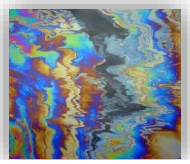


INVESTIGATE



REMEDIATE



REGENERATE

TECHNICAL REPORT

INVESTIGATION OF CONTAMINATION AND VALIDATION OF REMEDIATION AT FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GREATER MANCHESTER FOR WIGGETT CONSTRUCTION LIMITED

REPORT NO. 6461F
APRIL 2019

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INVESTIGATION OF CONTAMINATION AND VALIDATION OF REMEDIATION AT FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GREATER MANCHESTER

CLIENT: WIGGETT CONSTRUCTION LIMITED

ENGINEER: BUILD VISION CONSULTING ENGINEERS

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1. INTRODUCTION

This report has been prepared in accordance with an email, dated 18 December 2018, from the Client.

The brief was set out in our estimate, ref. E3031 and dated 18 December 2018, and a "Proposals" letter, ref. DJ/6461F dated 20 December 2018, with amendments as the investigation proceeded and includes:

- 5 No. cable percussive boreholes
- 3 No. hand dug trial pits
- Photo Ionisation Detection (PID) testing
- Contamination analysis
- Installation of standpipes followed by groundwater monitoring and sampling
- Provision of an interpretative report on the above.

The Engineer has prepared and issued a report for the site, as follows:

- 1176 dated February 2016: Phase I: Walkover Survey and Desk Study.

We have also prepared and issued reports for the site, as follows:

- 6461 dated February 2018: Phase II: Ground Investigation (*superseded)*.
- 6461A dated April 2018: Phase II: Ground Investigation (Addendum).
- 6461B dated December 2018: Phase II: GI & Phase IV Validation.
- 6461C dated November 2018: Phase II: Ground Investigation (*superseded)*.
- 6461D dated December 2018: Phase II: Ground Investigation (Addendum).
- 6461E dated February 2019: Phase II: Ground Investigation.
- 6461G dated February 2019: Phase III: Remediation Statement.
- 6461H dated February 2019: Pipeline Risk Assessment.

The above should be read in conjunction with this report.

1.1 Site Location and Description

The site is the former Hare Hill Mill site to the north east of Hare Hill Road, Littleborough, Rochdale, Greater Manchester, as indicated on Figure 1. The approximate National Grid Reference of the centre of the site is SD.9360 1661.

As shown on Figure 2, the about 0.79 hectare near 'L' shaped site is bounded to the south west by Hare Hill Road with parkland beyond, to the south east by houses off of Hare Hill Road, Pine Street and Sale Street, to the east by Littleborough Primary School and to the north east, north and north west by Hare Hill Park.

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Prior to initiating the Phase II ground investigations all but the west north western third of the site was occupied by disused mill buildings, a tower and associated tanks with adjoining concrete and bituminous macadam surfaced roads and hardstandings. The west north western third of the site was covered by trees, saplings and low vegetation with an apparent car parking area adjoining Hare Hill Road. A near central bunded area, which was full of oil, was also present together with a number of retaining walls.

In the spring of 2018 demolition took place a revised topographical survey was undertaken in July 2018. Ground levels were amended and spoil mounds removed and further revised topographical surveys were produced in late autumn and December 2018, the latter forming the base plan to Figure 4.

1.2 Proposed Development and Purpose of the Ground Investigation

It is proposed to develop the site by constructing twenty five houses with gardens and parking areas off the partially constructed access roads, as shown on Figure 3. In addition the "Engine House" and the existing buildings along Hare Hill Road are to be replaced by new identical stone buildings.

The purpose of the investigation was to determine the ground conditions at the positions of the exploratory holes and to enable samples of soil and groundwater to be taken for contamination analysis and assessment.

2. INVESTIGATION

2.1 Investigation Details

Five 150mm diameter boreholes were put down by cable percussive boring techniques at the positions determined and set out by Sub Surface North West Limited, as shown on Figure 4. The boreholes were put down to between 6.00 and 7.50 metres depth and on completion hdpe standpipes were installed to their bases. The 50mm diameter standpipes are slotted from 1.00 metres depth in order that groundwater monitoring and sampling could be undertaken.. Samples were taken at regular intervals for logging in accordance with BS EN ISO 14688-1: 2002 and BS EN ISO 14689-1: 2003 and for contamination analysis. Details of the boreholes and installations are given on the appended Borehole Records.

Three hand dug trial pits were taken out at the positions determined and set out by Sub Surface North West Limited, as shown on Figure 4, and were excavated to 0.60 metres depth. Samples were taken for logging in accordance with BS EN ISO 14688-1: 2002 and BS EN ISO 14689-1: 2003 and for contamination analysis. On completion the pits were backfilled with arisings. Details are given on the appended Hand Dug Trial Pit Records and photographs.

Ground levels at the exploratory hole positions have been interpolated from spot heights given on topographical survey base plan to Figure 4. The reduced levels are related to Ordnance Datum.

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2.2 Sub Surface Detail

Details of the strata encountered in the ground investigation are given on the appended Borehole and Hand Dug Trial Pit Records. * BH7, from previous ground investigation, is also appended. The exploratory holes found Made Ground overlying cohesive and granular drift deposits. The depths of strata found were as follows:

TABLE 1 STRATA (EASTERN AREA)

Expl. Hole No.	Ground Level (mOD)	Depth of Cohesive Made Ground (m)	Depth of Granular Made Ground (m)	Depth of Cohesive Drift Deposits (m)	Depth of Granular Drift Deposits (m)	Depth of Hole (m)
BH101	146.60	2.90	-	> 7.50		7.50
BH102	146.20	3.40	5.00	-	> 6.00	6.00
BH103	146.30	-	1.40	> 6.00		6.00
BH104	146.90	3.10	-	> 6.00		6.00
* BH7	146.80	-	3.00	-	> 7.50	7.50

BH = Borehole.

A general summary of the strata found is as follows:

2.2.1 Made Ground

BH101 and BH104, in the north western part, were found to be broadly similar with cohesive Made Ground found to between 2.90 and 3.10 metres depth. However, BH103 found granular Made Ground to 1.40 metres depth and BH102 found cohesive Made Ground to 3.40 metres over granular Made Ground to 5.00 metres depth. BH7, from a previous ground investigation, found granular Made Ground to 3.00 metres depth.

Cohesive Made Ground was generally found to be slightly gravelly to gravelly slightly sandy to sandy silty clays with in parts cobble sized fragments and pockets of sand. Gravel and cobble sized fragments comprised brick, concrete, stone and occasional slate, glass and wood.

Granular Made Ground was found to be slightly gravelly silty sand in BH102 and very sandy gravel sized fragments with medium cobble sized fragments in BH103. Gravel and cobble sized fragments comprised brick, concrete, stone and occasional slate, glass and wood.

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2.2.2 Drift Deposits

Underlying the above were predominantly cohesive drift deposits with granular drift deposits found in BH102 only.

Cohesive drift deposits were found to comprise firm slightly gravelly slightly sandy silty clays (BH101 and BH104) and very soft slightly gravelly slightly sandy clayey silts (BH103).

Granular drift deposits were found to comprise silty very sandy fine to coarse quartz gravel with occasional pockets of silty clay.

2.2.3 Groundwater

A summary of groundwater entries and levels are tabulated below:

TABLE 2 GROUNDWATER

Expl. Hole No.	Water Entry Depth (m)	Rate of Inflow	Depth to Standing Water Level after 20 minutes (m)	Depth Sealed (m)
BH101	1.50	Slow	1.40	3.00
	6.50	Fast	3.10	Not Sealed
BH102	3.40	Slow	3.20	Not Sealed
	5.40	Slow	4.90	Not Sealed
BH103	1.20	Slow	1.10	1.40
BH104	2.80	Slow	2.40	3.20
BH7	4.00	Medium	3.00	Not Sealed

It should be noted that the boreholes were only left open for a short period of time and groundwater levels and rates of inflow may be subject to seasonal and/ or climatic variations.

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TABLE 3 STRATA (WESTERN AREA)

Expl. Hole No.	Ground Level (mOD)	Depth of Granular Made Ground (m)	Depth of Cohesive Made Ground (m)	Depth of Cohesive Drift Deposits (m)	Depth of Granular Drift Deposits (m)	Depth of Hole (m)
BH105	147.40	0.90	5.00	-	> 5.40	5.40
HD106	147.15	> 0.60	-			0.60
HD107	146.90	> 0.60	-			0.60
HD107	145.85	> 0.60	-			0.60

BH = Borehole, HD = Hand Dug Trial Pit.

A general summary of the strata found is as follows:

2.2.4 Made Ground

Granular Made Ground was found at the surface with cohesive Made Ground being found from 0.90 metres depth in BH105.

Granular Made Ground was found to be generally very sandy gravel sized fragments with low to medium cobble sized fragments in all but BH108 where it was found to be slightly gravelly slightly silty sand with low cobble sized fragments. The gravel and cobble sized fragments comprised brick, stone, concrete and occasional slate, glass, metal and wood.

Cohesive Made Ground was found to be gravelly slightly sandy silty clays with low to medium cobble sized fragments. Gravel and cobble sized fragments comprised brick, concrete, stone and occasional glass and slate.

2.2.5 Drift Deposits

Underlying the above were granular drift deposits which in BH105 comprised silty very sandy fine to coarse quartz gravel.

2.2.6 Groundwater

A summary of groundwater entries and levels are tabulated below:

TABLE 4 GROUNDWATER

Expl. Hole No.	Water Entry Depth (m)	Rate of Inflow	Depth to Standing Water Level after 20 minutes (m)	Depth Sealed (m)
BH105	5.10	Medium	3.90	Not Sealed

No groundwater was encountered in the hand dug trial pits although it should be noted that they were only taken out to 0.60 metres depth, only left open for a short period of time and groundwater levels may be subject to seasonal and/ or climatic variations.

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3. SAMPLING AND TESTING

3.1 Sampling

Nine 100mm diameter undisturbed samples were attempted and seven recovered together with bulk disturbed samples in the boreholes. Bulk disturbed, small disturbed, amber glass jar and glass vial samples were taken in the hand dug trial pits. The samples were taken for logging and contamination analysis.

The samples will be retained for a period of one month after the issue of this report, for reference purposes, and then disposed of unless otherwise instructed.

3.2 Field Testing

Photo Ionisation Detection (PID) testing was undertaken at regular intervals in the boreholes in order to determine whether volatile hydrocarbon contaminants were present.

3.3 Laboratory Testing

Eight soil samples have been subjected to the speciated aliphatic and aromatic total petroleum hydrocarbons (TPHs) suite and the benzene/ ethylbenzene/ toluene/ xylene (BTEX) suite. In addition organic matter content was determined for seven soil samples, including two of the above.

A groundwater sample taken from the standpipe installed in BH7 on 11 December 2018, groundwater samples taken from the standpipes installed in BH5, BH6A, BH7, BH101, BH102, BH103, BH104 and BH105 on 20 February 2019 and groundwater samples taken from the standpipes installed in BH5, BH6A, BH7, BH101, BH102, BH103, BH104 and BH105 on 21 March 2019 have been subjected to the speciated aliphatic and aromatic TPHs suite and the BTEX suite.

The results of the above analyses are appended.

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4. APPRAISAL AND RECOMMENDATIONS

4.1 Comments on the Profile

At the outset it should be appreciated that only a small proportion of the area to be developed has been investigated and consequently the recommendations made and opinions expressed in this report can only be applied to such conditions as were encountered in the exploratory holes.

The exploratory holes indicate that the natural strata are interleaved/ interbedded and relatively variable such that great care will need to be taken when interpolating or extrapolating strata to adjacent areas.

Due to the site having been previously developed and the nature of Made Ground localised variations in thickness and composition should be anticipated and hence interpolation or extrapolation from the exploratory holes to adjoining areas should only be undertaken with caution.

Details of the findings of the investigation are given on the appended Borehole and Hand Dug Trial Pit Records and a summary of the ground conditions is given in Section 2.2.

4.2 Contamination Considerations

4.2.1 Introduction

It is proposed to develop the site by constructing twenty five houses with gardens and parking areas off the partially constructed access roads, as shown on Figure 3. In addition the "Engine House" and the existing buildings along Hare Hill Road are to be replaced by new identical stone buildings.

In the eastern part of the site the ground investigation found granular and cohesive Made Ground to between 1.40 and 5.00 metres depth underlain by interbedded/ interleaved granular and cohesive drift deposits proven to >7.50 metres depth. Groundwater was encountered at shallow depths of between 1.20 and 3.40 metres and rose in 20 minutes to between depths of 1.10 and 3.20 metres. In parts, groundwater was also encountered at greater depths of between 4.00 and 6.50 metres and rose in 20 minutes to between depths of 3.00 and 4.90 metres.

In the western part of the site the ground investigation found granular Made Ground to 1.90 metres depth, cohesive Made Ground to 5.00 metres depth and granular drift deposits to >5.40 metres depth in BH105. HD106, HD107 and HD108 were all terminated in the granular Made Ground at 0.60 metres depth. Groundwater was encountered in BH105 at 5.10 metres depth and rose in 20 minutes to 3.90 metres depth.

A Phase I Desk Study Report, including a Conceptual Ground Model, has been provided and this Phase II ground investigation has been undertaken to provide an additional contamination risk assessment, in accordance with the Conceptual Ground Model. It should be appreciated that the suite of determinants analysed for consists of a range of contaminants identified in the Conceptual Ground Model. However, the absence of any other specific contaminants cannot be guaranteed.

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4.2.2 Western Area (soil)

This soil contamination assessment in the western area follows previous ground investigations, details of which are given in the Phase II Ground Investigation Reports, ref. 6461A dated April 2018, 6461B dated December 2018, 6461D dated December 2018 and 6461E dated February 2019.

In 2018 earthmoving took place and materials, including contaminated material in the area of TP5, were removed from the site. The access road was subsequently constructed. This ground investigation was undertaken to validate, or otherwise, that the "hot spot" of contamination in the area of M1, TP14 and TP15 has been removed as required by the Phase III Remediation Statement, ref. 6461G dated February 2019 (see appended Figure 5).

In order to provide an assessment of the absence of contamination after remediation by the Client three soil samples from HD106, HD107 and HD108 have been analysed for a suite of determinants and the results are appended.

In July 2009 Generic Assessment Criteria (GACs) were published by Land Quality Management Limited (LQM) in conjunction with the Chartered Institute of Environmental Health (CIEH). Contaminated Land: Applications in Real Environments (CL:AIRE) guideline values were also published in December 2009 to supplement the above. DEFRA published in March 2014 Category 4 Screening Levels (C4SLs) for arsenic, cadmium, lead, hexavalent chromium, benzo(a)pyrene and benzene. In November 2014 Suitable for Use Levels (S4ULs) were then published by LQM/ CIEH which superseded the GACs. Updated S4ULs values for cadmium and phenols were published in July 2015 and for nickel in August 2015. The guideline values (SGVs, S4ULs, CL:AIRE and C4SLs) vary dependent upon the land use; allotment and residential use being the most sensitive and commercial/ industrial use being the least sensitive.

For the purposes of assessment, as the proposed development is for houses with gardens, contamination analyses have been compared with the guideline values for a standard land use of residential with plant uptake (with homegrown produce).

When compared with published guideline values for a standard land use of residential with plant uptake the contamination analysis determined elevated levels of aromatic TPHs in HD107 only, as tabulated below:

TABLE 5 ASSESSMENT OF SOIL CONTAMINATION

Determinant	Expl. Hole No.	Depth (m)	Recorded Level (mg/kg)	Published Guideline Value (mg/kg)
Aromatic TPHs (C12-C16)	HD107	0.50-0.60	840	660
Aromatic TPHs (C16-C21)	HD107	0.50-0.60	1,000	930
Aromatic TPHs (C21-C35)	HD107	0.50-0.60	3,600	1,700

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Guideline values for the assessment can be supplied directly to the Regulator, if requested.

4.2.3 Eastern Area (groundwater)

This groundwater contamination assessment in the eastern area (and the adjoining areas surrounding BH5/R5 and BH6A) follows contaminated groundwater having been found in a sample from BH7 at 2.35 metres depth taken on 29 October 2018. Elevated levels of total petroleum hydrocarbons (TPHs) in the C6-C10, C10-C21, and C21-C40 ranges and toluene were found, details of which are given in the Phase II Ground Investigation Report, ref. 6461D dated December 2018 (and appended for ease of reference).

A groundwater sample taken from the standpipe installed in BH7 on 11 December 2018, groundwater samples taken from the standpipes installed in BH5, BH6A, BH7, BH101, BH102, BH103, BH104 and BH105 on 20 February 2019 and groundwater samples taken from the standpipes installed in BH5, BH6A, BH7, BH101, BH102, BH103, BH104 and BH105 on 21 March 2019 have been subjected to the speciated aliphatic and aromatic TPHs suite and the BTEX suite.

To assess the risk to surface water bodies the results have been compared with the Environmental Quality Standards (EQS) for annual allowable concentrations, published in the Department of Environment Food and Rural Affairs (DEFRA) Water Framework Directive Directions 2015, or the best equivalent (e.g. the Dangerous Substance Directive List II Substances).

To assess the risk to groundwater resources the results have been compared with the United Kingdom Drinking Water Standards (UK DWS), published in the Water Supply (Water Quality) Regulations 2016. Where no UK DWS is available the World Health Organisation (WHO) Drinking Water Guidelines have been adopted.

The analyses on samples taken on 11 December 2018, 20 February 2019 and 21 March 2019 found no elevated levels when compared to the EQS and/ or the UK DWS.

4.2.4 Eastern Area (soil)

This soil contamination assessment in the eastern area has been undertaken in order to identify a possible source of the TPH and toluene contamination found in BH7 in October 2018.

In order to provide an assessment of the presence of contamination five soil samples from BH101, BH102, BH103, BH104 and BH105 have been analysed for a suite of determinants and the results are appended.

In July 2009 Generic Assessment Criteria (GACs) were published by Land Quality Management Limited (LQM) in conjunction with the Chartered Institute of Environmental Health (CIEH). Contaminated Land: Applications in Real Environments (CL:AIRE) guideline values were also published in December 2009 to supplement the above. DEFRA published in March 2014 Category 4 Screening Levels (C4SLs) for arsenic, cadmium, lead, hexavalent chromium, benzo(a)pyrene and benzene. In November 2014 Suitable for Use Levels (S4ULs) were then published by LQM/ CIEH which superseded the GACs. Updated S4ULs values for cadmium and phenols were published in July 2015 and for nickel in August 2015. The guideline values (SGVs, S4ULs, CL:AIRE and C4SLs) vary dependent upon the land use; allotment and residential use being the most sensitive and commercial/ industrial use being the least sensitive.

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For the purposes of assessment, as the proposed development is for houses with gardens, contamination analyses have been compared with the guideline values for a standard land use of residential with plant uptake (with homegrown produce).

When compared with published guideline values for a standard land use of residential with plant uptake the contamination analysis determined no elevated levels speciated aliphatic and aromatic TPHs or toluene.

It was noted that very low levels of aliphatic and aromatic TPHs were detected in BH101, BH102 and BH104 and very low levels of toluene were detected in BH103 and BH104; these all being insignificant when compared to the guideline values.

4.2.5 Conclusions and Recommendations

Section 78a(2) of the Environmental Protection Act: 1990 as amended by the Contaminated Land (England) (Amendment) regulations 2012, and Section 86 of the Water Act 2003, defines CONTAMINATED LAND for the purposes of Part IIA as:

"any land which appears to the LOCAL AUTHORITY in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that:

(a) SIGNIFICANT HARM is being caused or there is a SIGNIFICANT POSSIBILITY of such harm being caused; or
(b) SIGNIFICANT POLLUTION OF CONTROLLED WATERS is being, or is likely to be, caused"

Before a LOCAL AUTHORITY can make the judgement that land appears to be CONTAMINATED LAND on the basis that SIGNIFICANT HARM is being caused, or that there is a SIGNIFICANT POSSIBILITY of such harm being caused, the LOCAL AUTHORITY must identify a SIGNIFICANT POLLUTANT LINKAGE. This means that each of the following has to be identified:

(a) a CONTAMINANT;
(b) a relevant RECEPTOR (defined as living organisms, ecological systems, controlled waters or property); and
(c) a PATHWAY by means of which either:
    (i) the CONTAMINANT is causing SIGNIFICANT HARM to that RECEPTOR, or
    (ii) there is a SIGNIFICANT POSSIBILITY of such harm being caused by that CONTAMINANT to that RECEPTOR

It should be noted that the words in capitals have a legal definition within the legislation.

Without a clear identification of all three elements of the pollutant linkage, land cannot be identified as contaminated under the regime.

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The National Planning Policy Framework states that, “after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990”. Therefore, the general principles detailed above apply to this assessment.

Our sampling and assessment of soil samples in the area of the previously identified “hot spot” of contamination indicate that elevated levels of aromatic TPHs in the C12-C16, C16-C21 and C21-C35 are still present in the near surface Made Ground (source) in the area of HD107. The pathway from the source to site operatives during earthworks, the end users of the development and any proposed planting (receptors) will need to be removed by precautions and/ or remedial measures.

The contaminated soils in the area of HD107 should be excavated and removed to a licensed waste disposal facility, further validation sampling should be undertaken to confirm that it has been removed and a clean cover should be placed in accordance with the Phase III Remediation Statement, ref. 6461G dated February 2019.

The contaminated groundwater sampled in October 2018 in BH7 has been shown to be no longer present and a source of the contamination has not been found in its vicinity.

During earthworks should potential hydrocarbon or toluene odours be noted we recommend that these are investigated to ensure that elevated levels are not present which could affect the end users of the site.

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4.3 General

We recommend that consultation should be undertaken with the Local Authority Environmental Health Officer and the Local Authority Building Control Officer prior to development

We trust that this report fulfils your present requirements but if you have any queries or we can be of further assistance please contact the undersigned or Miss Anna Marsden at our Preston office.

SUB SURFACE CONSULTANTS LIMITED
REPORT No. 6461F
APRIL 2019



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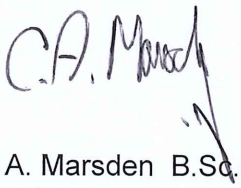
Principal Geotechnical Engineer
For and on behalf of
Sub Surface Consultants Limited



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EXTRACTS OF PREVIOUS REPORT

SUB SURFACE

SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
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Site	Borehole Number
FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GREATER MANCHESTER	BH5

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
LIGHT CABLE PERCUSSIVE	150mm to 29.50m	145.90	WIGGETT CONSTRUCTION LIMITED	6461C
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	28/08/2018-03/09/2018	BUILD VISION CONSULTING ENGINEERS	1/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.40)	MADE GROUND: brown slightly ashy gravelly clayey silty fine to coarse sand. Gravel sized fragments are fine to coarse stone, brick and metal.		
0.40	D				145.50	0.40			
0.50-1.20	B						MADE GROUND: brown gravelly slightly sandy silty clay. Gravel sized fragments are fine to coarse stone, brick and wood.		
						(0.80)			
					144.70	1.20			
1.20-1.65	SPT N=1			1,0/0,1,0,0			Soft very low to low strength clayey silty amorphous PEAT with gravel sized fragments of fine to medium stone and brick from above.		
1.20-1.65	D					(0.60)			
1.20-1.70	B								
1.80	D				144.10	1.80	Soft very low strength greyish brown slightly gravelly sandy silty CLAY. Gravel is subangular to subrounded fine to coarse quartz and sandstone.		
2.00-2.45	SPT N=3			1,1/1,0,1,1					
2.00-2.45	D								
2.00-2.50	B					(1.20)			
2.50	D						.... at 2.50m : organic odour		
2.80	D						.... at 2.80m : hydrocarbon odour		
3.00-3.45	SPT N=23			4,5/6,6,5,6	142.90	3.00	Firm high strength brown and dark brown mottled gravelly silty CLAY. Gravel is subangular fine to coarse sandstone.		▼1
3.00-3.45	D								
3.00-3.50	B								▽1
				Slow Inflow(1) at 3.45m, rose to 3.00m in 20 mins, not sealed.		(1.00)			
4.00-4.45	SPT N=14			2,3/3,2,4,5	141.90	4.00	Firm medium strength dark brownish grey slightly gravelly slightly sandy silty CLAY. Gravel is subrounded fine to coarse quartz.		
4.00-4.45	D								
4.00-4.50	B								
5.00-5.45	SPT N=10			1,2/2,2,3,3					
5.00-5.45	D					(2.50)			
5.00-5.50	B								
							.... from 6.20m : with cobbles		
6.50-6.68	SPT 25*/75 50/100			25/30,20	139.40	6.50	Very dense brown slightly silty sandy subangular fine to coarse quartz and mudstone GRAVEL with medium to high quartz and mudstone cobbles.		
6.50-6.70	B								
						(3.00)			
8.00-8.17	SPT 25*/75 50/90			25/37,13					
8.00-8.20	B								
				28/08/2018:3.50m					
				29/08/2018:3.50m					
				From 9.00m to 11.00m pushing down cobbles and boulders					
9.50-9.95	D				136.40	9.50	Dense brown slightly silty to silty very sandy subangular to subrounded fine to coarse quartz GRAVEL.		
9.50-9.95	SPT N=34			25,15/9,8,8,9					
9.50-10.00	B								

Remarks
Hand dug inspection pit from GL to 1.20m to check for services - 1hr
Chiselling cobbles from 6.20m to 7.20m - 45mins, cobbles and boulders from 8.00m to 8.60m - 45mins, cobbles from 12.70m to 13.20m - 45mins, from 15.50m to 16.00m - 1hr 30mins, from 22.00m to 22.50m - 45mins, from 23.00m to 23.40m - 45mins, from 25.70m to 26.00m - 1hr and from 26.50m to 26.80m - 45mins
Continued by R5 from 29.50m to 42.00m and standpipe installed (See R5 for details).

Scale (approx)	Logged By
1:50	TDC/SJ

Figure No. 6461C.BH5

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SUB SURFACE

SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Site	Borehole Number
FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GREATER MANCHESTER	BH5

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
LIGHT CABLE PERCUSSIVE	150mm to 29.50m	145.90	WIGGETT CONSTRUCTION LIMITED	6461C
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	28/08/2018-03/09/2018	BUILD VISION CONSULTING ENGINEERS	2/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							Dense brown slightly silty to silty very sandy subangular to subrounded fine to coarse quartz GRAVEL.		
11.00-11.45 11.00-11.45 11.00-11.50	SPT N=40 D B			7,8/9,10,10,11		(3.00)			
12.50-12.83 12.50-12.83 12.50-13.00	SPT 50/180 D B			5,8/15,25,10	133.40	12.50 (1.50)	Very dense dense brown slightly silty sandy subrounded fine to coarse quartz GRAVEL with low quartz cobbles.		
14.00-14.45 14.00-14.45 14.00-14.50	SPT N=17 D B			2,3/4,4,4,5	131.90	14.00 (1.50)	Medium dense brown slightly silty sandy subrounded fine to coarse quartz GRAVEL.		
15.50-15.65 15.50-15.65 15.50-16.00	SPT 25*/75 50/70 D B			25/50 29/08/2018:4.00m 30/08/2018:3.50m From 16.00m no samples taken, drillers descriptions from 16.00m to 29.50m	130.40 129.90	15.50 (0.50) 16.00 (5.80)	Very dense grey slightly silty sandy subrounded fine to coarse quartz GRAVEL with high quartz cobbles. Brown sandy GRAVEL with cobbles.		

Remarks

Scale (approx)	Logged By
1:50	TDC/SJ

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Site	Borehole Number
FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GREATER MANCHESTER	BH5

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
LIGHT CABLE PERCUSSIVE	150mm to 29.50m	145.90	WIGGETT CONSTRUCTION LIMITED	6461C
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	28/08/2018-03/09/2018	BUILD VISION CONSULTING ENGINEERS	3/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							Brown sandy GRAVEL with cobbles.		
					124.10	21.80			
							Greyish brown silty very sandy GRAVEL with cobbles.		
						(2.40)			
					121.70	24.20			
						(0.40)	Soft brown gravelly silty CLAY with mudstone cobbles.		
					121.30	24.60			
							Brown very sandy GRAVEL with cobbles.		
				30/08/2018:3.50m					
				03/09/2018:3.50m		(2.90)			
					118.40	27.50			
							Brown silty SAND with bands of silt.		
						(1.60)			
					116.80	29.10			
						(0.40)	Stiff grey gravelly sandy silty CLAY.		
				03/09/2018:9.00m	116.40	29.50			
							Complete at 29.50m		

Remarks

Scale (approx)	Logged By
1:50	TDC/SJ

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Site	Borehole Number
FORMER HARE HILL MILL, HARE HILL ROAD, LITLEBOROUGH, ROCHDALE, GREATER MANCHESTER	R5

Machine	Casing Diameter	Ground Level (mOD)	Client	Job Number
Machine : BERETTA T44 Flush : WATER Core Dia: NONE mm Method : ROTARY OPEN HOLE	150mm to 29.50m 100mm to 42.00m	145.90	WIGGETT CONSTRUCTION LIMITED	6461C
	Location AS PLAN	**Dates** 03/09/2018	**Engineer** BUILD VISION CONSULTING ENGINEERS	**Sheet** 1/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
					Open holing (100mm dia) GL to 42.00m		(29.50)	(See BH5 for details).			

Remarks
Continuation from base of BH5 at 29.50m
Descriptions based upon foreman drillers records of water flush returns.
Foreman driller recorded no voids or loss of flush returns.
On completion backfilled with arisings from 42.00m to 7.00m and installed a Bentonite seal from 7.00m to 6.00m, a 50mm dia hdpe gas monitoring standpipe with a gas valve and a gravel surround to 6.00m, a Bentoniite seal from 1.00m to 0.20m and a concreted in lockable steel protective cover from 0.20m to 0.00m.

Scale (approx)	Logged By
1:100	AJP/SJ

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3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Site	Borehole Number
FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GREATER MANCHESTER	R5

Machine	Casing Diameter	Ground Level (mOD)	Client	Job Number
BERETTA T44	150mm to 29.50m 100mm to 42.00m	145.90	WIGGETT CONSTRUCTION LIMITED	6461C
Flush : WATER				
Core Dia: NONE mm				
Method : ROTARY OPEN HOLE	**Location** AS PLAN	**Dates** 03/09/2018	**Engineer** BUILD VISION CONSULTING ENGINEERS	**Sheet** 2/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
								(See BH5 for details).			
						116.40	29.50				
						116.20	29.70	Grey gravelly sandy silty CLAY.			
								Grey brown SANDSTONE.			
							(1.60)				
						114.60	31.30				
						114.55	31.35	Black COAL.			
								Grey SILTSTONE.			
							(2.15)				
						112.40	33.50	Grey SANDSTONE.			
							(1.10)				
						111.30	34.60				
							(0.50)	Brown SANDSTONE.			
						110.80	35.10	Grey SILTSTONE.			
							(2.90)				
						107.90	38.00	Grey SANDSTONE			

Remarks

Scale (approx)	Logged By
1:100	AJP/SJ

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Site	Borehole Number
FORMER HARE HILL MILL, HARE HILL ROAD, LITLEBOROUGH, ROCHDALE, GREATER MANCHESTER	R5

Machine	Casing Diameter	Ground Level (mOD)	Client	Job Number
BERETTA T44	150mm to 29.50m 100mm to 42.00m	145.90	WIGGETT CONSTRUCTION LIMITED	6461C
Flush : WATER				
Core Dia: NONE mm				
Method : ROTARY OPEN HOLE	**Location**: AS PLAN	**Dates**: 03/09/2018	**Engineer**: BUILD VISION CONSULTING ENGINEERS	**Sheet**: 3/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
							(4.00)	Grey SANDSTONE.			
					03/09/2018:	103.90	42.00	Complete at 42.00m			

Remarks

Scale (approx)	Logged By
1:100	AJP/SJ

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Site	Borehole Number
FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GREATER MANCHESTER	BH6

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
LIGHT CABLE PERCUSSIVE	200mm to 10.50m 150mm to 15.00m	146.15	WIGGETT CONSTRUCTION LIMITED	6461C
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	07/09/2018- 10/09/2018	BUILD VISION CONSULTING ENGINEERS	1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.50)	MADE GROUND: slightly ashy slightly clayey slightly silty sandy fine to coarse gravel sized fragments of stone, brick and clinker with low cobble sized fragments of brick.		
0.40 0.50-1.00	D B				145.65	0.50			
						(0.70)	MADE GROUND: brown clayey silty sandy fine to coarse gravel sized fragments of stone and brick with high cobble sized fragments of brick and stone.		
1.20-1.65 1.20-1.65 1.20-1.70	SPT N=11 D B			2,2/3,3,2,3	144.95	1.20	MADE GROUND: firm medium strength grey slightly sandy silty clay with some rootlets.		
						(0.80)			
2.00-2.45 2.00-2.45 2.00-2.50	SPT N=15 D B			3,3/4,4,3,4	144.15	2.00	MADE GROUND: firm medium strength dark grey slightly gravelly silty clay. Gravel sized fragments are fine to coarse quartz, sandstone and occasional brick.		
						(1.00)			
3.00-3.45 3.00-3.45 3.00-3.50	SPT N=10 D B			3,2/3,3,2,2	143.15	3.00	Firm low to medium strength brown silty CLAY with occasional lenses of silt.		▼1
				Slow Inflow(1) at 3.45m, rose to 3.00m in 20 mins, not sealed.		(1.00)			▽1
4.00-4.45 4.00-4.45 4.00-4.50	SPT N=16 D B			3,4/4,4,4,4	142.15	4.00	Firm medium strength brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular fine to coarse quartz and sandstone.		
						(1.00)			
5.00-5.45 5.00-5.45 5.00-5.50	SPT N=14 D B			4,6/6,4,2,2	141.15	5.00	Medium dense brown clayey silty sandy subangular fine to coarse quartz and sandstone GRAVEL.		
						(1.50)			
6.50-6.95 6.50-6.95 6.50-7.00	SPT N=49 D B			4,5/7,12,15,15	139.65	6.50	Dense brown slightly silty sandy subangular to subrounded fine to coarse quartz GRAVEL with low quartz cobbles.		
						(1.50)			
				07/09/2018: 10/09/2018:3.00m					
8.00-8.45 8.00-8.45 8.00-8.50	SPT N=13 D B			4,4/3,3,3,4	138.15	8.00	Medium dense brown slightly silty sandy subrounded fine to coarse quartz GRAVEL with low quartz cobbles.		
9.50-9.95 9.50-9.95 9.50-10.00	SPT N=18 D B			4,4/4,5,4,5					

Remarks
Ground raised following excavation of adjoining TP11.
Hand dug inspection pit rom GL to 1.20m to check for services - 1hr
Chiselling cobbles from 9.80m to 10.00m - 45mins, from 10.40m to 10.80m - 30mins, from 10.90m to 11.00m - 30mins and from 13.50m to 13.90m - 45mins
Casing snapped at 15.00m, abandoned, retrieved casing, backfilled with arisings and moved from BH6 0.70m to BH6A.

Scale (approx)	Logged By
1:50	TDC/SJ

Figure No. 6461C.BH6

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Site	Borehole Number
FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GREATER MANCHESTER	BH6

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
LIGHT CABLE PERCUSSIVE	200mm to 10.50m 150mm to 15.00m	146.15	WIGGETT CONSTRUCTION LIMITED	6461C
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	07/09/2018- 10/09/2018	BUILD VISION CONSULTING ENGINEERS	2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(4.50)	Medium dense brown slightly silty sandy subrounded fine to coarse quartz GRAVEL with low quartz cobbles.		
11.00-11.45 11.00-11.45 11.00-11.50	SPT N=23 D B			6,5/5,6,6,6					
					133.65	12.50			
12.50-12.95 12.50-12.95 12.50-13.00	SPT N=34 D B			7,8/8,8,9,9			Dense brown slightly silty sandy subrounded fine to coarse quartz GRAVEL with low quartz cobbless.		
						(2.50)			
14.00-14.45 14.00-14.45 14.00-14.50	SPT N=37 D B			8,8/9,10,9,9					
					131.15	15.00	Complete at 15.00m		
				10/09/2018:4.20m					

Remarks

Scale (approx)	Logged By
1:50	TDC/SJ

Figure No. 6461C.BH6

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Site	Borehole Number
FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GREATER MANCHESTER	BH6A

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
LIGHT CABLE PERCUSSIVE	200mm to 9.00m 150mm to 17.30m	146.15	WIGGETT CONSTRUCTION LIMITED	6461C
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	11/09/2018- 12/09/2018	BUILD VISION CONSULTING ENGINEERS	1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
				From 0.00m to 16.00m no samples taken, descriptions as per BH6 from 0.00m to 16.00m		(0.50)	MADE GROUND: slightly ashy slightly clayey slightly silty sandy fine to coarse gravel sized fragments of stone, brick and clinker with low cobble sized fragments of brick.			
					145.65	0.50				
						(0.70)	MADE GROUND: brown clayey silty sandy fine to coarse gravel sized fragments of stone and brick with high cobble sized fragments of brick and stone.			
					144.95	1.20				
						(0.80)	MADE GROUND: firm medium strength grey slightly sandy silty clay with some rootlets.			
					144.15	2.00				
						(1.00)	MADE GROUND: firm medium strength dark grey slightly gravelly silty clay. Gravel sized fragments are fine to coarse quartz, sandstone and occasional brick.			
					143.15	3.00				
				Slow Inflow(1) at 3.45m, not sealed.		(1.00)	Firm low to medium strength brown silty CLAY with occasional lenses of silt.		▽1	
					142.15	4.00				
						(1.00)	Firm medium strength brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular fine to coarse quartz and sandstone.			
					141.15	5.00				
						(1.50)	Medium dense brown clayey silty sandy subangular fine to coarse quartz and sandstone GRAVEL.			
					139.65	6.50				
						(1.50)	Dense brown slightly silty sandy subangular to subrounded fine to coarse quartz GRAVEL with low quartz cobbles.			
					138.15	8.00				
							Medium dense brown slightly silty sandy subrounded fine to coarse quartz GRAVEL with low quartz cobbles.			

Remarks
Ground raised following excavation of adjoning TP11.
Hand dug inspection pit from GL to 1.20m to check for services - 1hr
Water from 0.00m to 16.00m are as per BH6.
Chiselling cobbles from 16.50m to 17.30m - 1hr
On completion attempted to progress with rotary drilling rig but abandoned, backfilled with arisings to 7.00m and installed a Bentonite seal from 7.00m to 6.00m, a 50mm dia slotted standpipe with a gas valve and a gravel surround to 6.00m, a Bentonite seal from 1.00m to 0.20m and a concreted in lockable steel protective cover from 0.20m to GL.

Scale (approx)	Logged By
1:50	TDC/SJ

Figure No. 6461C.BH6A

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Site	Borehole Number
FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GREATER MANCHESTER	BH6A

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
LIGHT CABLE PERCUSSIVE	200mm to 9.00m 150mm to 17.30m	146.15	WIGGETT CONSTRUCTION LIMITED	6461C
	Location AS PLAN	**Dates** 11/09/2018- 12/09/2018	**Engineer** BUILD VISION CONSULTING ENGINEERS	**Sheet** 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
						(4.50)	Medium dense brown slightly silty sandy subrounded fine to coarse quartz GRAVEL with low quartz cobbles.			
					133.65	12.50				
							Dense brown slightly silty sandy subrounded fine to coarse quartz GRAVEL with low quartz cobbles.			
						(3.50)				
				11/09/2018:4.00m						
				12/09/2018:3.00m	130.15	16.00	Brown sandy GRAVEL with cobbles.			
				From 16.00m to 17.30m, no samples taken, drillers descriptions from 16.00m to 17.30m		(1.30)				
				12/09/2018:5.00m	128.85	17.30	Complete at 17.30m			

Remarks

Scale (approx)	Logged By
1:50	TDC/SJ

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Site	Borehole Number
FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GREATER MANCHESTER	BH7

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
LIGHT CABLE PERCUSSIVE	150mm to 7.50m	146.80	WIGGETT CONSTRUCTION LIMITED	6461C
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	14/09/2018	BUILD VISION CONSULTING ENGINEERS	1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
				From 0.00m to 7.50m no samples taken, drillers descriptions from 0.00m to 7.50m		(3.00)	MADE GROUND: brick and stone.			
					143.80	3.00	Grey silty SAND.		▼1	
				Medium Inflow(1) at 4.00m, rose to 3.00m in 20 mins, not sealed.		(2.00)			▽1	
					141.80	5.00	Brown silty SAND with bands of thinly laminated silty clay.			
						(2.00)				
					139.80	7.00	Brown very sandy GRAVEL.			
						(0.50)				
				14/09/2018:	139.30	7.50	Complete at 7.50m			

Remarks
Ground raised following excavation of adjoining TP12.
Hand dug inspection pit from GL to 1.20m to check for services - 1hr
Toluene odour when groundwater inflow encountered at 4.00m
On completion installed a 50mm dia slotted standpipe with a gas valve and gravel surround to 7.50m, a Bentonite seal from 1.00m to 0.20m and a concreted in lockable steel protective cover from 0.20m to GL.

Scale (approx)	Logged By
1:50	TDC/SJ

Figure No. 6461C.BH7

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Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

UKAS TESTING
2183

Final Report

Report No.:	18-33783-1
Initial Date of Issue:	06-Nov-2018
Client	Sub Surface
Client Address:	3 Peel Street Preston Lancashire PR2 2QS
Contact(s):	Simon Gabbatt
Project	(6461C) Former Hare Hill Mill, Hare Hill Road, Littleborough, Gt Manchester

Quotation No.:		**Date Received:**	31-Oct-2018
Order No.:		**Date Instructed:**	31-Oct-2018
No. of Samples:	3		
Turnaround (Wkdays):	5	**Results Due:**	06-Nov-2018
Date Approved:	06-Nov-2018		

Approved By:



Details: Glynn Harvey, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Water

(6461C) Former Hare Hill Mill, Hare Hill Road, Littleborough, Rochdale, Gt Manchester

Client: Sub Surface			Chemtest Job No.:		18-33783	18-33783	18-33783
Quotation No.:			Chemtest Sample ID.:		716216	716217	716218
			Client Sample ID.:		233 234 235	236 237 238	239 240 241
			Sample Location:		BH5	BH6A	BH7
			Sample Type:		WATER	WATER	WATER
			Top Depth (m):		2.85	2.60	2.35
			Date Sampled:		29-Oct-2018	29-Oct-2018	29-Oct-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
pH	U	1010		N/A	6.9	6.6	7.0
Sulphate	U	1220	mg/l	1.0	24	96	230
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050
Sulphide	U	1325	mg/l	0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	1.4	< 1.0	5.2
Boron (Dissolved)	U	1450	µg/l	20	52	34	73
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	0.20	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	1.9	1.7	1.9
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50	< 0.50
Molybdenum (Dissolved)	U	1450	µg/l	1.0	8.4	1.5	2.7
Nickel (Dissolved)	U	1450	µg/l	1.0	4.4	8.2	19
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	1.5	< 1.0	2.2
Zinc (Dissolved)	U	1450	µg/l	1.0	2.6	15	11
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	< 20	< 20
TPH >C6-C10	N	1670	µg/l	0.10	< 0.10	< 0.10	1700
TPH >C10-C21	N	1670	µg/l	0.10	< 0.10	< 0.10	200
TPH >C21-C40	N	1670	µg/l	0.10	< 0.10	< 0.10	130
Total TPH >C6-C40	U	1670	µg/l	10	< 10	< 10	2100
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	1.2	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	1.5	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	1.0	1.7
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0	3.7	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	1600
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	7.8
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	70
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	16
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Total Phenol	U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030

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CONTAMINATION ANALYSIS RESULTS

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Email: info@chemtest.com

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Final Report

Report No.:	19-05847-1
Initial Date of Issue:	01-Mar-2019
Client	Sub Surface
Client Address:	3 Peel Street Preston Lancashire PR2 2QS
Contact(s):	Simon Gabbatt
Project	(6461F) Former Hare Hill Mill, Hare Hill Road, Littleborough, Gt Manchester

Quotation No.:		**Date Received:**	18-Feb-2019
Order No.:		**Date Instructed:**	18-Feb-2019
No. of Samples:	3		
Turnaround (Wkdays):	5	**Results Due:**	22-Feb-2019
Date Approved:	01-Mar-2019		

Approved By:

Details: Robert Monk, Technical Manager

Results - Soil

(6461F) Former Hare Hill Mill, Hare Hill Road, Littleborough, Gt Manchester

Client: Sub Surface					Chemtest Job No.:	19-05847	19-05847	19-05847
Quotation No.:					Chemtest Sample ID.:	776467	776468	776469
					Client Sample ID.:	659 660 661	667 668 669	675 676 677
					Sample Location:	HD106	HD107	HD108
					Sample Type:	SOIL	SOIL	SOIL
					Top Depth (m):	0.50	0.50	0.50
					Bottom Depth (m):	0.60	0.60	0.60
					Date Sampled:	11-Feb-2019	11-Feb-2019	11-Feb-2019
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Moisture	N	2030	%	0.020		11	11	12
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0		< 1.0	44	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0		< 1.0	69	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0		< 1.0	230	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0		< 1.0	170	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0		8.5	1400	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0	170	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0		8.5	2000	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0		< 1.0	2.6	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0		< 1.0	66	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0		< 1.0	840	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0		< 1.0	1000	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0		61	3600	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0	320	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		61	5800	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		70	7800	< 10
Benzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0

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Report Information

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Final Report

Report No.:	19-06215-1
Initial Date of Issue:	04-Mar-2019
Client	Sub Surface
Client Address:	3 Peel Street Preston Lancashire PR2 2QS
Contact(s):	Simon Gabbatt
Project	(6461F) Former Hare Hill Mill, Hare Hill Road, Littleborough, Gt Manchester

Quotation No.:		**Date Received:**	20-Feb-2019
Order No.:		**Date Instructed:**	20-Feb-2019
No. of Samples:	10		
Turnaround (Wkdays):	5	**Results Due:**	26-Feb-2019
Date Approved:	04-Mar-2019		

Approved By:



Details: Martin Dyer, Laboratory Manager

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Results - Soil

(6461F) Former Hare Hill Mill, Hare Hill Road, Littleborough, Gt Manchester

Client: Sub Surface					Chemtest Job No.:	19-06215	19-06215	19-06215	19-06215	19-06215	19-06215	19-06215	19-06215	19-06215	19-06215
Quotation No.:					Chemtest Sample ID.:	778379	778380	778381	778382	778383	778384	778385	778386	778387	778388
					Client Sample ID.:	696	699	689	692	694	695	681	710	713	718
					Sample Location:	BH101	BH101	BH102	BH102	BH102	BH102	BH103	BH104	BH104	BH105
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.00	2.00	1.00	2.50	4.00	5.50	1.50	2.00	4.50	1.00
					Date Sampled:	13/02/19	13/02/19	13/02/19	13/02/19	13/02/19	13/02/19	13/02/19	13/02/19	13/02/19	13/02/19
Determinand	**Accred.**	**SOP**	**Units**	**LOD**											
Moisture	N	2030	%	0.020		15	23	23	21	15	10	18	19	18	9.7
Organic Matter	U	2625	%	0.40			2.2		4.3	5.3	1.6	4.5	4.5	2.8	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0		< 1.0		< 1.0				< 1.0	< 1.0		< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0		< 1.0		< 1.0				< 1.0	< 1.0		< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0		< 1.0		< 1.0				< 1.0	< 1.0		< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0		< 1.0		< 1.0				< 1.0	< 1.0		< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0		< 1.0		< 1.0				< 1.0	1.5		< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0		< 1.0		< 1.0				< 1.0	< 1.0		< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0		9.9		17				< 1.0	9.0		< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0		< 1.0				< 1.0	< 1.0		< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0		9.9		17				< 5.0	11		< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0		< 1.0		< 1.0				< 1.0	< 1.0		< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0		< 1.0		< 1.0				< 1.0	< 1.0		< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0		< 1.0		< 1.0				< 1.0	< 1.0		< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0		< 1.0		< 1.0				< 1.0	< 1.0		< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0		< 1.0		< 1.0				< 1.0	< 1.0		< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0		2.0		2.5				< 1.0	1.9		< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0		29		31				< 1.0	9.7		< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0		< 1.0				< 1.0	< 1.0		< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		31		34				< 5.0	12		< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		41		51				< 10	23		< 10
Benzene	U	2760	µg/kg	1.0		< 1.0		< 1.0				< 1.0	< 1.0		< 1.0
Toluene	U	2760	µg/kg	1.0		< 1.0		< 1.0				44	33		4.9
Ethylbenzene	U	2760	µg/kg	1.0		< 1.0		< 1.0				< 1.0	< 1.0		< 1.0
m & p-Xylene	U	2760	µg/kg	1.0		< 1.0		< 1.0				< 1.0	< 1.0		< 1.0
o-Xylene	U	2760	µg/kg	1.0		< 1.0		< 1.0				< 1.0	< 1.0		< 1.0

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Report Information

Key

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Final Report

0

Report No.:	18-39182-1
Initial Date of Issue:	24-Dec-2018
Client	Sub Surface
Client Address:	3 Peel Street Preston Lancashire PR2 2QS
Contact(s):	Simon Gabbatt
Project	(6461F) Former Hare Hill Mill, Hare Hill Road, Littleborough, Gt Manchester

Quotation No.:		**Date Received:**	13-Dec-2018
Order No.:		**Date Instructed:**	13-Dec-2018
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	19-Dec-2018
Date Approved:	24-Dec-2018		

Approved By:



Details: Martin Dyer, Laboratory Manager

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Results - Water

(6461F) Former Hare Hill Mill, Hare Hill Road, Littleborough, Gt Manchester

Client: Sub Surface				Chemtest Job No.:	18-39182
Quotation No.:				Chemtest Sample ID.:	740979
				Client Sample ID.:	283 284 285
				Sample Location:	BH7
				Sample Type:	WATER
				Date Sampled:	11-Dec-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0

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Final Report

Report No.:	19-06549-1
Initial Date of Issue:	01-Mar-2019
Client	Sub Surface
Client Address:	3 Peel Street Preston Lancashire PR2 2QS
Contact(s):	Simon Gabbatt
Project	(6461F) Former Hare Hill Mill, Hare Hill Road, Littleborough, Gt Manchester

Quotation No.:		**Date Received:**	22-Feb-2019
Order No.:		**Date Instructed:**	22-Feb-2019
No. of Samples:	8		
Turnaround (Wkdays):	5	**Results Due:**	28-Feb-2019
Date Approved:	01-Mar-2019		

Approved By:

Details: Robert Monk, Technical Manager

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Results - Water

(6461F) Fmr Hare Hill Mill, Hare Hill Road, Littleborough, Gt Manchester

Client: Sub Surface		Chemtest Job No.:			19-06549	19-06549	19-06549	19-06549	19-06549	19-06549	19-06549	19-06549
Quotation No.:		Chemtest Sample ID.:			780138	780139	780140	780141	780142	780143	780144	780145
		Client Sample ID.:			639,640,641	642,643,644	645,646,647	648,649,650	651,652,653	654,655,656	657,658,659	660,661,662
		Sample Location:			BH101	BH102	BH103	BH104	BH105	BH5	BH6A	BH7
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Top Depth (m):			2.65	2.25	2.45	2.75	3.75	2.30	2.15	1.85
		Date Sampled:			20/02/19	20/02/19	20/02/19	20/02/19	20/02/19	20/02/19	20/02/19	20/02/19
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Report Information

Key 3

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

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Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

UKAS TESTING
2183

Final Report

4

Report No.: 19-10201-1

Initial Date of Issue: 02-Apr-2019

Client Sub Surface

Client Address: 3 Peel Street
Preston
Lancashire
PR2 2QS

Contact(s): Simon Gabbatt

Project
(6461F) Former Hare Hill Mill, Hare Hill Road, Littleborough, Gt Manchester

Quotation No.:		**Date Received:**	25-Mar-2019
Order No.:		**Date Instructed:**	25-Mar-2019
No. of Samples:	8		
Turnaround (Wkdays):	7	**Results Due:**	02-Apr-2019
Date Approved:	02-Apr-2019		

Approved By:

Details: Robert Monk, Technical Manager

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Results - Water

(6461F) Fmr Hare Hill Mill, Hare Hill Road, Littleborough, Gt Manchester

Client: Sub Surface					Chemtest Job No.:	19-10201	19-10201	19-10201	19-10201	19-10201	19-10201	19-10201
Quotation No.:					Chemtest Sample ID.:	798553	798554	798555	798556	798557	798558	798559	798560
					Client Sample ID.:	832 833 834	836 837 835	839 840 838	842 841 843	845 846 844	825 824 823	828 826 827	829 830 831
					Sample Location:	BH101	BH102	BH103	BH104	BH105	BH5	BH6A	BH7
					Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
					Top Depth (m):	2.65	2.25	2.45	2.75	3.75	2.30	2.15	1.85
					Date Sampled:	21/03/19	21/03/19	21/03/19	21/03/19	21/03/19	21/03/19	21/03/19	21/03/19
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Report Information

Key 4

U	UKAS accredited
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A - Date of sampling not supplied
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E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

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customerservices@chemtest.com

BOREHOLE RECORD SHEETS

SUB SURFACE

SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Site	Borehole Number
FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GREATER MANCHESTER	BH101

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
LIGHT CABLE PERCUSSIVE	150mm to 6.00m	146.60	WIGGETT CONSTRUCTION LIMITED	6461F
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	12/02/2019	BUILD VISION CONSULTING ENGINEERS	1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.50	B						MADE GROUND: soft brown and dark brown mottled gravelly slightly sandy silty clay with low cobble sized fragments of brick, concrete and stone. Gravel sized fragments are fine to coarse brick, stone and concrete.			
0.50-1.00	B			at 0.50m, PID = 2.0 ppm		(1.40)				
1.00-1.50	B			at 1.00m, PID = 0.7 ppm						
					145.20	1.40	MADE GROUND: soft brown and occasional light brown and grey mottled slightly gravelly sandy silty clay with occasional pockets of sand. Gravel sized fragments are fine to coarse stone and brick.		▼1 ∇1	
				Slow Inflow(1) at 1.50m, rose to 1.40m in 20 mins, sealed at 3.00m.						
2.00-2.50	B			at .1.50m, PID = 1.2 ppm		(1.50)				
				at 2.50m, PID = 1.2 ppm						
					143.70	2.90	Firm grey and occasional brown mottled slightly gravelly slightly sandy silty CLAY. Gravel is subangular to subrounded fine to coarse siltstone and quartz (slight organic odour).		▼2	
3.00-3.45	U									
						(1.00)				
3.50-4.00	B									
					142.70	3.90	Firm brown and occasional light brown mottled slightly gravelly slightly sandy silty CLAY with occasional lenses of sand. Gravel is subangular to subrounded fine to coarse sandstone, siltstone and quartz.			
4.00-4.45	U			at 4.00m, PID = 1.4 ppm						
4.50-5.00	B									
5.00-5.45	U			at 5.00m, PID = 1.8 ppm						
5.60-6.00	B					(3.60)				
				at 6.00m, PID = 1.7 ppm						
							.... at 6.30m : 200mm band of sand		∇2	
6.50-7.00	B			Fast Inflow(2) at 6.50m, rose to 3.10m in 20 mins, not sealed.						
				at 7.00m, PID = 1.2 ppm						
				12/02/2019:3.10m	139.10	7.50	Complete at 7.50m			

Remarks
On completion installed a 50mm dia slotted standpipe with a gas valve and a gravel surround to 7.50m, a Bentonite seal from 1.00m to 0.20m and a concreted in lockable steel protective cover from 0.20m to GL.
PID = Photo Ionisation Detection test in bulk sample bag.

Scale (approx)	Logged By
1:50	MB/SJ

Figure No. 6461F.BH101

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SUB SURFACE

SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Site	Borehole Number
FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GREATER MANCHESTER	**BH102**

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
LIGHT CABLE PERCUSSIVE	150mm to 6.00m	146.20	WIGGETT CONSTRUCTION LIMITED	6461F
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	11/02/2019-12/02/2019	BUILD VISION CONSULTING ENGINEERS	1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.50	B			at 0.50m, PID = 1.3 ppm		(1.40)	MADE GROUND: soft brown and dark brown mottled gravelly slightly sandy silty clay with low cobble sized fragments of brick, concrete and stone. Gravel sized fragments are fine to coarse brick, stone, concrete and wood.			
1.00	B			at 1.00m, PID = 1.8 ppm	144.80	1.40				
1.50	B			at 1.50m, PID = 2.2 ppm		(0.80)	MADE GROUND: soft brown and occasional light brown, orangish brown and grey mottled slightly gravelly sandy silty clay. Gravel sized fragments are fine to coarse stone and brick.			
2.00-2.45	U			11/02/2019:DRY	144.00	2.20				
				12/02/2019:DRY			MADE GROUND: very soft grey and brown mottled slightly gravelly slightly sandy silty clay with low cobble sized fragments of brick. Gravel sized fragments are fine to coarse stone and brick.			
2.50-3.00	B					(1.20)				
3.00-3.45	U			at 3.00m, PID = 2.8 ppm					▼1	
				Slow Inflow(1) at 3.40m, rose to 3.20m in 20 mins, not sealed.	142.80	3.40			▽1	
							MADE GROUND: brown and grey mottled slightly gravelly silty fine to coarse sand. Gravel sized fragments are fine to coarse stone and brick.			
4.00	B			at 4.00m, PID = 2.5 ppm		(1.60)				
									▼2	
					141.20	5.00	Brown silty very sandy subrounded to rounded fine to coarse quartz GRAVEL with occasional pockets of silty clay.			
									▽2	
5.50-6.00	B			Slow Inflow(2) at 5.40m, rose to 4.90m in 20 mins, not sealed.		(1.00)				
				at 6.00m, PID = 0.8 ppm 12/02/2019:4.90m	140.20	6.00	Complete at 6.00m			

Remarks

On completion installed a 50mm dia slotted standpipe with a gas valve and a gravel surround to 6.00m, a Bentonite seal from 1.00m to 0.20m and a concreted in lockable steel protective cover from 0.20m to GL.
PID = Photo Ionisation Detection test in bulk sample bag.

Scale (approx)	Logged By
1:50	MB/SJ

Figure No. 6461F.BH102

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SUB SURFACE

SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Site
FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GREATER MANCHESTER

Borehole Number
BH103

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
LIGHT CABLE PERCUSSIVE	150mm to 6.00m	146.30	WIGGETT CONSTRUCTION LIMITED	6461F
	Location AS PLAN	**Dates** 11/02/2019	**Engineer** BUILD VISION CONSULTING ENGINEERS	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
							MADE GROUND: brown and occasional reddish brown mottled very sandy fine to coarse gravel sized fragments of brick, concrete, stone, glass, slate and wood with medium cobble sized fragments of brick, concrete and stone.			
0.50	B			at 0.50m, PID = 4.5 ppm		(1.40)				
1.00	B			at 1.00m, PID = 2.6 ppm					▼1	
1.50	B			Slow Inflow(1) at 1.20m, rose to 1.10m in 20 mins, sealed at 1.40m.	144.90	1.40	Very soft grey slightly gravelly slightly sandy clayey SILT with occasional pockets of brown silty clay. Gravel is subangular to rounded fine to coarse sandstone, siltstone and quartz.			
2.00	B			at 1.50m, PID = 3.6 ppm at 2.00m, PID = 3.7 ppm						
3.00	B			at 3.00m, PID = 3.0 ppm		(4.60)				
4.00	B			at 4.00m, PID = 2.7 ppm						
5.00	B			at 5.00m, PID = 3.0 ppm						
				11/02/2019:DRY	140.30	6.00	Complete at 6.00m			

Remarks
On completion installed a 50mm dia slotted standpipe with a gas valve and a gravel surround to 6.00m, a Bentonite seal from 1.00m to 0.20m and a concreted in lockable steel protective cover from 0.20m to GL.
PID = Photo Ionisation Detection test in bulk sample bag.

Scale (approx)	Logged By
1:50	MB/SJ

Figure No.
6461F.BH103

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SUB SURFACE

SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Site	Borehole Number
FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GREATER MANCHESTER	**BH104**

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
LIGHT CABEL PERCUSSIVE	150mm to 6.00m	146.90	WIGGETT CONSTRUCTION LIMITED	6461F
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	13/02/2019	BUILD VISION CONSULTING ENGINEERS	1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.50	B						MADE GROUND: soft / friable brown and dark brown mottled gravelly slightly sandy silty clay with low cobble sized fragments of brick, concrete and stone. Gravel sized fragments are fine to coarse brick, concrete, stone, slate, glass and wood.			
0.50-1.00	B			at 0.50m, PID = 2.7 ppm						
1.00-1.50	B			at 1.00m, PID = 2.5 ppm						
				at 1.50m, PID = 2.6 ppm		(3.10)				
2.00-2.50	B									
				at 2.50m, PID = 1.1 ppm					▼1	
				Slow Inflow(1) at 2.80m, rose to 2.40m in 20 mins, sealed at 3.20m.					▽1	
3.10-3.60	B				143.80	3.10	Firm grey and occasional brown mottled slightly gravelly slightly sandy silty CLAY with occasional plant remains and with pockets of sand. Gravel is subangular to subrounded fine to coarse siltstone and quartz (slight organic odour).			
				at 3.60m, PID = 1.0 ppm						
4.00-4.45	U					(1.80)				
4.50-4.90	B									
				at 4.90m, PID = 0.9 ppm	142.00	4.90	Firm brown and occasional light brown mottled slightly gravelly slightly sandy silty CLAY with occasional pockets of sand. Gravel is subangular to subrounded fine to coarse sandstone, siltstone and quartz.			
5.00-5.45	U									
5.50-6.00	B			at 6.00m, PID = 1.2 ppm		(1.10)				
				13/02/2019:DRY	140.90	6.00	Complete at 6.00m			

Remarks

On completion installed a 50mm dia slotted standpipe with a gas valve and a gravel surround to 6.00m, a Bentonite seal from 1.00m to 0.20m and a concreted in lockable steel protective cover from 0.20m to GL.
PID = Photo Ionisation Detection test in bulk sample bag.

Scale (approx)	Logged By
1:50	MB/SJ

Figure No. 6461F.BH104

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SUB SURFACE

SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Site
FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GREATER MANCHESTER

Borehole Number
BH105

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
LIGHT CABLE PERCUSSIVE	150mm to 5.40m	147.40	WIGGETT CONSTRUCTION LIMITED	6461F
	Location AS PLAN	**Dates** 13/02/2019	**Engineer** BUILD VISION CONSULTING ENGINEERS	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.40	B					(0.40)	MADE GROUND: brown and grey mottled very sandy fine to coarse gravel sized fragments of brick, stone, concrete and slate with medium cobble sized fragments of stone and brick and with occasional pockets of silty clay.			
				at 0.40m, PID = 6.1 ppm	147.00	0.40				
0.50-0.90	B					(0.50)	MADE GROUND: grey very sandy fine to coarse gravel sized fragments of stone.			
				at 0.90m, PID = 2.4 ppm	146.50	0.90				
1.00-1.50	B						MADE GROUND: soft / friable brown and dark brown mottled gravelly slightly sandy silty clay with low cobble sized fragments of brick and stone and with occasional pockets of sand. Gravel sized fragments are fine to coarse brick, concrete, stone and glass.			
				at 1.50m, PID = 2.3 ppm		(1.80)				
2.00-2.50	B									
				at 2.50m, PID = 2.2 ppm	144.70	2.70	MADE GROUND: soft brown and occasional dark grey mottled gravelly slightly sandy silty clay with medium cobble sized fragments of stone. Gravel sized fragments are fine to coarse stone and tile.			
3.00-3.45	U NR									
3.00-3.50	B									
				at 3.50m, PID = 2.3 ppm		(2.30)			▼1	
4.00-4.45	U NR									
4.00-4.50	B									
				at 4.50m, PID = 1.3 ppm						
					142.40	5.00	Brown silty very sandy angular to rounded fine to coarse quartz GRAVEL.		▽1	
5.00-5.40	B					(0.40)				
				Medium Inflow(1) at 5.10m, rose to 3.90m in 20 mins, not sealed.	142.00	5.40				
				at 5.40m, PID = 1.3 ppm			Complete at 5.40m			
				13/02/2019:3.90m						

Remarks
NR = No Recovery
Chiselling cobbles from 5.30m to 5.40m - 45mins and from 5.40m to 5.40m - 45mins
On completion installed a 50mm dia slotted standpipe with a gas valve and a gravel surround to 5.40m, a Bentonite seal from 1.00m to 0.20m and a concreted in lockable steel protective cover from 0.20m to GL.
PID = Photo Ionisation Detection test in bulk sample bag.

Scale (approx)	Logged By
1:50	MB/SJ

Figure No.
6461F.BH105

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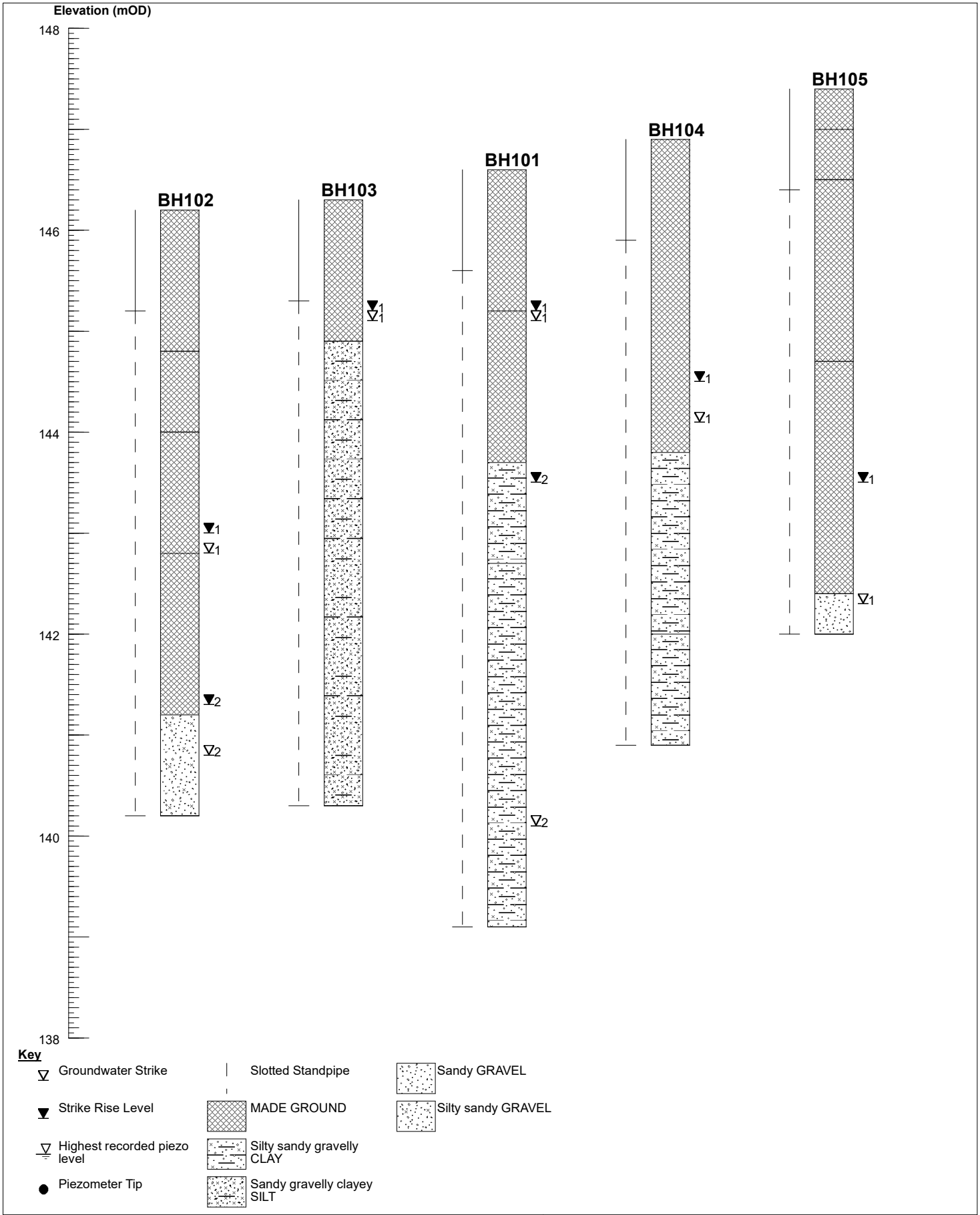

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Nominal Section

Site	Date Drawn	Date Checked	Sheet	Job Number
FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GREATER MANCHESTER	30/04/2019		1/1	6461F
Client	**Drawn By**	**Checked By**	**Scale**	**Figure No.**
WIGGETT CONSTRUCTION LIMITED			1:50[V]	6461F.1

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HAND DUG TRIAL PIT RECORD SHEETS

SUB SURFACE

SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Site	Trial Pit Number
FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GREATER MANCHESTER	HD106

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
HAND DUG	0.35m x 0.35m	147.15	WIGGETT CONSTRUCTION LIMITED	6461F
	Location AS PLAN	**Dates** 11/02/2019	**Engineer** BUILD VISION CONSULTING ENGINEERS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10-0.20 0.10-0.20	B DA V				(0.60)	MADE GROUND: brown very sandy fine to coarse gravel sized fragments of brick, stone, concrete, glass, metal, slate and wood with medium cobble sized fragments of brick, stone and concrete.		
0.50-0.60 0.50-0.60	B D A V		11/02/2019:	146.55	0.60	Complete at 0.60m		

Plan

Remarks

Pit sides remained vertical and stable
No groundwater encountered, but wet from 0.50m

Scale (approx)	Logged By	Figure No.
1:25	MB/SJ	6461F.HD106

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SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

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Site	Trial Pit Number
FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GREATER MANCHESTER	HD107

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
HAND DUG	0.35m x 0.35m	146.90	WIGGETT CONSTRUCTION LIMITED	6461F
	Location AS PLAN	**Dates** 11/02/2019	**Engineer** BUILD VISION CONSULTING ENGINEERS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10-0.20 0.10-0.20	B DA V				(0.40)	MADE GROUND: brown and reddish brown mottled very sandy fine to coarse gravel sized fragments of brick, stone, concrete, wood and slate with medium cobble sized fragments of brick and stone.		
				146.50	0.40			
0.50-0.60 0.50-0.60	B DA V		11/02/2019:DRY		(0.20)	MADE GROUND: brown and grey mottled very sandy fine to coarse gravel sized fragments of brick and stone with low cobble sized fragments of brick (slight hydrocarbon odour).		
				146.30	0.60	Complete at 0.60m		

Plan

Remarks

Pit sides remained vertical and stable.
No groundwater encountered.

Scale (approx)	Logged By	Figure No.
1:25	MB/SJ	6461F.HD107

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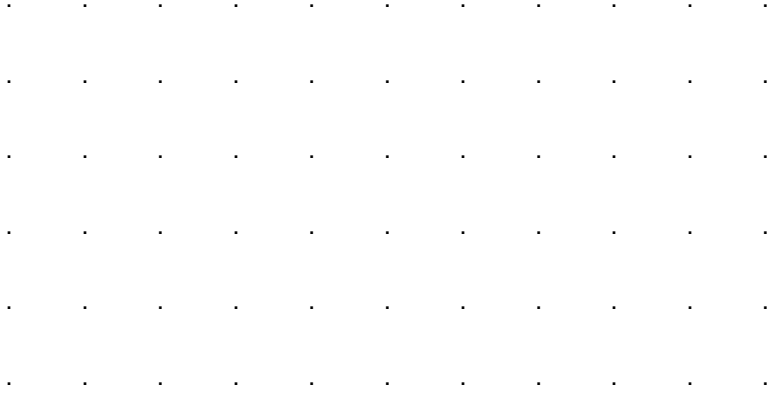
Site	Trial Pit Number
FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GREATER MANCHESTER	HD108

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
HAND DUG	0.35m x 0.35m	145.85	WIGGETT CONSTRUCTION LIMITED	6461F
	Location AS PLAN	**Dates** 11/02/2019	**Engineer** BUILD VISION CONSULTING ENGINEERS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				145.75	(0.10) 0.10	MADE GROUND: reddish brown fine to medium sand.		
0.10-0.20 0.10-0.20	B DA V				(0.50)	MADE GROUND: brown slightly gravelly slightly silty fine to coarse sand with low cobble sized fragments of brick. Gravel sized fragments are fine to coarse brick and stone.		
0.50-0.60 0.50-0.60	B DA V		11/02/2019:DRY	145.25	0.60	Complete at 0.60m		

Plan



Remarks

Pit sides remained vertical and stable.
No groundwater encountered.

Scale (approx)	Logged By	Figure No.
1:25	MB/SJ	6461F.HD108

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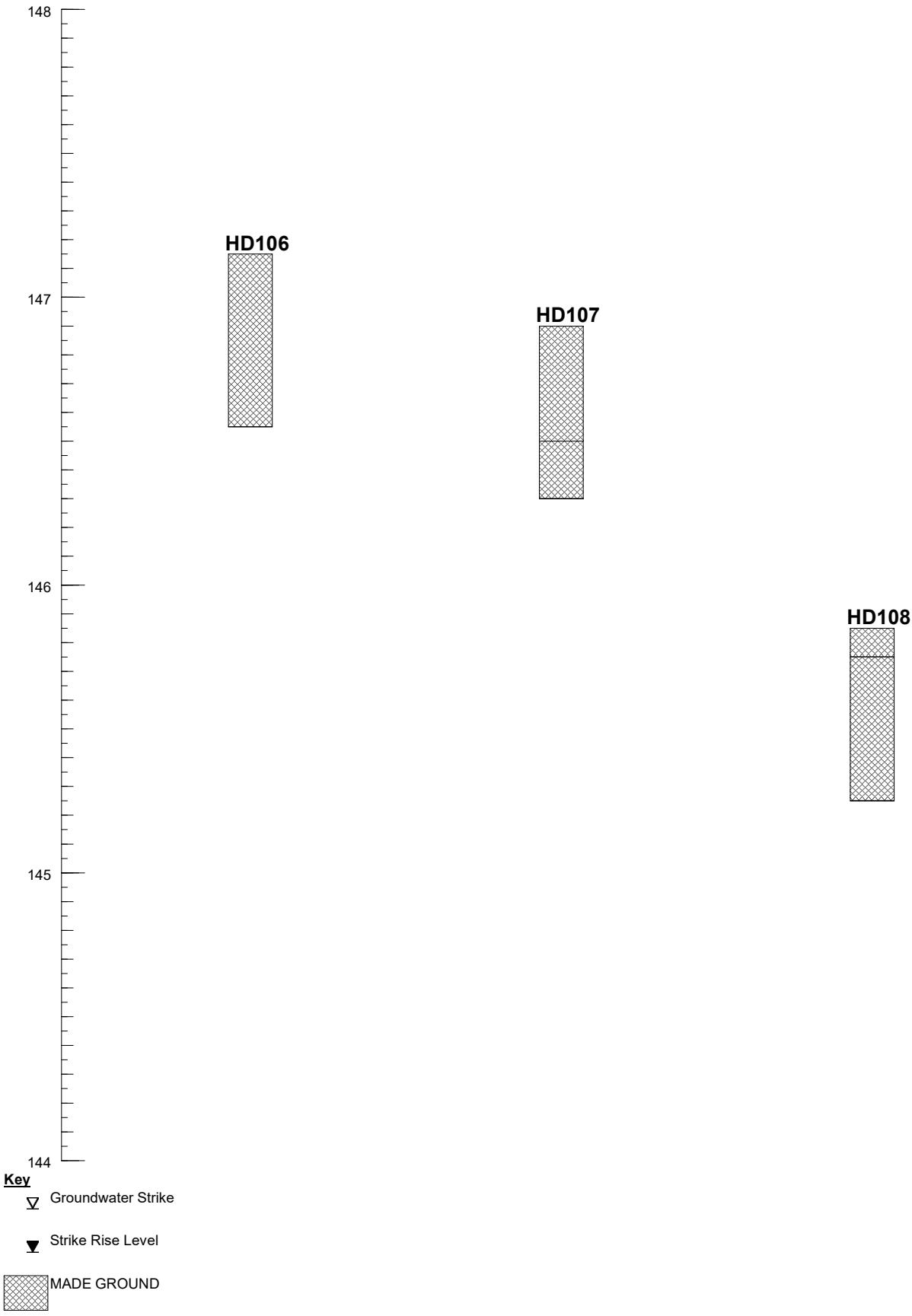

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SITE INVESTIGATION, GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
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Nominal Section

Site	Date Drawn	Date Checked	Sheet	Job Number
FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GREATER MANCHESTER	30/04/2019		1/1	6461F
Client	**Drawn By**	**Checked By**	**Scale**	**Figure No.**
WIGGETT CONSTRUCTION LIMITED			1:20[V]	6461F.1

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PHOTOGRAPHS

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Photographs

Site: FMR HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GT MANCHESTER

Client: WIGGETT CONSTRUCTION LIMITED

Engineer: BUILD VISION CONSULTING ENGINEERS

Job No. 6461F

Sheet 1 of 1

Survey Date 11/02/19

HAND DUG TRIAL PIT PHOTOGRAPHS



HD106

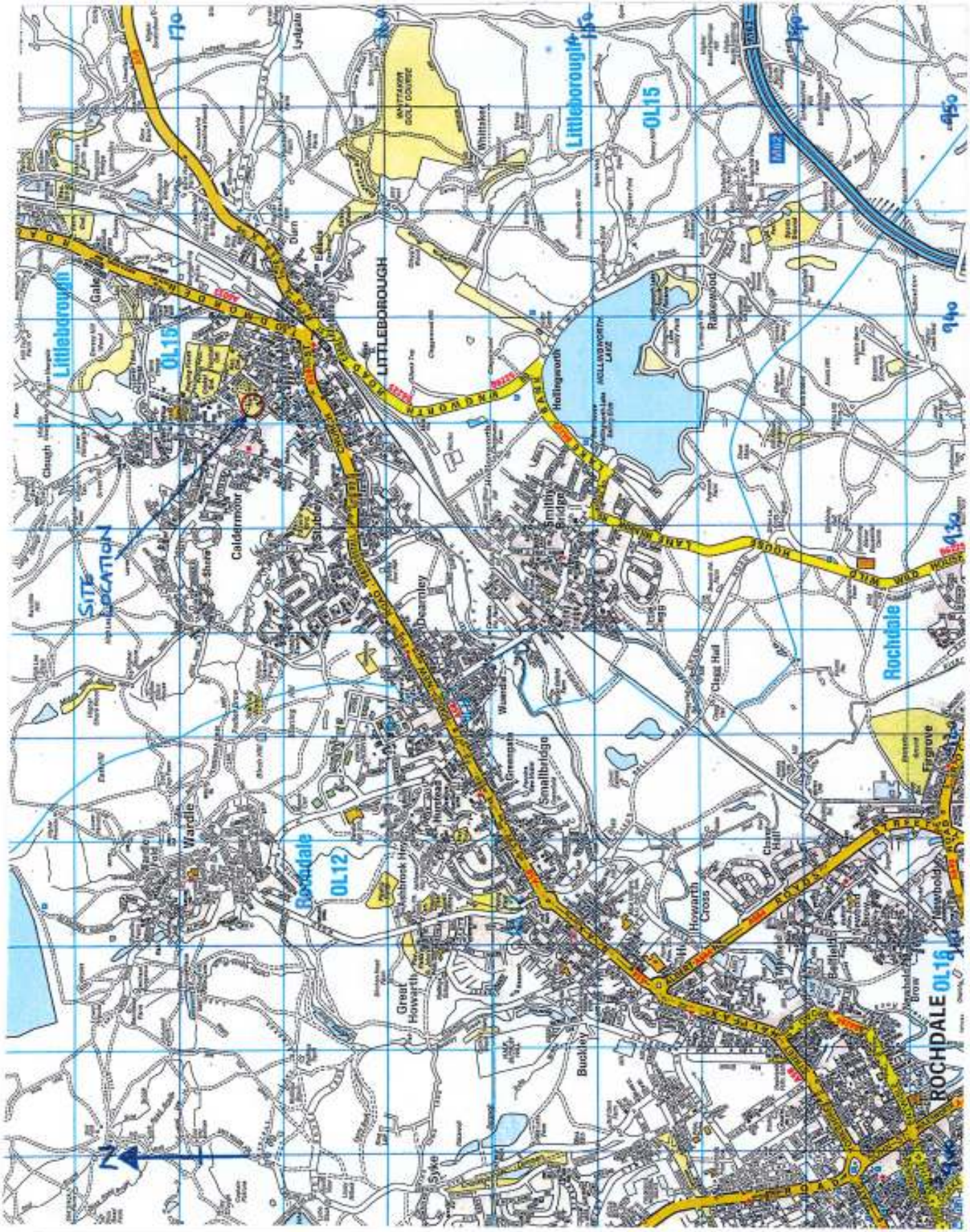


HD107



HD108

FIGURES



SUB SURFACE

SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS

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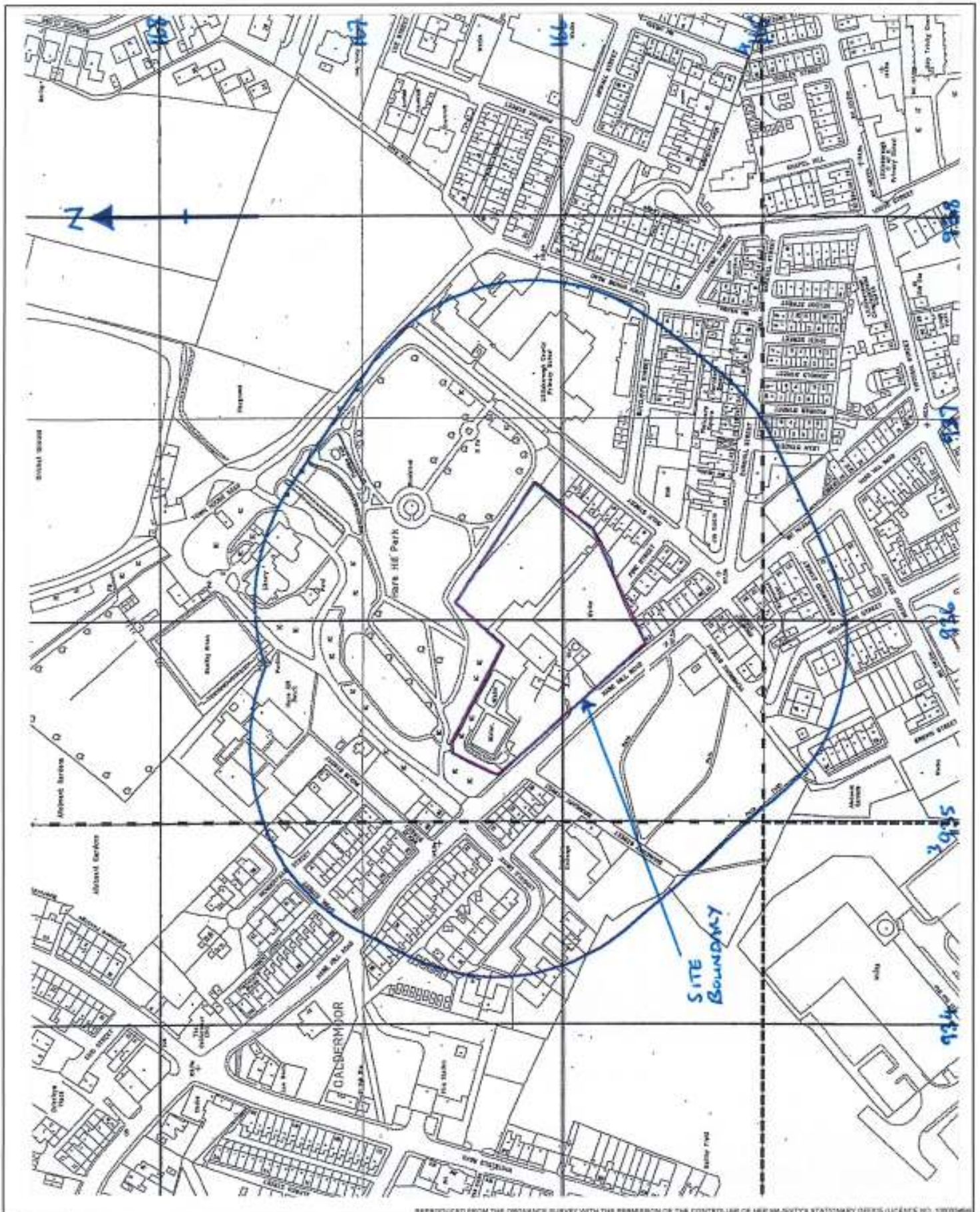
Site Location Plan

Site	Date Drawn	Date Checked	Sheet	Job No.
FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GT MANCHESTER	03-Dec-18		1 / 1	6461B
Client	**Drawn By**	**Checked By**	**Scale**	**Figure No.**
WIGGETT CONSTRUCTION LIMITED	AJP		1:25,000	1



REPRODUCED FROM THE ORDNANCE SURVEY WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE (LICENCE NO. 100035484)

SUB SURFACE
SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS
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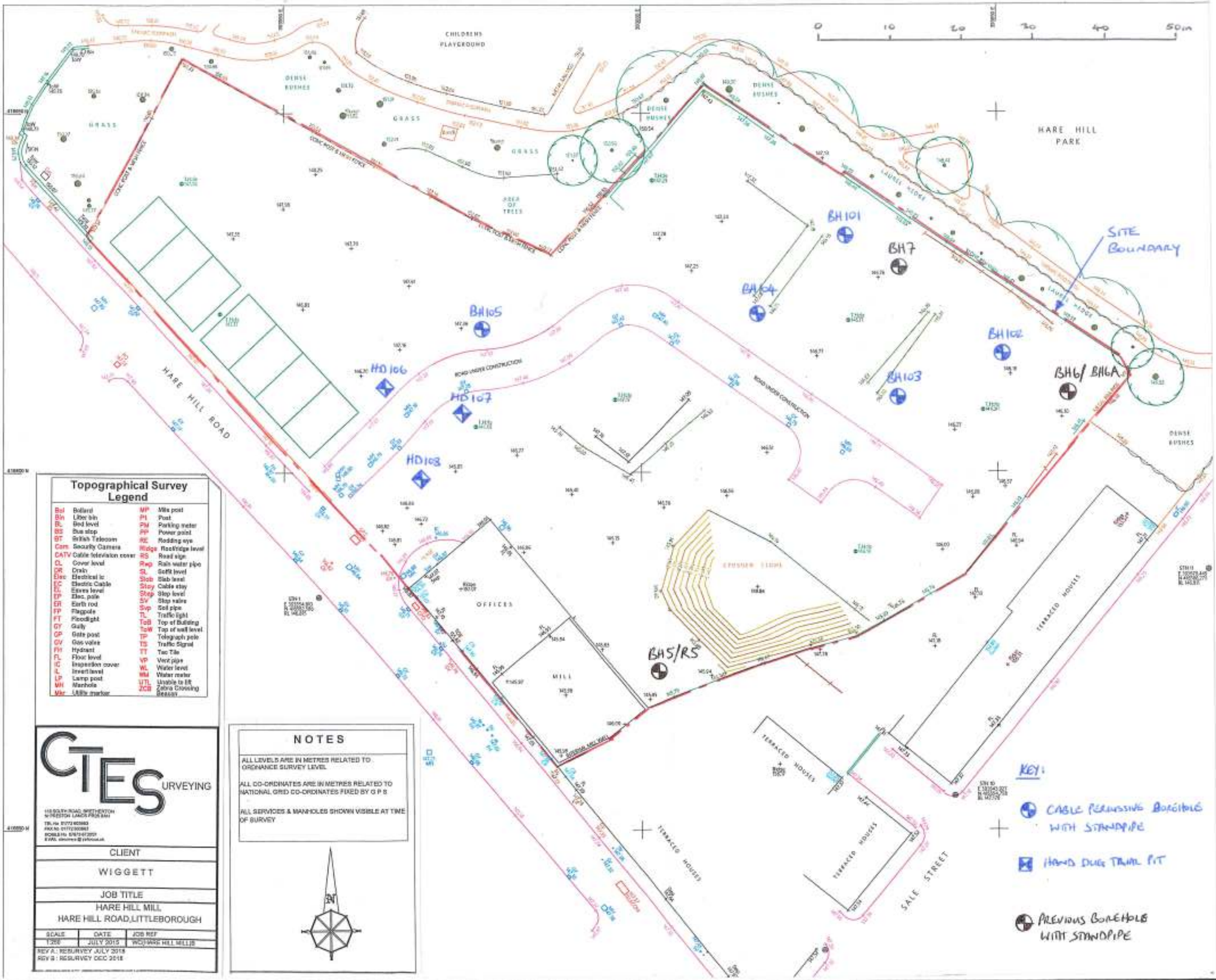
Site Boundary Plan

Site	Date Drawn	Date Checked	Sheet	Job No.
FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GT MANCHESTER	03-Dec-18		1 / 1	6461B
Client	**Drawn By**	**Checked By**	**Scale**	**Figure No.**
WIGGETT CONSTRUCTION LIMITED	AJP		1:2,500	2



[Based on HNA Architects Drg. No. 1104/001, Revision G, dated 06/09/16]

SUB SURFACE SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907		Proposed Development Layout Plan		
Site FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GT MANCHESTER	Date Drawn 30-Jan-19	Date Checked	Sheet 1 / 1	Job No. 6461E
Client WIGGETT CONSTRUCTION LIMITED	Drawn By AJP	Checked By	Scale 1:500 (at A3)	Figure No. 3



Topographical Survey Legend

Bol	Bollard	MP	Mile post
Bin	Litter bin	PI	Post
BL	Bed level	PM	Parking meter
BS	Bus stop	PP	Power point
BT	British Telecom	RE	Rodding eye
Com	Security Camera	Ridge	Roof/ridge level
CATV	Cable television cover	RS	Road sign
CL	Cover level	Rwp	Rain water pipe
DR	Drain	SL	Soffit level
Elec	Electrical ic	Slab	Slab level
EC	Electric Cable	Stay	Cable stay
EL	Eaves level	Step	Step level
EP	Elec. pole	SV	Stop valve
ER	Earth rod	Svp	Soil pipe
FP	Flagpole	TL	Traffic light
FT	Floodlight	ToB	Top of Building
GY	Gully	ToW	Top of wall level
GP	Gate post	TP	Telegraph pole
GV	Gas valve	TS	Traffic Signal
HH	Hydrant	TT	Tac Tile
FL	Floor level	VP	Vent pipe
IC	Inspection cover	WL	Water level
IL	Invert level	WM	Water meter
LP	Lamp post	UTL	Unable to lift
MH	Manhole	ZCB	Zebra Crossing Beacon
Mkr	Utility marker		

CTES SURVEYING

CLIENT

WIGGETT

JOB TITLE

HARE HILL MILL
HARE HILL ROAD,LITTLEBOROUGH

SCALE	DATE	JOB REF
1:250	JULY 2015	WC(HARE HILL MILL)B

REV A : RESURVEY JULY 2018
REV B : RESURVEY DEC 2018

NOTES

ALL LEVELS ARE IN METRES RELATED TO ORDNANCE SURVEY LEVEL

ALL CO-ORDINATES ARE IN METRES RELATED TO NATIONAL GRID CO-ORDINATES FIXED BY G P S

ALL SERVICES & MANHOLES SHOWN VISIBLE AT TIME OF SURVEY

[Based on CTES topographical survey drawing dated December 2018]

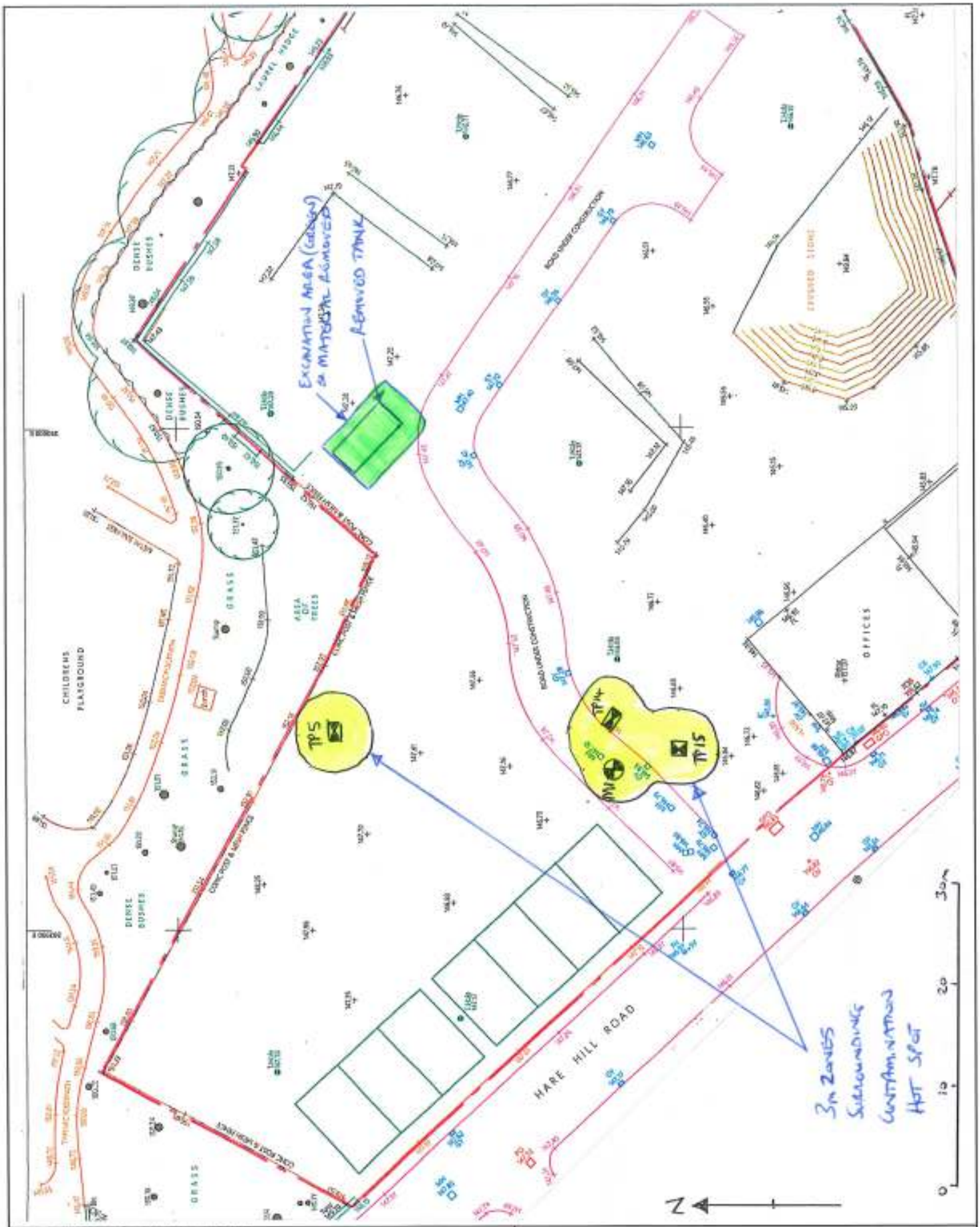
Exploratory Hole Location Plan

Date Drawn	Date Checked	Sheet	Job No.
30-Apr-19		1 / 1	6461F
Drawn By	**Checked By**	**Scale**	**Figure No.**
AJP		1:500 (at A3)	4

SUB SURFACE
SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS
3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Site: FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GT MANCHESTER

Client: WIGGETT CONSTRUCTION LIMITED



SUB SURFACE SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907	Areas to be Remediated by "Hot Spot" Removal			
Site FORMER HARE HILL MILL, HARE HILL ROAD, LITTLEBOROUGH, ROCHDALE, GT MANCHESTER	Date Drawn 31-Jan-19	Date Checked	Sheet 1 / 1	Job No. 6461G
Client WIGGETT CONSTRUCTION LIMITED	Drawn By AJP	Checked By	Scale 1:500	Figure No. 5