Chartered Consulting Engineers

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BY E-MAIL

Our Ref: F1/HOO/03/WW

24th November 2023

Dear Taylor

Barnsley Road, Goldthorpe, Barnsley
Shaft Investigation Results

In accordance with our commission, we attended site following the topsoil strip to investigate the possible presence of four unrecorded mine entries (F1, F2, F3 and F4) noted during the strip. These potential mine entries are not known to the Coal Authority or conjectured to be on site. Further details are provided below.

Background

The Coal Authority records, and the CMRA report for the site, dated 12 October 2020, indicate that there is one mine entry within 20m of the site, beneath the A635, and is recorded as treated. During the site strip, undertaken by Hoober Homes, four potential mine entries were identified across the site, ARP were then instructed to investigate these features, in the development area, and conduct a visual inspection. The four features covered by this validation are F1, F2, F3 and F4, as shown on the enclosed plan.

Shaft Investigations

The shape and dimensions of the features were recorded at the surface by an ARP engineer. The ground overlying each feature was subsequently excavated down to competent bedrock using an excavator in the presence of an engineer from ARP, and the shape and dimensions of the feature recorded. ARP then subsequently excavated several meters into the feature to prove it was not a shallow surface feature. Details are provided below.

Mine Entry 'F1' (445045.18, 404320.19)

At surface, the expression of the anomaly was circular in shape and comprised densely compacted made ground. The anomaly was visible due to a colour variation between the natural strata (Dark grey in colour) compared to a light greyish brown colour.

Excavation and stripping of the surface revealed a circular patch backfilled with made ground, easily distinguished by a colour variation from the natural greyish brown coloured siltstone to a dark grey colour. The made ground was predominantly reworked natural materials such as

mudstone, coal and clay. The depth to competent rock head was approximately 1.2m BGL, at a level of 36.0m AOD. The aperture at rock head was measured to be 2.2m in diameter. The excavation into the middle of the feature, indicated that the feature extended at least a further 2.5m, 3.7m bgl in total. From this, it is concluded that this feature is a mine shaft. The excavation was taken to 1.2m depth to assess the quality of the rock for founding a cap. This showed that the rockhead comprised siltstone, suitable for cap founding.

Photo 1 and 2: Mine Entry F1 at surface (Top) and at rockhead (Bottom)

Mine Entry 'F2' (445030.83, 404259.73)

At surface, the expression of the anomaly was oval in shape and comprised densely compacted made ground. The anomaly was visible due to a colour variation between the natural strata (Dark grey in colour) compared to a light greyish brown colour.

Excavation and stripping of the surface revealed an oval patch backfilled with made ground, easily distinguished by a colour variation from the natural greyish brown coloured siltstone to a dark grey colour. The made ground was predominantly reworked natural materials such as mudstone, coal and clay. The depth to competent rock head was approximately 1.2m BGL, at a level of 36.5m AOD. The aperture at rock head was measured to be 2.5m by 1.6m. The excavation into the middle of the feature, indicated that the feature extended at least a further 2.5m, 3.7m bgl in total. From this, it is concluded that this feature is a mine shaft. The excavation was taken to 1.2m depth to assess the quality of the rock for founding a cap. This showed that the rockhead comprised siltstone, suitable for cap founding.

Photo 3 and 4: Mine entry F2 at surface (Top) and at rockhead (Bottom)

Mine Entry 'F3' (445066.09, 404232.54)

At surface, the expression of the anomaly was circular in shape, and comprised densely compacted and backfilled mine spoil.

Excavation and stripping of the surface revealed a circular patch, backfilled with made ground, easily distinguished by a colour variation from the natural greyish brown coloured siltstone to a dark grey colour. The made ground was predominantly backfilled mine spoil such as mudstone, coal and clay. The depth to competent rock head was approximately 1.2m BGL, at a level of 38.5m AOD. The aperture at rock head was measured to be 2.5m by 2.1m. The excavation into the middle of the feature, indicated that the feature extended at least a further 1.5m, 2.7m bgl in total. From this, it is concluded that this feature is a mine shaft. The excavation was taken to 1.2m depth to assess the quality of the rock for founding a cap. This showed that the rockhead comprised siltstone, suitable for cap founding.

Photo 5 and 6: Mine entry F3 at surface (Top) and at rockhead (Bottom)

Mine Entry 'F4' (445069.36, 404276.69)

At surface, the expression of the anomaly was circular in shape, and comprised densely compacted and backfilled mine spoil.

Excavation and stripping of the surface revealed a circular patch, backfilled with made ground, easily distinguished by a colour variation from the natural greyish brown coloured siltstone to a dark grey colour. The made ground was predominantly backfilled mine spoil such as mudstone, coal and clay. The depth to competent rock head was approximately 0.8m BGL, at a level of 37.9m AOD. The aperture at rock head was measured to be a maximum of 2.4m in diameter. The excavation into the middle of the feature, indicated that the feature extended at least a further 2.0m, 2.8m bgl in total. From this, it is concluded that this feature is a mine shaft. The excavation was taken to 0.8m depth to assess the quality of the rock for founding a cap. This showed that the rockhead comprised siltstone, suitable for cap founding.

Photo 7 and 8: Mine entry F4 at surface (Top) and at rockhead (Bottom)

Reinstatement

After completing the inspection of each feature, all excavations were backfilled with arisings and compacted with the excavator bucket. With a marker placed above the centre of the feature upon completion for future site reference.

Conclusions

Based on stripping, and excavating down into the features it is concluded that the four features are mine shafts. It is recommended that the shafts are capped, founding on rockhead, with the cap extending the length of the radius of the shaft past the opening at rockhead (i.e. the cap will be twice the shaft diameter), the ground above the cap shall then be backfilled and a building exclusion for founding imposed, such that no building loading is placed directly on the cap.

It is also recommended that a 45 degree angle extending from the edge of the cap, in cross section, is used to define the depth of any foundations. It is recommended that the depths of the foundations are extended below the confining 45 degree line so that no residual strain is transferred onto the cap.

The findings of this shaft investigation and recommendations for treatment are subject to regulatory approval. Where mine shafts are located within the influence of adoptable highways, these loadings should be taken account of during the mine shaft cap design. The adopting authority will need to approve the proposed treatment/cap design.

We trust the above, and attachments, are acceptable, but if you have any queries, please do not hesitate to contact us.

Yours sincerely
for ARP GEOTECHNICAL LTD

W Watkins

William watkins

Encs

1:250 SCALE @ A0

legend :

SURVEY STATION	STN	GENERAL ABBREVIATIONS	
BANKING	TOP / BOTTOM	AIR CONDITIONING UNIT	ACU
		AIR VALVE	AV
		BACK DROP	BD
		BRICK	BK
		BIN	B
		BUS STOP	BS
HEDGE SPREADS		BT INSPECTION COVER	BT
		CABLE TV COVER	CATV
VEGETATION LINE		CONTROL BOX	CB
		COVER LEVEL	CL
MARSH / WATERLOGGED		CONC POST	C post
		DIRECTIONAL BOLLARD	DB
TREES	SPREAD & GIRTH SHOWN TO SCALE	ELECTRIC CONTROL COVER	EC
		ELECTRICITY POLE	EP
		FENCE HYDRANT	FH
		FIRE HYDRANT	FH
		FLOOR LEVEL	FL
GATE		FOOTPATH	FP
		FOUL WATER SEWER	FWS
KERB CHANNEL		GAS VALVE	GV
		GATE POST	GP
ROAD UNKERBED		GULLY	GY
		INSPECTION COVER	IC
FOOTPATH		KERB LEVELS	K
		KERB OUTLET	KO
CHANGE IN SURFACE		LAMP POST	LP
		LETTER BOX	LB
FENCE		LITTER BIN	BIN
		MANHOLE	MH
WALL		MARKER POST	MK
		METER	MT
OVERHEAD ELECTRIC		ORDNANCE SURVEY BENCH MARK	OSBM
		POST	P
OVERHEAD TELECOM		ROAD SIGN	RS
		RAIN WATER PIPE	RWP
FOUL SEWER		RETAINING WALL	RW
		STOP COCK	SC
SURFACE SEWER		STREET NAME PLATE	SNP
		STAY CABLES	ST
BUILDING		SURFACE WATER SEWER	SWS
		STOP VALVE	SV
OPEN SIDED BUILDING		SOIL VENT PIPE	SVP
		TACTILE PAVING	TACT
GLASSHOUSE		TRAFFIC LIGHT BOX	TCB
		TRAFFIC LIGHT	TL
CONTOUR	25.50	TELECOM POLE	TP
		UNABLE TO LIFT	UTL
SPOT LEVEL	× 127.13	UNABLE TO SURVEY	UTS
		VENT PIPE	VP
BORE HOLE	BH	WATER LEVEL	WL
		WATER METER	WM
TRIAL HOLE	TH	WASH OUT	WO
		WATER PIPE	WP
		HEIGHT ABBREVIATIONS	
		TOP OF WALL	ToW
		TOP OF FENCE	ToF
		TOP OF KERB	ToK
		EAVES LEVEL (roof)	EL
		EAVES LEVEL (roof)	EL
		SOFFIT BOARD (roof)	SB
		WINDOW HEAD	WH
		WINDOW CILL	WC

notes:

- The survey only records those features on the ground that were readily visible at the time of surveying.
  It may well be that further items are buried or obscured by vegetation etc. (eg. MH covers)
- All levels shown on kerblines are at channel level (not top of kerb)
- MH invert levels measured at channel outlet.
- Plotted fence lines are the site-side of the structure (not centrelines)

control:

As transferred from the original survey of the site undertaken by Midland Survey Ltd. (Dec 2012)

MIDLAND CONTROL REMAINING (at time of survey)

ST02	444937.535E	404206.928N	37.078H
ST04	444891.794E	404213.452N	35.922H
ST05	444883.627E	404267.839N	36.162H

ADDITIONAL CONTROL ESTABLISHED (from the above)

STNA	445003.325E	404204.487N	40.32H (Dec2022 40.38)
STNB	445028.062E	404207.236N	41.18H (Dec2022 41.24)
STNC	445083.389E	404208.950N	42.45H (Dec2022 42.54)
STND	445039.214E	404258.095N	38.74H (best)

PLEASE NOTE

TO AVOID CONFLICT WITH DESIGN WORK ALREADY UNDERTAKEN, THIS SURVEY DRAWING HAS **NOT** BEEN ADJUSTED TO SUIT UPDATED GPS VALUES IN ANY WAY.
THE SUBSEQUENT SETTING OUT OF THE SITE MUST THERFORE BE UNDERTAKEN TO THE SURVEY CONTROL STATIONS TABULATED ABOVE AS CARRIED OVER FROM MIDLAND SURVEYS LTD 2012 SURVEY

rev	date	amendment	by
D	20-12-22	Mine shafts (2#) surveyed-in.	MS
C	16-12-22	Superseded with site strip levels & muck heaps	MS
B	14-05-20	Levels on AutoCAD drawing upgraded to 3D	MS
A	22-08-19	SWMH Located in NE corner & added to survey	MS

MS LAND & CONSTRUCTION SERVICES LTD.
LAND SURVEY | BUILDING SURVEY | SITE SETTING OUT
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01757 617020
msmith.co@btinternet.com

title:

TOPOGRAPHICAL SURVEY

project:

LAND OFF BARNSLEY ROAD
GOLDTHORPE
ROTHERHAM

client:

HOOBER homes

plotted scale: 1:250@A0		surveyed: M.Smith	date: 18/08/19
drg id: 001	rev: D		