south east of the site.

A fault is shown north of the site within the Wooley Edge Rock. It is aligned north-west south-east with a down throw to the north-east.

No superficial deposits are shown to be present on site.

2.3 Coal Mining Risk Assessment

As part of the CMRA a Consultants Coal Mining Report (CCMR) was obtained from the Coal Authority (CA). The following sections from the CMRA are considered salient points in scoping the ground investigation.

- *The geological maps show two seams outcropping within the site the Meltonwood Coal and the Two-Foot Coal. The CCMR also shows the two seams outcropping as the Meltonfield Coal and the Two Foot Coal.*

- *The dips of the coal seams recorded as worked beneath the site in CCMR are approximately 5° to the north east.*

- *Given what is considered a high risk of shallow mine workings being present beneath the northern part of the site it is recommended that an intrusive ground investigation be carried out using rotary drilling techniques to confirm the depth to the various coal seams. A minimum of seven boreholes is suggested for an initial investigation..*

- *If as suggested bell pits or opencast workings are present close to the outcrops then rotary drilling may not encounter voids, only loose ground and the absence of coal. To this end additional*

boreholes may be needed to confirm the depth of intact coal i.e. to identify the level of the seam or alternatively trial trenches are carried out to locate the out crops and investigate any crop workings.

3.0 FIELDWORK.

3.1 Scope of Works

The field work was carried out in phases between 4th November 2020 and 15th February 2021 and comprised trial pits, trial site scrapes and rotary boreholes shown on the Trial Pit and Site Strip Location Plan (drawing number C398/CM/01) and Borehole Location Plan (drawing number C398/CM/02) presented in Appendix A of this report:

SCOPE OF INTRUSIVE WORKS AND IN-SITU TESTING			
Number	**Exploratory Hole**	**Hole / Test Numbers**	**Notes**
18	Trial pits	TP1 to TP18	Phase 1 04/11/2020 to 05/11/2020 Phase 2 15/02/2021
2	Trial site scrape	TT1 and TT2	Carried out 15/02/2021
8	Rotary drilled open holes	BH1 to BH8	05/01/2021 to 07/01/21

The scope of the works and the exploratory positions were selected by G&M and adjusted where necessary to take account of buried or overhead services, or other restrictions.

Prior to the commencement of any exploratory hole a scan was carried out for buried services using a combination of cable avoidance tool (CAT) and signal generator ('Genny').

All of the locations were accurately surveyed using a Leica GPS system.

The trial pits and site scrapes were logged by an engineer in accordance with the recommendations of BS5930:2015+ A1: 2020. Detailed descriptions, together with relevant comments are given on the respective logs, presented in Appendix B of this report. The rotary open holes were logged by the driller, copies of the drillers logs are presented in Appendix B.

3.2 Trial Pits

The trial pits were excavated using a 6-tonne tracked excavator equipped with 0.5 m wide bucket. The primary aim was for geotechnical /geoenvironmental purposes but also to determine the depth to rock head and expose any coal outcrops.

3.3 Trial Site Scrape

A localised site scrape was undertaken using a 6-tonne tracked excavator to a maximum depth of 0.15 m using a ditching bucket to scrap away the topsoil and subsoil to expose the upper surface of the weathered rock (weathered mantle material) to determine if there was any discolouration which could be indicative of shallow mine workings such as bell pits or open cast / crop workings. The extent of this scrape is shown on the Trial Pit and Site Strip Location Plan (drawing number C398/CM/01) presented in Appendix A of this report:

A photographic record of the site scrape is presented in Appendix D of this report.

3.4 Rotary Boreholes

The drilling work was undertaken by Cape Site Services using a Beretta T25 tracked rotary drilling rig and carried out under the Terms and Conditions of the CA Permission No 20241, a copy of which is presented in Appendix C of this report.

Drilling was initially progressed using 150mm diameter augers through the superficial soils, and cased into the underlying bedrock, to aid flush returns.

Drilling was undertaken using water flush or air/mist. In accordance with the CA permission, the boreholes were monitored at surface for gases, during their advancement. The boreholes were backfilled on completion.

4.0 GROUND CONDITIONS.

The sequence of strata encountered during this investigation generally confirms published geological information for the area of strata of the Pennine Middle Coal Measures overlain locally by made ground.

Made Ground

Topsoil is present across much of the site. Made ground was only encountered in four trial pits TP1, TP2, TP13 and TP18 to depths of between 0.20 m and 1.20 m. In general, it comprises either a gravelly clay or clayey gravelly sand. The gravel content generally comprises a mixture of fragments of brick, mudstone, sandstone and concrete with fragments of coal noted in TP1 and TP13.

Weathered Coal Measures Deposits

The topsoil and made ground (where present) is underlain by firm to stiff gravelly clay, which contains with depth lithorelics of the underlying rock. This material is typical of the weathering in situ of the underlying bedrock.

Pennine Middle Coal Measures Deposits

Bedrock comprises an interbedded sequence of mudstone and sandstone with four coal seams encountered across the site. The boreholes in which the coals were encountered together with depths and thicknesses are summarised in the following table and on the geological cross section presented in Appendix A of this report.

Coal	Number of holes	Thickness		Comment
		Seam	Intervening Strata	
Melton Field	BH8 TP1	0.5 0.7		
			10.2	
Two Foot	BH1-BH5 & BH6-BH8 TP7, TP16 & TP7	0.4-0.5 (1.0) 0.3-0.65		1.0 m thickness proved in BH8
			10.1-11.4	
Abdy Coal	BH1-BH8	0.8-0.9 (0.1)		0.1 m thickness assumed in BH4, black mudstone
			9.4	
Beamish	BH4	1.0		

The most northerly seam is assumed to be the Meltonfield, as shown in Coal Authority records in the CMRA, although the geological map shows it as the Meltonwood coal. It outcrops close to the northern edge of the site and the two foot outcrops through the central area of the site as anticipated from the records presented in the CMRA. Both these outcrops were proven in one or more of the trial pits.

The seam assumed to be the Abdy coal is likely to outcrop close to the southern border of the site. This seam was not clearly identified in BH4. All the other boreholes proved between 0.8 m and 0.9 m of coal where in BH4 only 0.1 m of black mudstone was recorded at the anticipated level. The absence of the coal could be due to being close to the outcrop, or the presence of a washout within the geology. No loss of flush or broken / soft ground was recorded in the vicinity of the mudstone in BH4 to indicate working of the coal although ground water was encountered at a depth of 6m.

Mining

No evidence of historical mining was encountered during the investigation. Where coal was encountered in the boreholes and trial pits it was intact. No loss of flush, broken ground or voids were recorded in the boreholes. The trial site scrape did not encounter any evidence of surface workings, either bell pits or backfilled open cast.

The site slopes to the south and the coal seams dip to the north east, therefore the coal seams become deeper relatively quickly to the north or north east away from the outcrop of the seam. There will be a zone approaching the out crop where the coal seam would be in influencing distance of the surface. The general rule of thumb for assessing the depth of influence, from pillar and stall coal mining, is the 10 x the worked seam thickness rule. For a site not to be affected by mining the seam needs to be overlain by a thickness of competent bedrock equal to or greater than 10 x the seam thickness. For the Two Foot coal and the Abdy coal the horizontal distance back from the outcrop that a zone of influence may extend is estimated to be about 70 m. The Meltonfield is likely to be in influencing depth where it is present beneath the northern area of the site. This rule is a guide only and does not take in to account the effect of multiple seams having been worked beneath a site.

5.0 DISCUSSIONS AND CONCLUSIONS

In accordance with the instruction issued by Andrew Bailey Architects, an intrusive investigation has been carried out to investigate the possible mining legacy at the site off Paddock Road, Staincross Barnsley.

The results from this investigation suggests that shallow mining has not taken place beneath the site. No evidence of mining was encountered in any of the exploratory holes. Given the size of the site and the number of exploratory holes it is feasible that localised mining has taken place in areas not investigated and as such a watching brief should be maintained whilst foundations are excavated, particularly in the areas close to the outcrops and the area of potential zone of influence discussed above. If any discolouration or deep made ground is encountered then a suitably experienced and qualified consultant should be notified and the area inspected prior to continuing.

This report should be submitted to the local authority for their comment/approval, prior to undertaking any development work.

APPENDIX A

DRAWINGS

Paddock Road Phase 2-3

Notes

N

-10 -5 0 10 20 30

site plan

Notes/Advisories

No Dimensions To Be Scaled From This Drawing Which Is The Property Of The Company AAZL LTD. It Is Not To Be Used Or Disclosed In Any Way Except As Authorised By The Company

The Architect AAZL LTD Owns All Intellectual Property Rights Including The Copyright In The Drawings And Documents Produced In Performing The Services And Generally Asserts The Architect's Moral Rights To Be Identified As The Author of Such Work No Part Of Any Design By The Architect May Be Registered By The Client Without Written Consent Of AAZL LTD

The Drawing Will Not Be Assigned To Any Third Party.

The Client Is Responsible For Providing the Architect With the Correct Site Boundary/ownership Definitions And Any Covenants Or Easements Relating To The Site. AAZL LTD Will Assume Site Boundaries As Clearly Defined/indicated, Unless Otherwise Informed By the Client.

No Work To Be Carried Out Without Planning Permission. Until All Pre Start Planning Conditions Have Been Discharged And Until A Building Regulations Application Has Been Submitted. Any Work Carried Out Before Building Regulations Approval Has Been Granted Will Be Strictly At Clients Own Risk.

Principal Contractor/client/project manager Is Responsible For Ensuring Works Are Signed Off And Certificate Of Completion Is Issued By Building Control.

Any Building Works Within 6M Of A Neighbouring Historic Foundations May Require You To Notify The Owner Of That Property Of Your Intentions At Least One Month Before You Start Work. Work To An Existing Party Wall Requires You To Give At Least Two Months Notice Of Your Intentions. If Consent To Carry Out Work Cannot Be Reached Procedures Dealing With A Dispute Should Be Followed. (the Party Wall Act 1996).

It Is The Responsibility Of The Principal Contractor To Verify The Architect Of Any Discrepancies On The Drawing Prior To Construction.

All Dimensions To Be Checked On Site

If In Doubt Ask!

NO CAD DRAWINGS WILL BE ISSUED TO ANY THIRD PARTY !!

9/11/21

REV	REVISION NOTE	DATE	DRAWN BY
J		12-9-22	akb
H		6-9-22	akb
G		5-9-22	akb
F		25-8-22	akb
E		23-8-22	akb
D		15-8-22	akb
C		12-8-22	akb
B		3-8-22	akb
A		2-8-22	akb

Andrew Bailey
Architect

PADDOCK ROAD
PHASE 2-3

CLIENT RMH PROPERTIES LTD

DRAWING TITLE SITE PLAN

DATE June 2022

SCALE 1:500 AT A0

DWG NO. RMH-PD2

REV J

RIBA WORK STAGE 3 - DEVELOPED DESIGN

DRAWN BY akb

CHECKED tab

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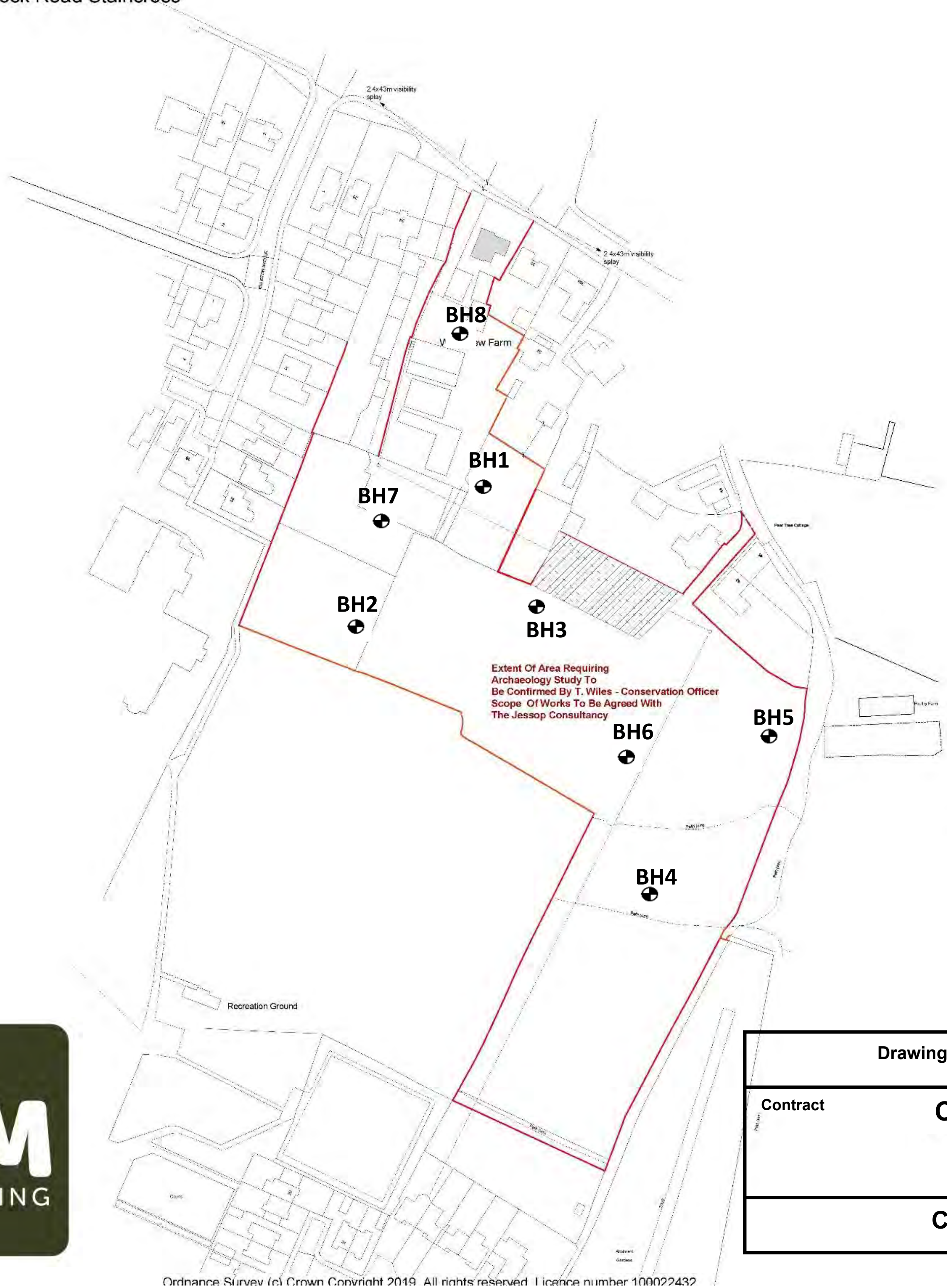
Woodview Farm Paddock Road Staincross

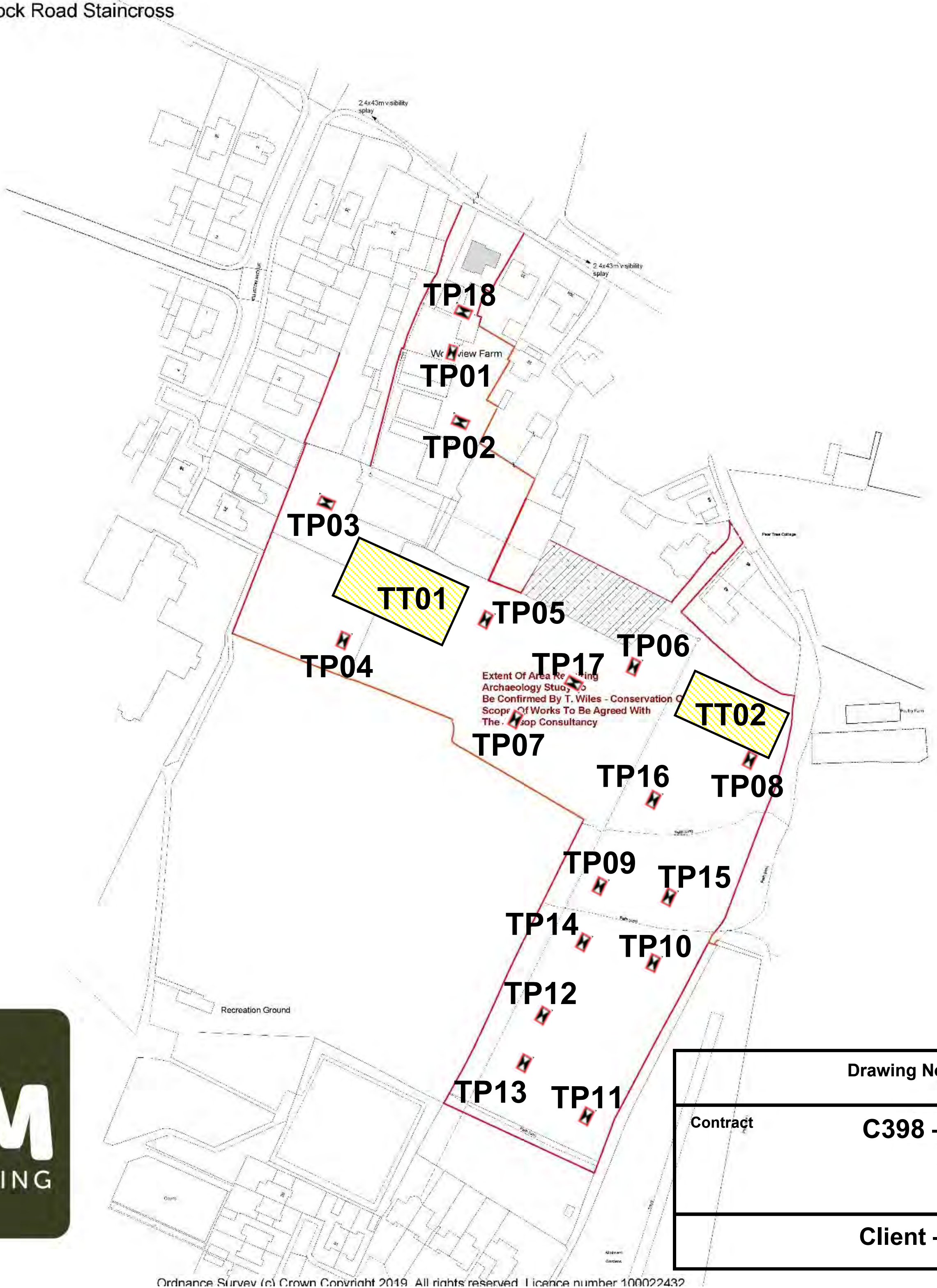


PUBLIC SEWER. -(REFER TO YOKSHIRE WATER MAP SE3209NE)
INDICATIVE
LOCATION
SUBJECT TO SITE
INVESTIGATION AND SURVEY
EASEMENT TO
BE CONFIRMED
BY YORKSHIRE WATER

G&M CONSULTING

Drawing No: C398/CM/02	Scale NTS	
Contract C398 – Paddock Road, Staincross	Drawn AS	Approved GS
	Drawing Name – Borehole Location Plan	
Client – Andrew Bailey Architects		

Woodview Farm Paddock Road Staincross



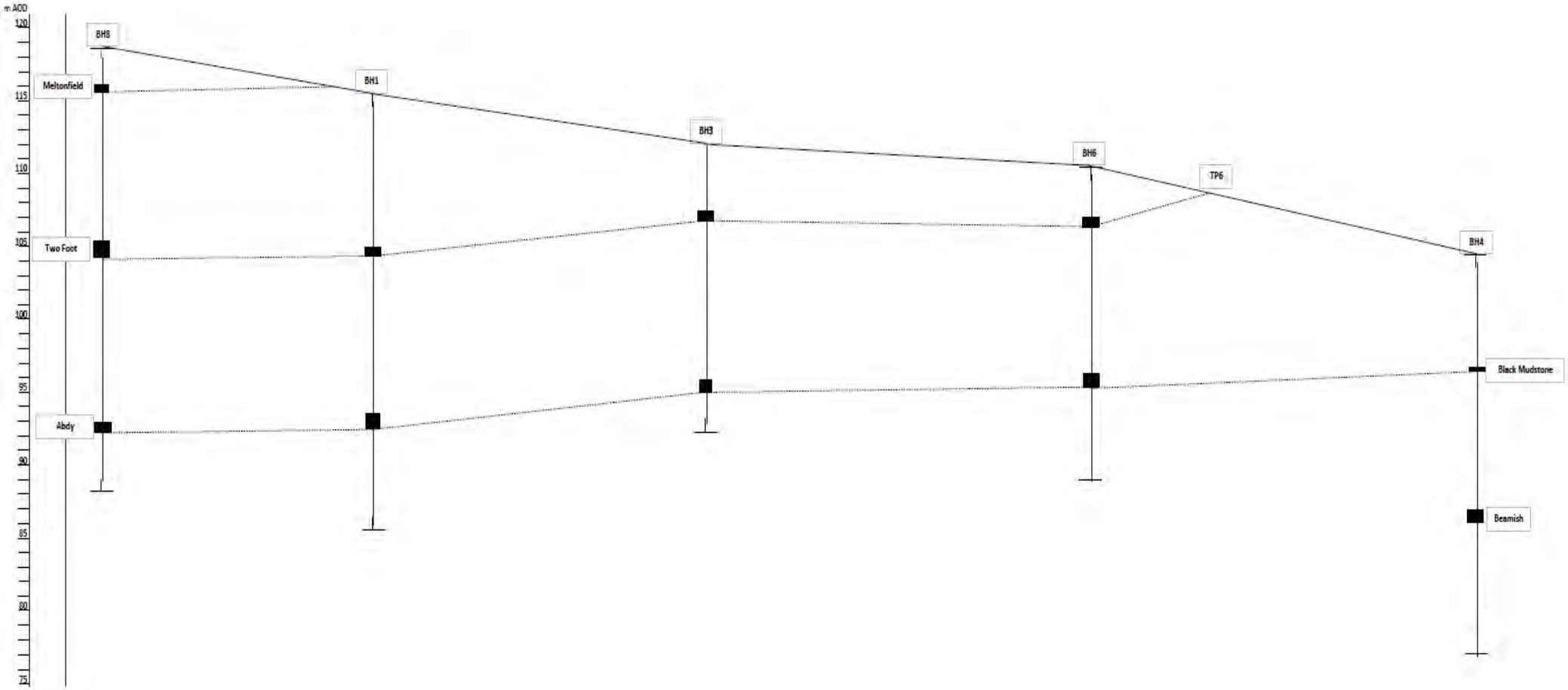
notes

PUBLIC SEWER. -(REFER TO YOKSHIRE WATER MAP SE3209NE) INDICATIVE LOCATION SUBJECT TO SITE INVESTIGATION AND SURVEY

EASEMENT TO BE CONFIRMED BY YORKSHIRE WATER

G&M CONSULTING

Drawing No: C398/CM/01	Scale NTS	
Contract — C398 – Paddock Road, Staincross	Drawn AS	Approved GS
	Drawing Name – Trial Pit and Site Strip Location Plan	
Client – Andrew Bailey Architects		



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		Scale NTS	
Contract	C398 – Paddock Road, Staincross	Drawn AS	Approved GS
		Drawing Name – Coal Cross Section	
Client – Andrew Bailey Architects			

APPENDIX B

EXPLORATORY HOLE RECORDS

Trial Pit Record

				TP No	1
				Contract No	C398
Method:	Machine excavated trial pit using a 3 tonne rated tracked excavator	**Site**	**28 Paddock Road, Staincross**	Date	04/11/20
				Scale	1:25
		Client	**Andrew Bailey Architects**	Logged By	ATS

Sample Details			Description	Depth (m)	Level (mAOD)	Legend
Type	Depth To-from (m)	Vane kN/m²				
			MADE GROUND: Soft dark grey very gravelly CLAY. Gravel is subangular fine to coarse of brick, concrete and rare coal.	0.20		
			Firm locally stiff pale yellow mottled light grey silty gravelly CLAY. Gravel is subangular fine to coarse of mudstone lithorelicts.	0.80		
			Very weak to weak black vitreous extremely closely fractured COAL. Occasional brown iron staining noted along fracture surfaces Recovered as: Black slightly clayey sandy subangular fine to coarse gravel sized fragments.	1.50		
			Firm light grey very gravelly CLAY. Gravel is subangular fine to coarse of mudstone lithorelicts.			
			Trial pit complete at 1.60m			

Remarks

Faces stable during excavation
No groundwater encountered
Pit dimensions 0.50x1.30m
Trial Pit used for soakaway testing
Trial Pit backfilled upon completion of soakaway

Sample Types

D - Disturbed
B - Bulk
W - Water
ES - Environmental

G&M CONSULTING

Trial Pit Record

				TP No	2
				Contract No	C398
Method:	Machine excavated trial pit using a 3 tonne rated tracked excavator	**Site**	**28 Paddock Road, Staincross**	Date	04/11/20
				Scale	1:25
		Client	**Andrew Bailey Architects**	Logged By	ATS

Sample Details			Description	Depth (m)	Level (mAOD)	Legend
Type	**Depth** To-from (m)	**Vane** kN/m²				
Hv	0.70	72,74,68	MADE GROUND: Dark brown very clayey gravelly fine to coarse SAND with a low cobble content. Gravel sized fragments are subangular fine to coarse of brick and mudstone. Cobbles are subangular of concrete and sandstone.	0.65		
			Firm locally stiff pale yellow mottled light grey silty gravelly CLAY. Gravel is subangular fine to coarse of mudstone lithorelicts.	1.45		
			Moderately strong thinly laminated to very thinly bedded SANDSTONE. Recovered as slightly gravelly subangular cobbles.			
			Trial pit complete at 1.50m			

Remarks

Faces stable during excavation
No groundwater encountered
Pit dimensions 0.50x1.40m
Trial Pit backfilled upon completion
Hv - Hand Vane

Sample Types

D - Disturbed
B - Bulk
W - Water
ES - Environmental

G&M CONSULTING

Trial Pit Record

				TP No	3
				Contract No	C398
Method:	Machine excavated trial pit using a 3 tonne rated tracked excavator	**Site**	**28 Paddock Road, Staincross**	Date	04/11/20
				Scale	1:25
		Client	**Andrew Bailey Architects**	Logged By	ATS

Sample Details			Description	Depth (m)	Level (mAOD)	Legend
Type	Depth To-from (m)	Vane kN/m²				
			Dark brown very sandy CLAY. Sand is fine to coarse. (TOPSOIL)	0.35		
Hv	0.70	92,94,98	Firm locally stiff pale yellow mottled light grey silty gravelly CLAY. Gravel is subangular fine to coarse of lithorelict mudstone.			
D	0.80					
Hv	1.00	88,92,90		1.05		
D	1.20		Firm locally stiff dark grey locally light grey very gravelly CLAY. Gravel is subangular fine to coarse of mudstone lithorelicts			
Hv	1.50	82,92,96		1.70		
			Weak dark grey thinly to thickly laminated MUDSTONE: Recovered as yellowish brown subangular fine to coarse gravel with a low cobble content. Cobbles are subangular.			
			Trial Pit Complete at 1.80m			

Remarks

Sides stable during excavation
No groundwater encountered
Pit used for soakaway testing
Trial pit backfilled upon completion of soakaway
Pit dimensions 0.50x1.70m

Sample Types

D - Disturbed
B - Bulk
W - Water
ES - Environmental
Hv - Hand vane

G&M CONSULTING

Trial Pit Record

				TP No	4
				Contract No	C398
Method:	Machine excavated trial pit using a 3 tonne rated tracked excavator	**Site**	**28 Paddock Road, Staincross**	Date	04/11/20
				Scale	1:25
		Client	**Andrew Bailey Architects**	Logged By	ATS

Sample Details			Description	Depth (m)	Level (mAOD)	Legend
Type	**Depth** To-from (m)	**Vane** kN/m²				
			Dark brown very sandy CLAY. Sand is fine to coarse. (TOPSOIL)	0.30		
Hv	0.65	110,98,102	Firm locally stiff pale yellow mottled light grey silty gravelly CLAY. Gravel is subangular fine to coarse of mudstone lithorelicts.	1.05		
D	1.60		Moderately weak brownish orange thinly laminated to very thinly bedded SANDSTONE: Recovered as slightly clayey very sandy subangular fine to coarse gravel with a low cobble and boulder content. Cobbles and boulders are subangular.			
			Trial pit complete at 1.60m			

Remarks

Sides stable during excavation
Sow ingress of water into put at 1.35m-No rise
Pit dimensions 0.50x1.40m
Trial pit backfilled upon completion
Hv - Hand vane

Sample Types

D - Disturbed
B - Bulk
W - Water
ES - Environmental

G&M CONSULTING

Trial Pit Record

				TP No	5
				Contract No	C398
Method:	Machine excavated trial pit using a 3 tonne rated tracked excavator	**Site**	**28 Paddock Road, Staincross**	Date	04/11/20
				Scale	1:25
		Client	**Andrew Bailey Architects**	Logged By	ATS

Sample Details			Description	Depth (m)	Level (mAOD)	Legend
Type	**Depth** To-from (m)	**Vane** kN/m²				
Hv	0.60	130,126,120	Firm locally stiff pale yellow mottled light grey silty gravelly CLAY. Gravel is subangular fine to coarse of lithorelict mudstone.	0.60		
			Extremely weak yellowish brown thinly to thickly laminated MUDSTONE: Recovered as slightly clayey subangular fine to coarse gravel with a low cobble content. Cobbles are subangular.	1.50		
			Extremely weak dark grey thinly to thickly laminated MUDSTONE: Recovered as subangular fine to coarse gravel with a low cobble and boulder content. Cobbles and boulders are subangular.			
			Trial pit complete at 1.80m			

Remarks

Sides stable during excuvation
No groundwater encountered
Pit dimensions 0.50x1.40m
Trial pit backfilled upon completion

Sample Types

D - Disturbed
B - Bulk
W - Water
ES - Environmental

G&M CONSULTING

Trial Pit Record

				TP No	6
				Contract No	C398
Method:	Machine excavated trial pit using a 3 tonne rated tracked excavator	**Site**	**28 Paddock Road, Staincross**	Date	04/11/20
				Scale	1:25
		Client	**Andrew Bailey Architects**	Logged By	ATS

Sample Details			Description	Depth (m)	Level (mAOD)	Legend
Type	Depth To-from (m)	Vane kN/m²				
			Very stiff indistinctly fissured light grey mottled pale yellow slightly gravelly silty CLAY. Gravel is subangular fine to coarse of lithorelict mudstone.	0.45		
			Extremely weak interbedded MUDSTONE with siltstone: Recovered as locally slightly clayey sandy subangular fine to coarse gravel with a low cobble content. Cobbles are subangular to subrounded.			
			Trial pit complete at 1.50m			

Remarks

Sides stable during excuvation
No groundwater encountered
Pit used for soakaway testing
Pit dimensions 0.50x1.50m

Sample Types

D - Disturbed
B - Bulk
W - Water
ES - Environmental

G&M CONSULTING

Trial Pit Record

				TP No	7
				Contract No	C398
Method:	Machine excavated trial pit using a 3 tonne rated tracked excavator	**Site**	**28 Paddock Road, Staincross**	Date	05/11/20
				Scale	1:25
		Client	**Andrew Bailey Architects**	Logged By	ATS

Sample Details			Description	Depth (m)	Level (mAOD)	Legend
Type	**Depth** To-from (m)	**Vane** kN/m²				
HV	0.40	58,52,50	Firm pale yellow mottled light grey silty gravelly CLAY. Gravel is subangular fine to coarse of lithorelict mudstone.			
D	0.60					
HV	0.70	74,70,78		0.70		
D	1.10		Firm locally stiff, dark grey gravelly CLAY. Gravel is subangular fine to coarse of lithoretict mudstone.	1.35		
			Very weak to weak black vitreous extremely closely fractured COAL. Occasional brown iron staining noted along fracture surfaces Recovered as: Black slightly clayey sandy subangular fine to coarse gravel sized fragments.	2.00		
			Firm, light grey very gravelly CLAY. Gravel is subangular fine to coarse of lithoretict mudstone.			
			Trial pit complete at 2.10m			

Remarks

Sides stable during excavation
No groundwater encountered
Pit dimensions 0.50x1.40m
Trial pit backfilled upon completion

Sample Types

D - Disturbed
B - Bulk
W - Water
ES - Environmental

G&M CONSULTING

Trial Pit Record

				TP No	8
				Contract No	C398
Method:	Machine excavated trial pit using a 3 tonne rated tracked excavator	**Site**	**28 Paddock Road, Staincross**	Date	05/11/20
				Scale	1:25
		Client	**Andrew Bailey Architects**	Logged By	ATS

Sample Details			Description	Depth (m)	Level (mAOD)	Legend
Type	**Depth** To-from (m)	**Vane** kN/m²				
			Firm locally stiff pale yellow mottled light grey silty gravelly CLAY. Gravel is subangular fine to coarse of lithorelict mudstone.	0.70		
D	1.20		Stiff pale grey very gravelly CLAY. Gravel is subangular fine to coarse of mudstone lithorelicts.	1.40		
			Extremely weak, orangish brown thickly laminated to very thinly bedded SANDSTONE: Recovered as slightly clayey very sandy subangular fine to coarse gravel.			
			Trial pit complete at 1.50m			

Remarks
Sides stable during excuvation
No groundwater encountered
Pit used for soakaway
Pit dimensions 0.50x1.70m

Sample Types
D - Disturbed
B - Bulk
W - Water
ES - Environmental

G&M CONSULTING

Trial Pit Record

				TP No	9
				Contract No	C398
Method:	Machine excavated trial pit using a 3 tonne rated tracked excavator	**Site**	**28 Paddock Road, Staincross**	Date	05/11/20
				Scale	1:25
		Client	**Andrew Bailey Architects**	Logged By	ATS

Sample Details			Description	Depth (m)	Level (mAOD)	Legend
Type	**Depth** To-from (m)	**Vane** kN/m²				
			Stiff friable yellow mottled orangish yellow gravelly very sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse of mudstone	0.30		
D	0.50		Firm locally stiff pale yellow mottled light grey silty gravelly CLAY. Gravel is subangular fine to coarse of mudstone lithorelicts.	1.10		
			Extremely weak, orangish brown thinly laminated to very thinly bedded SANDSTONE: Recovered as sandy subangular fine to coarse gravel with low cobble content. Cobbles are subangular.			
			Trial pit complete at 1.20m			

Remarks
Sides stable during excavation
No groundwater encountered
Trial pit used for soakaway
Pit dimensions 0.50x1.60

Sample Types
D - Disturbed
B - Bulk
W - Water
ES - Environmental

G&M CONSULTING

Trial Pit Record

				TP No	10
				Contract No	C398
Method:	Machine excavated trial pit using a 3 tonne rated tracked excavator	**Site**	**28 Paddock Road, Staincross**	Date	05/11/20
				Scale	1:25
		Client	**Andrew Bailey Architects**	Logged By	ATS

Sample Details			Description	Depth (m)	Level (mAOD)	Legend
Type	**Depth** To-from (m)	**Vane** kN/m²				
HV D HV	0.40 0.50 0.60	58,52,62 108,110,110	Firm locally stiff pale yellow mottled light grey silty gravelly CLAY. Gravel is subangular fine to coarse of lithorelict mudstone.	0.80		
D	1.20		Stiff dark brown mottled bluish grey silty very gravelly CLAY with a low cobble content. Gravel is subangular fine to coarse of lithrelict mudstone. Cobbles are subrounded of ironstone.	1.60		
			Extremely weak, light grey thinly to thickly laminated MUDSTONE: Recovered as sandy subangular fine to coarse gravel. Sand is fine to coarse.			
			Trial pit complete at 1.80m			

Remarks

Sides Stable during excuvation
No groundwater encountered
Pit dimensions 0.50x1.70m
Pit backfilled upon completion

Sample Types

D - Disturbed
B - Bulk
W - Water
ES - Environmental

G&M CONSULTING

Trial Pit Record

				TP No	11
				Contract No	C398
Method:	Machine excavated trial pit using a 3 tonne rated tracked excavator	**Site**	**28 Paddock Road, Staincross**	Date	05/11/20
				Scale	1:25
		Client	**Andrew Bailey Architects**	Logged By	ATS

Sample Details			Description	Depth (m)	Level (mAOD)	Legend
Type	**Depth** To-from (m)	**Vane** kN/m²				
HV	0.60	82,78,70	Firm locally stiff pale yellow mottled light grey silty gravelly CLAY. Gravel is subangular fine to coarse of lithorelict mudstone.	0.70		
			Stiff dark brown mottled bluish grey silty very gravelly CLAY with a low cobble content. Gravel is subangular fine to coarse of lithrelict mudstone. Cobbles are subrounded.	1.40		
			Extremely weak light grey thinly to thickly laminated MUDSTONE: Recovered as sandy subangular fine to coarse gravel. Sand is fine to coarse.			
			Trial pit complete at 1.50m			

Remarks

Sides stable during excuvation
No groundwater encountered
Pit used for soakaway tests
Pit dimensions 0.50x1.10m

Sample Types

D - Disturbed
B - Bulk
W - Water
ES - Environmental

G&M CONSULTING

Trial Pit Record

				TP No	12
				Contract No	C398
Method:	Machine excavated trial pit using a 3 tonne rated tracked excavator	**Site**	**28 Paddock Road, Staincross**	Date	05/11/20
				Scale	1:25
		Client	**Andrew Bailey Architects**	Logged By	ATS

Sample Details			Description	Depth (m)	Level (mAOD)	Legend
Type	**Depth** To-from (m)	**Vane** kN/m²				
			Firm locally stiff pale yellow mottled light grey silty gravelly CLAY. Gravel is subangular to rounded fine to coarse of lithorelict mudstone and ironstone.	0.70		
D	0.80		Stiff dark brown mottled bluish grey silty very gravelly CLAY with a low cobble content. Gravel is subangular fine to coarse of lithrelict mudstone. Cobbles are subrounded.	1.40		
			Extremely weak light grey thinly to thickly laminated MUDSTONE: Recovered as sandy subangular fine to coarse gravel. Sand is fine to coarse.			
			Trial pit complete at 1.50m			

Remarks

Sides stable during excuvation
No groundwater encountered
Pit dimensions 0.50x1.30m
Pit backfilled upon completion

Sample Types

D - Disturbed
B - Bulk
W - Water
ES - Environmental

G&M CONSULTING

Trial Pit Record

				TP No	13
				Contract No	C398
Method:	Machine excavated trial pit using a 3 tonne rated tracked excavator	**Site**	**28 Paddock Road, Staincross**	Date	15.02.21
				Scale	1:25
		Client	**Andrew Bailey Architects**	Logged By	ATS

Sample Details			Description	Depth (m)	Level (mAOD)	Legend
Type	**Depth** To-from (m)	**Vane** kN/m²				
ES	0.10		MADE GROUND: Soft, light brown slightly gravelly CLAY. Gravel is subangular fine to coarse of	0.10		
HV	0.50	62,64,58	MADE GROUND: Dark brown very clayey gravelly fine to coarse SAND with a low cobble content. Gravel sized fragments are subangular fine to coarse of brick and mudstone. Cobbles are subangular of concrete and sandstone. With a low cobble content.			
D	1.00		Cobbles are subrounded of limestone.			
HV	1.10	112,110,106		1.20		
			Stiff, dark brown mottled light grey silty very gravelly CLAY. Locally very clayey subangular fine to coarse GRAVEL of mudstone with a low cobble content. Cobbles are subangular of lithorelict mudstone.	1.50		
			Extremely weak light grey thinly to thickly laminated MUDSTONE: Recovered as sandy subangular fine to coarse gravel. Sand is fine to coarse.			
			Trial Pit complete at 1.70m			

Remarks

Sides stable during excavation
No groundwater encountered
Pit dimensions 1.90mx0.40m
Pit backfilled upon completion

Sample Types

D - Disturbed
B - Bulk
W - Water
ES - Environmental

G&M CONSULTING

Trial Pit Record

				TP No	14
				Contract No	C398
Method:	Machine excavated trial pit using a 3 tonne rated tracked excavator	**Site**	**28 Paddock Road, Staincross**	Date	15.02.21
				Scale	1:25
		Client	**Andrew Bailey Architects**	Logged By	ATS

Sample Details			Description	Depth (m)	Level (mAOD)	Legend
Type	**Depth** To-from (m)	**Vane** kN/m²				
ES	0.30					
HV	0.40	60,61,34	Firm locally stiff pale yellow mottled light grey silty gravelly CLAY. Gravel is subangular to rounded fine to coarse of lithorelict mudstone and ironstone.			
D	0.50					
HV	0.80	82,84,80				
				0.90		
D	1.00		Stiff, dark brown mottled light grey silty very gravelly CLAY. Locally very clayey subangular fine to coarse GRAVEL of mudstone with a low cobble content. Cobbles are subangular of lithorelict mudstone.			
				1.30		
			Trial Pit complete at 1.30m			

Remarks

Sides stable during excuvation
No groundwater encountered
Pit dimensions 1.70mX0.40m
Pit backfilled upon completion

Sample Types

D - Disturbed
B - Bulk
W - Water
ES - Environmental

G&M CONSULTING

Trial Pit Record

				TP No	15
				Contract No	C398
Method:	Machine excavated trial pit using a 3 tonne rated tracked excavator	**Site**	**28 Paddock Road, Staincross**	Date	15.02.21
				Scale	1:25
		Client	**Andrew Bailey Architects**	Logged By	ATS

Sample Details			Description	Depth (m)	Level (mAOD)	Legend
Type	**Depth** To-from (m)	**Vane** kN/m²				
ES HV D	0.20 0.30 0.60	52,56, 50	Firm locally stiff pale yellow mottled light grey silty very gravelly CLAY. Gravel is subangular to rounded fine to coarse of lithorelict mudstone and ironstone.	0.85		
			Light grey locally light brown clayey silty subangular fine to coarse GRAVEL of mudstone and siltstone, with a low cobble content. Cobbles are subangular to subrounded fine to coarse of lithrelict mudstone and ironstone (Probable Bedrock).	1.70		
			Trial pit complete at 1.70m			

Remarks

Sides stable during excavation
Slow ????? Of water into pit at 1.70-No rise
Pit dimensions 1.95mx0.40m
Hand vanes below 0.40m too friable

Sample Types

D - Disturbed
B - Bulk
W - Water
ES - Environmental

G&M CONSULTING

Trial Pit Record

				TP No	16
				Contract No	C398
Method:	Machine excavated trial pit using a 3 tonne rated tracked excavator	**Site**	**28 Paddock Road, Staincross**	Date	15.02.21
				Scale	1:25
		Client	**Andrew Bailey Architects**	Logged By	ATS

Sample Details			Description	Depth (m)	Level (mAOD)	Legend
Type	**Depth** To-from (m)	**Vane** kN/m²				
ES	0.20		Firm locally stiff pale yellow mottled light grey silty gravelly CLAY. Gravel is subangular to rounded fine to coarse of lithorelict mudstone and ironstone.	0.30		
D	0.50		Black COAL recovered as very clayey subangular fine to medium gravel.	0.70		
HV	0.80	75,78,70	Stiff, friable light grey very gravelly CLAY. Gravel is subangular fine to coarse of lithorelict mudstone.	1.20		
			Extremely weak light grey thinly to thickly laminated MUDSTONE: Recovered as sandy subangular fine to coarse gravel. Sand is fine to coarse.	1.55		
			Trial pit complete at 1.55m			

Remarks

Sides stable during excuvation
No groundwater encountered
Pit dimensions 2.10mx0.40m
Pit backfilled upon completion

Sample Types

D - Disturbed
B - Bulk
W - Water
ES - Environmental

G&M CONSULTING

Trial Pit Record

				TP No	17
				Contract No	C398
Method:	Machine excavated trial pit using a 3 tonne rated tracked excavator	**Site**	**28 Paddock Road, Staincross**	Date	15.02.21
				Scale	1:25
		Client	**Andrew Bailey Architects**	Logged By	ATS

Sample Details			Description	Depth (m)	Level (mAOD)	Legend
Type	**Depth** To-from (m)	**Vane** kN/m²				
ES	0.20					
HV	0.30	62,80,70	Firm locally stiff pale yellow mottled light grey silty gravelly CLAY. Gravel is subangular to rounded fine to coarse of lithorelict mudstone and ironstone.			
D	0.80					
HV	0.80	72,84,80		1.00		
			Black COAL recovered as very clayey subangular fine to medium gravel.	1.30		
			Extremely weak interbedded MUDSTONE with siltstone: Recovered as locally slightly clayey sandy subangular fine to coarse gravel with a low cobble content. Cobbles are subangular to subrounded.	1.70		
			Trial pit complete at 1.70m			

Remarks

Sides stable during excuvation
No groundwater encountered
Pit dimensions 2.10x40m
Pit backfilled upon completion

Sample Types

D - Disturbed
B - Bulk
W - Water
ES - Environmental

G&M CONSULTING

Trial Pit Record

				TP No	18
				Contract No	C398
Method:	Machine excavated trial pit using a 3 tonne rated tracked excavator	**Site**	**28 Paddock Road, Staincross**	Date	15.02.21
				Scale	1:25
		Client	**Andrew Bailey Architects**	Logged By	ATS

Sample Details			Description	Depth (m)	Level (mAOD)	Legend
Type	**Depth** To-from (m)	**Vane** kN/m²				
ES	0.20		MADE GROUND: Dark grey very gravelly CLAY with a high cobble content. Gravel is subangular fine to coarse of sandstone and brick. Cobbles are subangular of sandstone and brick.			
ES	0.80			0.90		
D	1.20		Stiff, black grey mottled light brown slightly gravelly locally gravelly silty CLAY with a low cobble content. Gravel is subangular fine to coarse of mudstone and sandstone. Cobbles are subangular to subrounded of sandstone and ironstone.			
HV	1.40	68,62,74		2.00		
			Trial pit complete at 2.00m			

Remarks

Sides unstable from 0-0.90m
No groundwater encountered
Pit dimensions 2.50m-0.40m
Pit backfilled upon completion

Sample Types

D - Disturbed
B - Bulk
W - Water
ES - Environmental

G&M CONSULTING

Client: G & M Consulting Ltd	Site: Land at 28. Paddock Road Staincross, Barnsley. S75 6LG	Cape Site Services Ltd Unit 2, Rear of castle buildings, Carlton Road, Barnsley, South Yorkshire, S71 3HX	
Date: 05/01/2021	METHOD Rotary air mist		

Measurements In Meters

BH no	FROM	TO	THICKNESS	Description
1				
	0.0	0.5	0.5	Fill
	0.5	1.5	1.0	Clay yellow brown sandy
	1.5	5.0	3.5	Sandstone grey brown silty with odd mudstone bands
	5.0	7.8	2.8	Mudstone grey silty
	7.8	10.5	2.7	Mudstone black
	10.5	11.0	0.5	Coal dirty
	11.0	11.5	0.5	Mudstone light grey silty
	11.5	21.5	10.5	Sandstone grey silty mudstone bands
	21.5	22.4	0.9	Coal
	22.4	30.0	7.6	Mudstone grey silty
				No gases recorded Water strike around 20.0m
2				
	0.0	0.7	0.7	Clay yellow brown
	0.7	2.5	1.8	Mudstone grey brown silty
	2.5	3.0	0.5	Coal
	3.0	3.5	0.5	Mudstone light grey silty
	3.5	7.0	3.5	Sandstone grey brown with mudstone bands
	7.0	13.6	6.6	Mudstone grey silty with odd sandstone bands
	13.6	14.4	0.8	Coal
	14.4	20.0	5.6	Mudstone grey silty
				No gases recorded Water strike around 12.0m
3				
	0.0	0.8	0.8	Clay yellow grey
	0.8	4.9	4.1	Mudstone grey silty
	4.9	5.4	0.5	Coal dirty
	5.4	6.0	0.6	Mudstone light grey silty
	6.0	16.3	10.3	Sandstone grey silty with mudstone bands
	16.3	17.1	0.8	Coal
	17.1	20.0	2.9	Mudstone grey silty odd sandstone band
				No gases recorded Water strike around 18.0m

Driller I Wiles	Driller's Assistant R Hawkins & S Fish
Driller's Signature I Wiles	Page …1…… of ……3…..

Client: G & M Consulting Ltd	Site: Land at 28. Paddock Road Staincross, Barnsley. S75 6LG	Cape Site Services Ltd Unit 2, Rear of castle buildings, Carlton Road, Barnsley, South Yorkshire, S71 3HX
Date: 05/01/2021	METHOD Rotary air mist	

Measurements In Meters

BH no	FROM	TO	THICKNESS	Description
4				
	0.0	2.2	2.2	Clay yellow brown sandy
	2.2	3.8	1.6	Mudstone grey brown silty with sandstone bands
	3.8	4.7	0.9	Sandstone grey silty
	4.7	8.0	3.3	Mudstone grey silty
	8.0	8.1	0.1	Mudstone black
	8.1	17.5	9.4	Mudstone grey silty odd sandstone band
	17.5	18.5	1.0	Coal
	18.5	19.5	1.0	Mudstone grey silty
	19.5	30.0	10.5	Sandstone grey silty mudstone bands
				No gases recorded Water strike around 6.0m
5				
	0.0	0.7	0.7	Clay yellow grey
	0.7	3.0	2.3	Mudstone grey brown silty
	3.0	6.3	3.3	Mudstone grey silty
	6.3	6.7	0.4	Coal
	6.7	8.5	1.8	Mudstone light grey silty
	8.5	17.0	8.5	Sandstone grey brown silty with mudstone bands
	17.0	17.8	0.8	Coal dirty
	17.8	21.0	3.2	Mudstone grey silty
				No gases recorded Water strike around 15.0m
6				
	0.0	0.6	0.6	Clay yellow brown grey
	0.6	2.0	1.4	Mudstone grey brown
	2.0	3.2	1.2	Mudstone grey silty
	3.2	3.7	0.5	Coal dirty
	3.7	5.2	1.5	Mudstone light grey silty
	5.2	13.8	8.6	Sandstone grey brown silty with mudstone bands
	13.8	14.7	0.9	Coal dirty
	14.7	21.0	6.3	Mudstone grey silty
				No gases recorded Water strike around 12.0m

Driller I Wiles	Driller's Assistant R Hawkins & S Fish
Driller's Signature I Wiles	Page …2…… of ……3…..

Client: G & M Consulting Ltd	Site: Land at 28. Paddock Road Staincross, Barnsley. S75 6LG	Cape Site Services Ltd Unit 2, Rear of castle buildings, Carlton Road, Barnsley, South Yorkshire, S71 3HX	
Date: 05/01/2021	METHOD Rotary air mist & Water flush		

Measurements In Meters

BH no	FROM	TO	THICKNESS	Description
7				
	0.0	0.7	0.7	Clay yellow grey
	0.7	2.6	1.9	Mudstone grey brown silty
	2.6	3.1	0.5	Coal
	3.1	3.6	0.5	Mudstone light grey silty
	3.6	13.7	10.1	Mudstone grey brown silty with sandstone bands
	13.7	14.6	0.9	Coal dirty
	14.6	21.0	6.4	Mudstone grey silty
				No gases recorded Water strike around 12.0m
				Water flushed
8				
	0.0	2.4	2.4	Clay yellow grey
	2.4	2.9	0.5	Coal dirty
	2.9	5.0	2.1	Mudstone grey brown silty
	5.0	13.1	8.1	Sandstone grey brown with mudstone bands
	13.1	14.1	1.0	Coal dirty
	14.1	25.5	11.4	Mudstone grey silty odd sandstone band
	25.5	26.3	0.8	Coal dirty
	26.3	30.0	3.7	Mudstone grey silty
				No gases recorded

Driller I Wiles	Driller's Assistant R Hawkins & S Fish
Driller's Signature 	Page ...3..... of .....3.....

APPENDIX C

COAL AUTHORITY PERMIT

The Coal Authority

Permit to Enter or Disturb Coal Authority Interests

Permit 21058

Name and Address of Permit Holder:

RMH Properties Ltd
18 Low Cudworth Green
Cudworth
Barnsley
S72 8EF

Site Location:

Land at
28 Paddock Road
Staincross
Barnsley
S75 6LG

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

A Ground Investigation comprising ten boreholes to 30m to determine presence of shallow coal seams within the Authority's interests at the identified site location above as shown on the Grant Permit Boundary (overleaf) 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 Permit Holder's responsibility to obtain appropriate health, safety, environmental, technical and legal advice.*

Conditions:

- *Air mist only to be used at 50m or further from receptors*
- *Water flush*
- *Gas Monitoring CO, CH_4, CO_2, O_2, H_2S at borehole and rig*
- *Operators undertaking the work must be in possession of this certificate and the Permit boundary plan at the time of works*
- *Appropriate borehole sealing without delay and to withstand site level changes*

Signed: Michael Amirtash Granted Date: ***1st December 2020***

For and on behalf of The Coal Authority

Nominated Representative: Michael Amirtash, Permitting Manager;
The Coal Authority, Permitting Office, 200 Lichfield Lane, Mansfield, Notts, NG18 4RG
Tel: 01623 637450; E-Mail: permissions@coal.gov.uk

The Coal Authority

Granted Permit Boundary

Permit Ref: 21058

Permit Boundary:

APPENDIX D

PHOTOGRAPHIC RECORD

Figure 1 - Site Strip 1 looking east to west

Figure 2 - Site Strip 1 looking north

Figure 3 - Site Strip 2 looking east to west

Figure 4 - Site Strip 2 looking north-east