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GROUND INVESTIGATION REPORT

**FOR
LAND AT ARTHUR STREET,
BARWELL,
LEICESTERSHIRE**

**PREPARED FOR
THE NOVA CROWD LTD**

**REPORT NO. M3554
JANUARY 2022**

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**GROUND INVESTIGATION FOR LAND AT ARTHUR STREET, BARWELL,
LEICESTERSHIRE, LE9 8GF**

CLIENT: THE NOVA CROWD LTD

ENGINEER: ARCELLE CONSULTING

1. INTRODUCTION

This report has been prepared in accordance with an emailed instruction, dated 6th October 2021, from the Client.

The brief was set out in our estimate, ref. EM5761 and dated 19th August 2021, with amendments as the investigation proceeded and includes:

- 5 No. mini boreholes
- 3 No. cable percussive boreholes
- Insitu testing
- Geotechnical laboratory testing
- Contamination analysis
- Installation of standpipes followed by groundwater and ground gas monitoring
- Provision of an interpretative report on the above.

It should be noted Castledine Environmental have previously issued a Phase I Land Contamination Risk Assessment Report (ref. 3152D and dated July 2021) for this site, which should be read in conjunction with this Phase II Ground Investigation Report.

1.1 Site Location and Description

The site is located at Arthur Street, Barwell, Leicestershire, LE9 8GF as indicated on Figure 1. The approximate National Grid Reference of the centre of the site is 444610, 296972.

As shown on Figure 2, site forms an irregular shaped area of approximately 0.12ha, bound by Arthur Street to the east, George Street to the south, and King Street to the west and north west. An existing three storey office building is situated in the north east corner of the site, which is to be converted to flats as part of the development.

The generally level brownfield site was previously occupied by factory units adjacent to the south and west boundaries (demolished prior to September 2011) with a central yard area opening onto King Street in the north west. At the time of the investigation, the generally level ground surface was largely covered in concrete hardstanding, particularly where former buildings were located, however a large amount of demolition rubble and general rubbish was stockpiled on site, limiting the access to some parts.

1.2 Proposed Development and Purpose of the Ground Investigation

We understand that it is proposed to develop the site with three two to three storey apartment blocks, comprising a total of fourteen flats and including some ground storey parking, with associated access, parking and landscaped areas as shown on Figure 3. In addition, the existing three storey office block located to the north east is to be converted into fifteen flats.

The purpose of the investigation was to determine the ground conditions at the positions of the exploratory holes, to assess the likelihood of a general pattern of strata being present below the site and to establish the load bearing characteristics of the strata deriving, if possible, an assessment of the suitability of appropriate founding techniques.

In addition contamination analysis and assessment was required in order to determine necessary precautions and/or remedial measures required for the proposed development and to ascertain the need for any further sampling and analysis.

Ground gas monitoring and assessment was also required to determine necessary precautions and/or remedial measures.

2. INVESTIGATION

2.1 Investigation Details

Five mini boreholes were put down to a depth of 5.45m using a Premier Mini Sampling Rig fitted with windowless sample tubes of varying diameters at the positions determined and set out by Sub Surface Midlands Ltd, as shown on Figure 4. The samples were subsequently logged in accordance with BS EN ISO 14688-1: 2018 and BS EN ISO 14689-1: 2018 and the resulting Mini Borehole Records are appended.

Three 150mm diameter boreholes were put down by cable percussive boring techniques at the positions determined and set out by Sub Surface Midlands Ltd, as shown on Figure 4. The boreholes were put down to depths of between 8.87m and 10.18m, samples taken were logged in accordance with BS EN ISO 14688-1: 2018 and BS EN ISO 14689-1: 2018 and the resulting Borehole Records are appended.

On completion, M1, M4, M5 and BH2 were backfilled with arisings as no installations were required.

2.2 Sub Surface Detail

Details of the strata encountered in the ground investigation are given on the appended Borehole Records. The exploratory holes found made ground overlying interbedded granular and cohesive drift deposits. A general summary of the strata found is as follows:

2.2.1 Made Ground

M1, M2, M3, M4, M5, BH1, BH2 and BH3 encountered made ground to depths of 0.30m, 0.40m, 0.40m, 0.60m, 0.40m, 1.20m, 0.30m and 0.70m, respectively. BH3 initially encountered paving blocks to 0.10m.

M1, BH1 and BH3 encountered light to dark brown, dark brownish grey and black locally ashy gravelly silty sand. M2 and M5 found dark brown and dark greyish brown slightly ashy gravelly slightly sandy silty clay. A hydrocarbon odour was also noted in M5. M3 and M4 encountered light brown, dark greyish brown, brown and brownish grey locally ashy silty very sandy gravel with occasional cobble sized fragments of brick and pockets of clay. BH2 found dark grey gravelly slightly clayey sandy silt.

Gravel sized fragments consisted of fine to coarse stone, brick, clinker and occasional plastic and metal.

2.2.2 Drift Deposits

Underlying the made ground, M1, M2, M3 and BH2 found light brown to brown and greyish brown slightly gravelly slightly sandy silty clay. M1, M2 and BH2 initially found medium strength clays becoming stiff high strength below 2.55m and 2.50m. M3 initially encountered soft low strength clays becoming firm medium strength below 2.00m and stiff high strength below 2.55m.

At 0.70m, BH3 found medium strength gravelly sandy silty clays with pockets of gravelly sand becoming stiff high strength slightly gravelly slightly sandy silty clay below 4.50m and very stiff greyish brown below 7.20m.

Underlying the made ground, M4, M5 and BH1 encountered medium dense brown gravelly silty fine to coarse sand, found to be medium dense at 1.20m, becoming loose below 3.15m in M5 and dense below 3.20m in BH1.

Underlying the sands at respective depths of 2.70m, 4.00m and 4.50m, M4, M5 and BH1 encountered brown slightly gravelly sandy silty clay with occasional pockets of sand. M4 encountered firm medium strength clays, locally soft low strength at 4.00m. M5 and BH1 encountered soft low strength clays becoming firm medium strength below 5.00m in M5 and stiff high strength below 6.00m in BH1.

Below respective depths of 8.40m, 7.50m and 8.10m, BH1, BH2 and BH3 encountered very dense brown slightly gravelly silty fine to medium sand.

Gravel in drift deposits consisted of angular to rounded fine to medium siltstone, quartz, chalk, flint and coal.

2.2.3 Groundwater

“Wet” sand strata was encountered below 2.00m in M4 and M5. No groundwater was encountered in the exploratory holes although it should be noted that they 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.

Monitoring of standpipes installed to 5.00m in BH1, BH3, M2 and M3, found groundwater to be at minimum depths of 0.70m, 1.50m, 2.00m and 0.80m, respectively.

3. SAMPLING, TESTING AND MONITORING

3.1 Sampling

Continuous core, small disturbed and bulk disturbed samples were obtained for the strata encountered and were subjected to careful examination and hand shear vane tests, where appropriate.

In the cable percussive boreholes, six 100mm diameter undisturbed samples were attempted in cohesive strata, for testing in the laboratory.

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

Forty-three Standard Penetration Tests (SPTs) were performed in the boreholes, the results of which are recorded on the appended Standard Penetration Test Results Sheet with 'N' values and indicative relative density and shear strength, where appropriate, given on the appended Borehole Records.

3.3 Installations and Monitoring

On completion of BH1, BH3, M2 and M3, hdpe standpipes were installed to a depth of 5.00m. The standpipes are slotted from 1.00m depth, have an internal diameter of 50mm and have removable quick release gas valves to enable both ground gas and groundwater monitoring and sampling to be undertaken. Details of the installations are given on the appended Borehole Records.

Monitoring of the standpipes for ground gas and groundwater has been undertaken on two of six scheduled occasions to date using portable equipment. A Gas Data GFM 435 was used for monitoring methane, carbon dioxide, oxygen, gas flows and atmospheric pressure. The results of the monitoring is given on the appended Ground Gas and Groundwater Monitoring Results sheet.

3.4 Laboratory Testing

The following laboratory tests were carried out in accordance with BS.1377: 1990, where applicable, and the results are appended.

- Moisture content, plastic limit and liquid limit tests
- Quick undrained triaxial tests
- Oedometer consolidation tests
- Particle size distribution by wet sieve analysis
- Soluble sulphate content and pH value tests.

Contamination analyses have been performed on eight soil samples to determine: pH and concentrations of sulphate, sulphide, cyanide, arsenic, boron (soluble), cadmium, chromium, hexavalent chromium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, speciated aliphatic and aromatic petroleum hydrocarbons (TPHs), the speciated polynuclear aromatic hydrocarbons (PAHs) suite, the benzene/ethylbenzene/ toluene/ xylene (BTEX) suite and phenols. In addition eight soil samples were subjected to an asbestos screen.

Four soil samples were also analysed for a suite of volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) to identify chlorinated solvent contamination.

Contamination analyses have also been performed on four samples of groundwater taken on 04/11/21 from the standpipes installed in BH1, BH3, M2 and M3 to determine: pH and concentrations of sulphate, sulphide, cyanide, arsenic, boron (soluble), cadmium, chromium, hexavalent chromium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, speciated aliphatic and aromatic TPHs, the speciated PAHs suite, the BTEX suite, phenols and suites of VOCs and SVOCs.

The results of the above analyses are appended.

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 a nature and degree of similarity to the extent that we consider them likely to be representative of the natural ground conditions. However, no guarantee can be given.

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 Records and a summary of the ground conditions is given in Section 2.2.

4.2 Foundations

We understand that it is proposed to construct three two to three storey apartment blocks, comprising fourteen flats with ground floor parking spaces in parts. However, at the time of writing this report no specific details regarding the proposed foundations and design loadings were available and consequently the recommendations given are in general terms only.

The ground investigation found made ground to depths ranging from 0.30m to 1.20m overlying variable interbedded granular and cohesive natural strata. BH1, M4 and M5, located in the central and east of the site, initially encountered medium dense sands becoming loose below 3.15m in M5 and dense below 3.20m in BH1. These were underlain at depths ranging from 2.70m to 4.50m by soft or firm clays generally found to be low to very low strength at 4.00m to 4.50m and becoming firm to stiff medium to high strength with increasing depth.

BH2, BH3, M1, M2 and M3 located in the west, south west and central south of the site encountered firm medium strength locally gravelly and sandy clays, found to be stiff high strength below depths ranging from 1.75m to 4.50m. An exception was found in M3 which initially found soft low strength clay to 1.75m, then stiff high strength.

Below depths ranging from 7.50m to 8.40m, BH1 to BH3 encountered very dense silty sand.

We would not recommend founding in the made ground in its present condition because of its inherent variability in consistency and compaction, and in parts the nature of its constituents.

Providing there is sufficient load bearing capability consideration could be given to founding the proposed buildings on strip footings for wall loads and pad foundations for column loads in the natural medium strength cohesive or medium dense granular strata.

Atterberg limit tests on the cohesive strata indicate clays of low to intermediate plasticity which are considered to have a low susceptibility to shrinkage and swelling with varying moisture content (based on a modified plasticity index determined from the <425µm fraction only). Given the above foundations should be taken down to a minimum 0.75m below finished ground level to avoid the zone which is subject to seasonal moisture content variation and frost action. If buildings are to be constructed adjacent to existing trees, trees are to be removed and/or trees are to be planted then the guidelines given in the National House Building Council (NHBC) Standards Chapter 4.2, 'Building Near Trees', should be followed for clays of low shrinkage and swelling potential.

It should be noted that in parts of the site the natural strata is at a depth of in excess of 0.75m and in these areas foundations should be taken down to a minimum 0.10m below the base of the made ground unless the NHBC guidelines indicate a greater depth.

Taking the results of the field and laboratory tests we have determined the safe bearing capacity of the natural strata, as follows:

TABLE 1 SAFE BEARING CAPACITY

Expl Hole No.	Depth (m)	SPT 'N' Value	Shear Strength (kN/m ²)	Safe Bearing Pressure (kN/m ²)		Recommended Minimum Foundation Depth (m)
				Strip Footing	Square Pad	
BH1	1.35	14	-	150	150	1.30
	2.65	20	-	225	225	
	3.65	33	-	395*	395*	
	4.50	-	14	25	30	
	6.15	23	92	175	210	
BH2	1.35	17	68	125	155	0.75
	2.50	-	95	180*	215*	
	3.65	20	80	150	180	
	4.65	27	108	205	245	
	6.00	-	140	265	315	
BH3	1.20	-	40 [#]	75	90	0.75
	2.65	17	68	125*	155*	
	3.65	16	64	120	145	
	4.65	29	116	220*	260*	
	6.15	22	88	165	200	
M1	1.35	13	52	95	115	0.75
	1.80	-	57 [#]	105*	130*	
	2.15	11	44	80	100	
	2.55	-	75 [#]	140	170	
	3.15	24	96	180	215	
	3.55	-	98 [#]	185	220	
	4.15	36	144	270	325	
M2	1.35	11	44	80	100	0.75
	1.55	-	74 [#]	140*	165*	
	2.15	13	52	95	115	
	2.90	-	114 [#]	215*	260*	
	3.15	26	104	195	235	
	3.55	-	129 [#]	245	290	
	4.15	34	136	255	310	

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M3	1.35	9	36	65	80	1.75
	1.75	-	74 [#]	140*	165*	
	2.15	15	60	110	135	
	2.90	-	100 [#]	190*	225*	
	3.15	19	76	140	170	
	3.70	-	122 [#]	230*	275*	
	4.15	25	100	190	225	
M4	1.35	13	-	140	140	0.75
	2.15	13	-	140*	140*	
	3.15	13	52	95*	115*	
	3.85	-	10 [#]	15	20	
	4.15	9	36	65	80	
	5.15	17	68	125	155	
M5	1.35	13	-	140	140	0.75
	2.15	13	-	140*	140*	
	3.15	9	-	85*	85*	
	4.15	6	24	45	55	
	5.15	18	72	135	160	

* Consideration must be given to weaker underlying strata which might be overstressed if loading is not reduced.

** For footings on granular strata, the safe bearing capacity given is based upon a footing width of <1.50m. For wider footings a reduction would be necessary.

Shear strength determined by hand shear vane test.

Appreciable variations in safe bearing capacity are indicated in Table 1 and as a consequence of this, and the need to utilise a generally applicable safe bearing pressure to enable designs to be reasonably formulated, we recommend that values of 75kN/m² for strip footings and 90kN/m² for square pads should not be exceeded for the recommended minimum foundation depth given.

All formation levels should be carefully inspected by an experienced and qualified engineer to confirm the appropriateness of the design figures used with any soft, loose, or rubbly zones removed and replaced with lean mix concrete. The formation should then be blinded with lean mix concrete as soon as possible after exposure, if there is to be a delay before construction, to prevent water softening or disturbance.

It should be noted that the safe bearing pressures given for the cohesive strata do not take into consideration settlement. Settlement is dependent upon loading intensity, the width of the foundation and the coefficient of volume compressibility (Mv) of the compressible strata. When details of the foundations are formulated we recommend that total and differential settlements are assessed to ensure that they are within acceptable limits.

In strata similar to that found in BH2 at 6.00m depth the oedometer consolidation tests indicate that, for a strip footing 1.0m wide at a depth of 0.75m and exerting a ground bearing pressure of 75kN/m², consolidation settlement in the order of 5mm might be expected. Similarly oedometer consolidation tests indicate that, for a pad foundation 1.5m square at a depth of 0.75m exerting a ground bearing pressure of 90N/m², consolidation settlement in the order of 10mm might be expected. We recommend that detailed settlement calculations are carried out for the final design scheme.

Should granular and cohesive rock strata be present at the proposed formation level we recommend that foundation excavations should be locally deepened in order that the formation is entirely within similar strata. If this is not possible we recommend that reinforcement in foundations is provided to give adequate strength to bridge or cantilever over areas of significantly differing rates of settlement and to induce an increase in the settlement where relatively low settlements are expected.

In view of the relatively low safe bearing pressures determined above, shallow foundations in natural ground may not be feasible and hence alternative foundations need to be considered. In this respect we understand that piled foundations are already being considered for the development.

With regard to the choice of pile type, consideration could be given to driven piles, continuous flight auger (CFA) piles or cast in-situ bored piles with the driven pile option probably being the most economical. However, in considering piles driven to a pre-determined set in the more competent strata at depth, it is essential to ensure that any vibrations set up during the driving process are not transmitted to adjacent/ nearby buildings, structures, services and/or slopes/ retaining walls as they may be detrimentally affected. Consequently, in respect of driven piles, we recommend that any tendering Specialist Piling Contractor confirm that vibrations will not detrimentally affect adjacent/ nearby buildings, structures, services and/or slopes/ retaining walls. If such confirmation cannot be given then we would recommend using either CFA or cast in-situ bored piles. When considering the type of pile to use it should be noted that chiselling techniques were required to penetrate horizons containing very dense sands.

Care must be taken to space the piles in any group to ensure the adequate utilisation of skin friction where this has been assumed in the calculation of the load bearing capacity of an individual pile. Checks must also be undertaken to confirm that the underlying ground supporting the pile group is not overstressed.

To provide assistance for estimating purposes only, we have undertaken a preliminary pile design calculation for a 10.0m long pile taking into consideration the ground conditions at BH1, as follows:

Preliminary Pile Design based on strata in BH1 (water at 0.70m)

Bored Cast In-situ or CFA Pile Factor of Safety: 2.5 (shaft), 3.0 (end)
Dia. = 0.30m, Perimeter = 0.94m, Cross Section Area = 0.07m², Length = 10.0m

0.00 to 1.20m	MADE GROUND	ignore
1.20 to 4.50m	Medium dense to dense gravelly SAND	($\bar{N} = 22$)
	Allowable Shaft Friction	= 3.7kN/m ²
	Allowable Shaft Friction Load	= <u>11kN</u>
4.50 to 6.00m	Low strength CLAY	($c = 14\text{kN/m}^2$)
	Allowable Shaft Friction	= 3.4kN/m ²
	Allowable Shaft Friction Load	= <u>4kN</u>
6.00 to 8.40m	High strength CLAY	($\bar{c} = 103\text{kN/m}^2$)
	Allowable Shaft Friction	= 28.0kN/m ²
	Allowable Shaft Friction Load	= <u>63kN</u>

8.40 to 10.00m	Very dense silty SAND	($\bar{N} = 83$)
	Allowable Shaft Friction	= 25.5kN/m ²
	Allowable Shaft Friction Load	= <u>38kN</u>
10.00m	Very dense silty SAND	($\bar{N} = 67$)
	Allowable End Bearing	= 1000kN/m ²
	Allowable End Bearing Load	= <u>70kN</u>

Total Allowable Working Load = 11 + 4 + 63 + 38 + 70 = 186kN

In order to use the load carrying capacity attributable to both shaft friction and end bearing, the final design figures should be checked to ensure that the ultimate shaft friction is greater than or equal to the allowable working load, otherwise end bearing only should be used.

In order to use the full load carrying capacity attributable to end bearing for bored cast in-situ piles either base ramming should be carried out or settled debris should be removed.

To formulate the most satisfactory and economic scheme we recommend that competitive tenders and designs from Specialist Piling Contractors should be sought using the borehole information obtained.

4.3 Floor Slab Construction

With regard to the design and construction of floor slabs, where made ground is encountered to depths of less than 0.60m, we would recommend the removal of any made ground and the level brought up as required using a graded granular hardcore placed and compacted in layers of not greater than 150mm followed by the construction of a concrete ground bearing floor slab.

In any areas where made ground is found to greater than 0.60m depth (e.g. BH1), we would recommend using a suspended floor slab with intermediate support designed on the same basis as the main foundations where the spans are too large for economical single suspended slab design.

4.4 Excavations and Groundwater

There should be no particular difficulties in excavating the strata indicated in the exploratory holes utilising an appropriate and suitably sized mechanical excavator.

It is recommended that all excavations to greater than 1.20m depth, or for shallower excavations where groundwater is encountered above this level, are closely supported, especially where man entry is required. Alternatively, where space permits, the excavations might be battered back to an appropriate angle.

“Wet” sand strata was encountered below 2.00m in M4 and M5. No groundwater inflows were encountered in the exploratory holes although it should be noted that they 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.

Monitoring of standpipes installed to 5.00m in BH1, BH3, M2 and M3, found groundwater to be at minimum depths of 0.70m, 1.50m, 2.00m and 0.80m, respectively.

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Where groundwater is encountered to about 1.30m depth and accumulates in open excavations it is considered that it should be able to be removed by pumping from a filtered sump.

Care will need to be taken when reducing groundwater levels to ensure that adjoining/ nearby buildings, structures and services are not affected.

4.5 Buried Concrete

For the design of buried concrete the recommendations given in Building Research Establishment (BRE) Special Digest 1 (February 2017 revision), "Concrete in Aggressive Ground", should be followed.

Determination of pH on the soil and groundwater samples gave values in the range of 8.2 to 9.0. Soluble sulphate concentrations were also determined for the soil and groundwater samples and the results ranged from 0.01g/l to 0.72g/l and 0.42g/l to 0.45g/l, respectively. The results indicate that the Design Sulphate Class for the site should be DS-2.

Our knowledge of the site and ground conditions indicates that the site is "brownfield" with mobile groundwater. Consequently, in accordance with the Design Sulphate Class for the site together with the site and groundwater conditions an Aggressive Chemical Environment for Concrete (ACEC) classification of AC-2 should be used as detailed on the appended extract.

4.6 Contamination Considerations

Castledine Environmental have previously undertaken a Phase I Report, ref. 3152D and dated July 2021 and this Phase II ground investigation has been undertaken to provide an initial contamination risk assessment in accordance with the Phase I Conceptual Ground Model. Based upon the findings of the above additional sampling, analysis and assessment may be required.

It should be appreciated that the suite of determinants analysed for consists of a range of contaminants identified in the Conceptual Site Model. However, the absence of any other specific contaminants cannot be guaranteed.

4.6.1 Assessment (Soil)

In order to provide an assessment of the presence of contamination eight soil samples have been analysed for a suite of determinants and the results are appended.

Levels of the determinants have been compared against the most recently published guideline values. Contaminated Land: Applications in Real Environments (CL:AIRE) published guideline values in December 2009 to supplement previous guideline values. The Department for Environment, Food and Rural Affairs (DEFRA) published in March 2014 Category 4 Screening Levels (C4SLs) for arsenic, cadmium, lead, hexavalent chromium, benzo(a)pyrene and benzene. Land Quality Management Limited (LQM)/ Chartered Institute of Environmental Health (CIEH) then published Suitable for Use Levels (S4ULs) in November 2014, which largely superseded the previous guideline values. Updated S4ULs values for cadmium and phenols were published in July 2015 and for nickel in August 2015. The guideline values (S4ULs and occasionally C4SLs and CL:AIRE) are derived using the Environment Agency's CLEA Model and 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 residential apartments with some landscaped areas, contamination analyses have been compared with the guideline values for a standard land use of residential without plant uptake (without homegrown produce).

The contamination analysis determined no elevated levels of the determinants analysed for when compared with the guideline values for a standard land use of residential without plant uptake (without homegrown produce).

An asbestos screen was undertaken on eight soil samples and no asbestos was detected.

In addition to the above, an assessment of risk to personnel who will come into contact with on-site materials throughout the site has been undertaken.

4.6.2 Assessment (Water)

Four samples of groundwater taken from the standpipes installed in BH1, BH3, M2 and M3 on 04/11/2021 have been analysed for a suite of determinants in accordance with the Conceptual Site Model and the results are appended.

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.

We have listed the samples where the levels of contamination have exceeded the EQS and UK DWS, as follows:

TABLE 2 ASSESSMENT OF GROUNDWATER CONTAMINATION

Determinant	Location	Depth (m)	Recorded Level (µ/l)	EQS (µ/l)	UK DWS (µ/l)
Boron	BH3	1.6	1200	2000	1000
Cadmium	BH3	1.6	0.21	0.08	5.0
Copper	BH1 BH3 M2 M3	0.7 1.6 2.0 0.8	1.9 17 6.5 2.4	1.0	2000
Nickel	BH3 M2	1.6 2.0	7.3 6.1	4.0	20
Selenium	M2	2.0	36	10.9	5000

The results show concentrations of cadmium, copper, nickel and selenium were locally elevated when compared to the EQS and the concentration of boron in groundwater sampled from BH3 is slightly elevated when compared to the UK DWS

The EQS values for copper and nickel are based on the bioavailable component. The groundwater analyses report total concentrations of metal ions rather than bioavailable concentrations and consequently may indicate a false exceedance of the EQS.

It should also be noted that the UK DWS is a post treatment standard and as such is very stringent.

The previous Phase I Report indicated the underlying drift deposits and bedrock were designated as Secondary (Undifferentiated) and Secondary B Aquifers, respectively. In addition the site is not in a Source Protection Zone and there are no controlled water abstractions identified within 250m of the site. Furthermore no hydrological features are identified within 250m of the site.

Given the above, we would consider the risk of significant pollution to “controlled waters” from the relatively low concentrations of contaminants determined in the groundwater to be negligible.

4.6.3 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.

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 assessment, based on the results of the contamination analyses, indicates that there are no contaminants requiring remediation and/or precautions to be taken for the proposed development.

If waste materials are to be removed from the site, classification of the waste should be undertaken to determine the most appropriate tip to use and the associated costs. It should be noted that significant cost savings can sometimes be made on waste disposal by correct classification of the waste, a service that we can provide.

S4ULs, C4SLs and CL:AIRE assume long term contact with contamination and assess chronic health risk. The risk of short term acute exposure to site personnel is dealt with in the remit of the Health and Safety Executive under the Health and Safety at Work Act: 1974 and Regulations made under the Act, including the Control of Substances Hazardous to Health (COSHH) Regulations. The levels of contamination and risk to site personnel should be considered under the Construction Design and Management (CDM) Regulations at the planning stage and in the development of the designers and contractors Health and Safety Plans and Method Statements. The risk of contact with on-site soils should be minimised and as standard good practice, site personnel involved in earthworks and excavations should wear gloves, overalls, and boots and smoking should be prohibited.

4.7 Ground Gas Considerations

Ground gas monitoring has been undertaken on two of six scheduled occasions to date and the results of the monitoring visits are appended.

Ground gases: methane, carbon dioxide and oxygen and flow rate have been monitored and the ranges of ground gases and flow rate during the monitoring period are as follows:

TABLE 3 GROUND GAS CONCENTRATIONS AND FLOW RATE

Methane (% vol. In air)	Carbon Dioxide (% vol. in air)	Oxygen (% vol. in air)	Gas Flow Rate (litres/ hour)
0.0	0.3 – 1.2	16.0 – 18.5	<0.1

It can be seen from the monitoring to date, that no elevated levels of methane or carbon dioxide, or gas flow has been detected, however slightly depleted levels of oxygen were detected.

Methane gas when present between 5% volume in air (Lower Explosive Limit - L.E.L.) and 15% volume in air (Upper Explosive Limit - U.E.L.) is potentially explosive and inflammable whilst carbon dioxide in conjunction with depleted oxygen is an asphyxiant. Both methane and carbon dioxide are a by-product of the anaerobic and aerobic decomposition of biodegradable materials.

The levels of gas have been assessed in accordance with British Standard 8485, "Code of practice for the design of protective measures for methane and carbon dioxide gasses for new buildings", published in June 2015 and updated in January 2019 (BS.8485:2015+A1:2019).

The characteristic hazardous gas flow rate (Q_{hg}) is calculated by dividing the maximum gas (methane or carbon dioxide) concentration by 100 and multiplying by the maximum flow rate in litres per hour (minimum 0.1 l/hr for Sub Surface monitoring equipment). For this site $Q_{hg} = [1.2 / 100] \times 0.1 = 0.0002 \text{ l/hr}$

Based on the monitoring to date, BS.8485:2015+A1:2019, Table 2, indicates that the site falls into Characteristic Situation 1 (CS1).

BS.8485:2015+A1:2019, Table 4, indicates that for a CS1 and the type of development proposed a score of zero gives no protection and remedial measures required.

All excavations of greater than 1.20m depth should be routinely checked for air quality prior to man entry and appropriate precautions taken.

It should be noted that it is our intention to update this section of the report on completion of the ground gas monitoring.

4.8 General

We recommend that consultation should be undertaken with, and the written approval obtained from, the Local Authority Environmental Health Officer and the Local Authority Building Control Officer prior to commencing 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 Mr Gurbinder Singh Mann at our Tipton office.

SUB SURFACE CONSULTANTS LIMITED
REPORT No. M3554
JANUARY 2022



T. Plum B.Sc.(Hons.), M.Sc., F.G.S.
Senior Geoenvironmental Engineer
For and on behalf of
Sub Surface Consultants Limited



C. A. Marsden B.Sc.(Hons.), C.Eng., M.I.C.E.
Director
For and on behalf of
Sub Surface Consultants Limited.

M3554 – BARWELL

INSITU TEST RESULTS

S S SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907							Standard Penetration Test Results						
Site : LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE												Job Number M3554	
Client : THE NOVA CROWD LIMITED												Sheet 1 / 1	
Engineer: ARCELLE CONSULTING													
Borehole Number	Base of Borehole (m)	End of Seating Drive (m)	End of Test Drive (m)	Test Type	Seating Blows per 75mm		Blows for each 75mm penetration				Result	Comments	
					1	2	1	2	3	4			
BH1	1.20	1.35	1.65	SPT	2	3	3	4	3	4	N=14		
BH1	2.50	2.65	2.95	SPT	3	3	5	5	5	5	N=20		
BH1	3.50	3.65	3.95	SPT	4	7	8	8	8	9	N=33		
BH1	6.00	6.15	6.45	SPT	2	3	4	6	6	7	N=23		
BH1	9.00	9.15	9.30	SPT	9	10	15	35			50/150mm		
BH1	9.80	9.95	10.18	SPT	5	10	15	15	20		50/225mm		
BH2	1.20	1.35	1.65	SPT	3	4	4	4	4	5	N=17		
BH2	3.50	3.65	3.95	SPT	3	4	4	5	5	6	N=20		
BH2	4.50	4.65	4.95	SPT	4	5	6	7	7	7	N=27		
BH2	7.50	7.65	7.83	SPT	5	10	10	20	20		50/180mm		
BH2	9.00	9.07	9.12	SPT	25		50				25*/69mm 50/50mm		
BH3	2.50	2.65	2.95	SPT	2	3	4	4	4	5	N=17		
BH3	3.50	3.65	3.95	SPT	2	3	4	4	4	4	N=16		
BH3	4.50	4.65	4.95	SPT	3	4	7	7	7	8	N=29		
BH3	6.00	6.15	6.45	SPT	3	4	5	5	6	6	N=22		
BH3	8.00	8.15	8.45	SPT	4	10	10	12	14	14	N=50		
BH3	8.50	8.65	8.85	SPT	8	10	10	22	18		50/200mm		
BH3	8.85	8.85	8.87	SPT			50				0*/0mm 50/20mm		

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Site : LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE											Job Number		
Client : THE NOVA CROWD LIMITED											M3554		
Engineer: ARCELLE CONSULTING											Sheet		
											1 / 1		
Borehole Number	Base of Borehole (m)	End of Seating Drive (m)	End of Test Drive (m)	Test Type	Seating Blows per 75mm		Blows for each 75mm penetration				Result	Comments	
					1	2	1	2	3	4			
M1	1.20	1.35	1.65	SPT	2	2	2	3	4	4	N=13		
M1	2.00	2.15	2.45	SPT	2	2	2	3	3	3	N=11		
M1	3.00	3.15	3.45	SPT	4	4	5	6	6	7	N=24		
M1	4.00	4.15	4.45	SPT	5	10	11	11	7	7	N=36		
M1	5.00	5.15	5.45	SPT	6	6	8	7	9	10	N=34		
M2	1.20	1.35	1.65	SPT	1	2	2	3	3	3	N=11		
M2	2.00	2.15	2.45	SPT	2	2	3	3	3	4	N=13		
M2	3.00	3.15	3.45	SPT	4	4	4	7	7	8	N=26		
M2	4.00	4.15	4.45	SPT	5	6	8	7	9	10	N=34		
M2	5.00	5.15	5.45	SPT	7	7	8	8	9	8	N=33		
M3	1.20	1.35	1.65	SPT	2	2	3	2	2	2	N=9		
M3	2.00	2.15	2.45	SPT	3	3	4	3	4	4	N=15		
M3	3.00	3.15	3.45	SPT	3	3	4	5	4	6	N=19		
M3	4.00	4.15	4.45	SPT	4	5	5	6	7	7	N=25		
M3	5.00	5.15	5.45	SPT	6	6	6	8	8	9	N=31		
M4	1.20	1.35	1.65	SPT	2	3	3	3	4	3	N=13	No Recovery	
M4	2.00	2.15	2.45	SPT	2	3	4	3	3	3	N=13		
M4	3.00	3.15	3.45	SPT	3	2	3	4	3	3	N=13		
M4	4.00	4.15	4.45	SPT	2	1	2	2	2	3	N=9		
M4	5.00	5.15	5.45	SPT	3	3	4	4	4	5	N=17		
M5	1.20	1.35	1.65	SPT	2	2	3	3	4	3	N=13	No Recovery No Recovery No Recovery	
M5	2.00	2.15	2.45	SPT	2	3	3	3	4	3	N=13		
M5	3.00	3.15	3.45	SPT	3	3	3	2	2	2	N=9		
M5	4.00	4.15	4.45	SPT	2	2	1	2	1	2	N=6		
M5	5.00	5.15	5.45	SPT	3	3	4	4	5	5	N=18		



Insitu Test Results

Job Number	M3554
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Sheet:

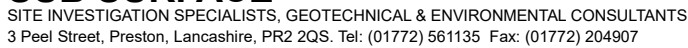
1 / 1

Ground Gas and Groundwater Monitoring Results Sheet

Remarks:	Elevated levels of methane and carbon dioxide and depleted levels of oxygen are shown in <i>bold/italics</i> . 04/11/21 - Groundwater samples taken from all boreholes.
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LABORATORY TEST RESULTS

S S SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907							Laboratory Test Results					
Site : LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE Client : THE NOVA CROWD LIMITED Engineer: ARCELLE CONSULTING											Job Number M3554	
											Sheet 1 / 1	
DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY AND LIQUIDITY INDEX												
Borehole/ Trial Pit	Depth (m)	Sample	Natural Moisture Content %	Sample Passing 425µm Sieve		Liquid Limit %	Plastic Limit %	Plasticity Index %	Liquidity Index	Group Symbol	Laboratory Description	
				Percentage %	Moisture Content %							
BH1	4.50	U	22	38	58	29	15	14	3.07	CL	Brown and occasional greyish brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular to subrounded fine to coarse sandstone, siltstone, quartz and chalk.	
BH2	1.20	B	19	69	28	40	18	22	0.45	CI	Light brown to brown and occasional greyish brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular to rounded fine to coarse siltstone, quartz, chalk, sandstone and coal.	
BH2	6.00	U	14	96	15	28	15	13	0.00	CL	Brown and occasional greyish brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular to subrounded fine to coarse sandstone, siltstone, quartz and chalk.	
BH3	1.70	D	14	32	44	26	14	12	2.50	CL	Brown gravelly sandy silty CLAY. Gravel is subangular to subrounded fine to coarse sandstone, siltstone and quartz.	
BH3	2.50	D	14	45	31	28	14	14	1.21	CL	Brown gravelly sandy silty CLAY. Gravel is subangular to subrounded fine to coarse sandstone, siltstone and quartz.	
M1	1.20	D	15	96	16	35	15	20	0.05	CL/CI	Brown slightly gravelly slightly sandy silty CLAY. Gravel is angular to subrounded fine to medium siltstone, chalk and coal.	
M2	1.20	D	14	64	22	26	13	13	0.69	CL	Greyish brown an d brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular to rounded fine to coarse siltstone, quartz and coal.	
M3	2.00	D	17	70	24	35	15	20	0.45	CL/CI	Brown slightly gravelly slightly sandy silty CLAY. Gravel is angular to rounded fine to coarse flint, siltstone, chalk and quartz.	
M4	1.20	D	10	74	14	24	14	10	0.00	CL	Brown gravelly silty fine to coarse SAND. Gravel is subrounded to rounded fine to medium quart, flint and siltstone.	
Method of Preparation : BS 1377:PART 1:1990:7.4 Preparation of samples for classification tests BS 1377:PART 2:1990:4.2 & 5.2 Sample preparations												
Method of Test : BS 1377:PART 2:1990:3 Determination of moisture content 1990:4 Determination of the liquid limit BS 1377:PART 2:1990:5 Determination of the plastic limit and plasticity index												
Remarks :												



Sheet

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**SUB SURFACE**

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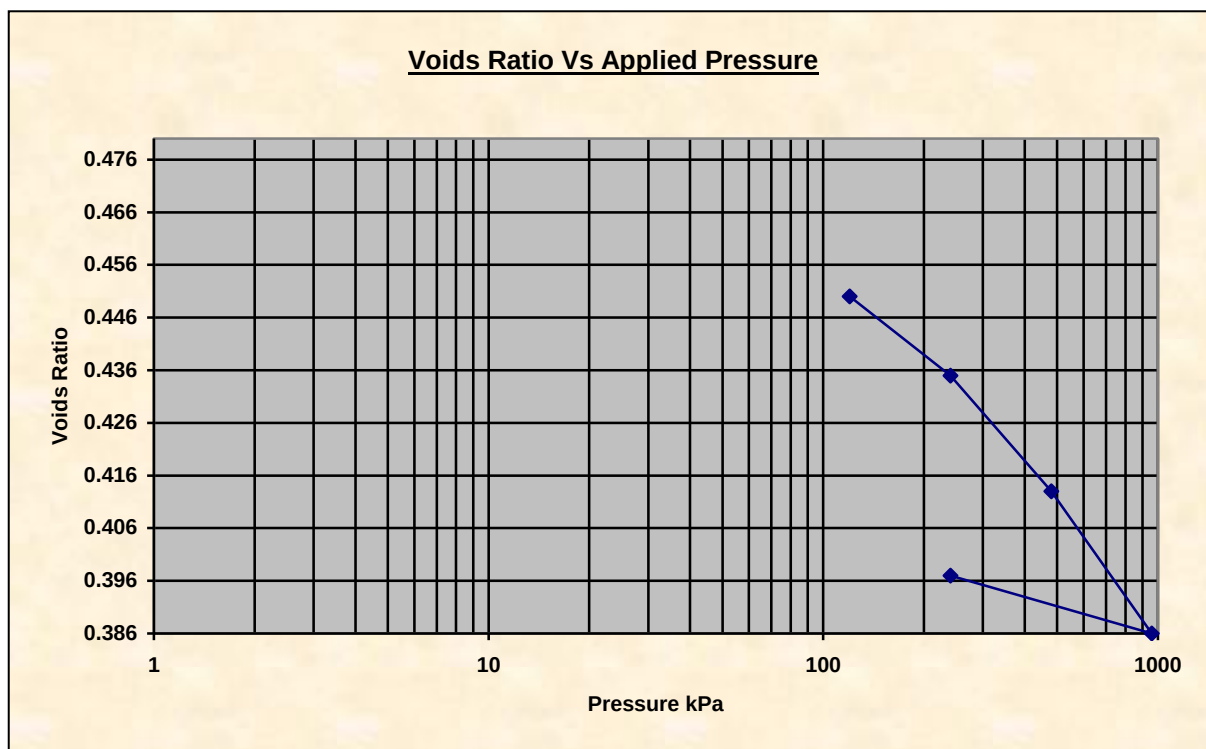
Laboratory Test Results**One Dimensional Consolidation Properties (Oedometer)**

Client	The Nova Crowd Limited	Lab Ref	011 (WAC)
Project	Land at Arthur Street, Barwell, Leicestershire	Job	M3554
Borehole	BH2	Sample	011

Test Details			
Standard	BS 1377: Part 5 : 1990 : Clause 3	Particle Density	2.65 Mg/m ³
Sample Type	Undisturbed sample - open drive	Lab Temperature	21.0 deg.C
Sample Depth	6.00 m		
Sample Description	Brown slightly gravelly slightly sandy silty CLAY. Gravel is fine to medium sandstone.		
Variations from Procedure	None		

Specimen Details			
Specimen Reference	A	Description	As Above
Depth within Sample	0.00mm	Orientation within Sample	None
Specimen Mass	179.10 g	Condition	Natural Moisture
Specimen Height	20.00 mm	Preparation	Natural Undisturbed
Comments			

Test Apparatus			
Ring Number	1	Ring Diameter	75.00 mm
Ring Height	20.00 mm	Ring Weight	111.96 g
Lever Ratio	9.00 : 1		



Height of Solid Particles	13.51 mm	Swelling Pressure	0.0 kPa
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One Dimensional Consolidation Properties (Oedometer)

Client	The Nova Crowd Limited	Lab Ref	011 (WAC)
Project	Land at Arthur Street, Barwell, Leicestershire	Job	M3554
Borehole	BH2	Sample	011

Initial Moisture Content*	13.2 %	Final Moisture Content	12.0 %
Initial Bulk Density	2.03 Mg/m3	Final Bulk Density	2.12 Mg/m3
Initial Dry Density	1.79 Mg/m3	Final Dry Density	1.90 Mg/m3
Initial Void Ratio	0.4803	Final Void Ratio	0.3974
Initial Degree of Saturation	72.98%	Final Degree of Saturation	80.15 %

- Calculated from initial and dry weights of whole specimen

[illegible]

Method of Time Fitting Used	Square Root Time
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Tested By and Date:	WAC 02 Nov 21
Checked By and Date:	
Approved By and Date:	

Job Number
M3554

Sheet

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Engineer: ARCELLE CONSULTING

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Grading Analysis

Sieve / Particle Size	% Passing
19 mm	100.0
9.5 mm	99.1
5.6 mm	97.8
3.35 mm	96.6
2.36 mm	96.1
1.4 mm	95.3
710 µm	93.5
425 µm	78.4
300 µm	37.9
150 µm	30.6
63 µm	19.0

CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Grading Analysis	
D85	549.6 µm
D60	368.2 µm
D10	<63.0 µm
Uniformity Coefficient	-

Particle Proportions	
Cobbles + Boulders	-
Gravel	4.2%
Sand	76.8%
Silt	-
Clay	-

Remarks :

S S SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907							Laboratory Test Results						
Site : LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE Client : THE NOVA CROWD LIMITED Engineer: ARCELLE CONSULTING												Job Number M3554 Sheet 1 / 1	
DETERMINATION OF pH, SULPHATE CONTENT AND TOTAL SULPHUR OF SOIL AND GROUNDWATER AND MAGNESIUM, CHLORIDE, AMMONIA AND NITRATE CONTENT													
Borehole/ Trial Pit	Depth (m)	Sample	Concentration of Sulphate			Total Sulphur %	Magnesium mg/l	Ammonium NH4 mg/l	Water Soluble Chloride mg/l	Water Soluble Nitrate mg/l	pH	Design Class	Laboratory Description
			Soil		Ground Water g /l								
			Total S03 %	S04 in 2:1 water:soil g /l									
BH1	0.70	W			0.21						8.4	DS-1	GROUNDWATER
BH2	1.20	B		0.02							8.7	DS-1	Light brown to brown and occasional greyish brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular to rounded fine to coarse siltstone, quartz, chalk, sandstone and coal.
BH2	6.00	U		0.01							8.9	DS-1	Brown and occasional greyish brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular to subrounded fine to coarse sandstone, siltstone, quartz and chalk.
BH3	0.10	B		0.72							8.7	DS-2	MADE GROUND: paving blocks.
BH3	1.60	W			0.46						8.2	DS-2	GROUNDWATER
M1	1.20	D		0.02							8.3	DS-1	Brown slightly gravelly slightly sandy silty CLAY. Gravel is angular to subrounded fine to medium siltstone, chalk and coal.
M2	0.20	B		0.19							8.5	DS-1	MADE GROUND: dark brownish grey and black ashy very gravelly silty fine to coarse sand. Gravel sized fragments are fine to coarse clinker, brick and stone.
M2	1.20	D		0.13							8.3	DS-1	Greyish brown an d brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular to rounded fine to coarse siltstone, quartz and coal.
M2	2.00	W			0.45						8.3	DS-2	GROUNDWATER
M3	0.00	B		0.26							9.0	DS-1	MADE GROUND: light brown to brownish grey slightly ashy silty very sandy fine to coarse gravel sized fragments of brick, stone and clinker with occasional pockets of clay.
M3	0.80	W			0.42						8.4	DS-2	GROUNDWATER
M3	2.00	D		0.02							8.6	DS-1	Brown slightly gravelly slightly sandy silty CLAY. Gravel is angular to rounded fine to coarse flint, siltstone, chalk and quartz.
Method of Preparation : BS 1377:PART 1:1990:7.5 Preparation of soil for chemical tests BS 1377:PART 3:1990:5.2, 5.3, 5.4 & 9.4													
Method of Test : Lab in-house methods based on BS1377: Part 3 for contents of water sol sulphate, pH, chloride and magnesium. Lab in-house method based on MEWAM (EA, 2006) for total sulphur													
Remarks : Classification relates to Design Sulphate Class of BRE Special Digest 1 (2005)													

**SUB SURFACE**

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BRE Special Digest 1

AGGRESSIVE CHEMICAL ENVIRONMENT FOR CONCRETE (ACEC) SITE CLASSIFICATION.**Table C1 Aggressive Chemical Environment for Concrete (ACEC) classification for natural ground locations^a**

Sulfate Design Sulfate Class for location	2:1 water/soil extract ^b	Groundwater	Total potential sulfate ^c	Groundwater Static water	Mobile water	ACEC Class for location
1	2 (SO ₄ mg/l)	3 (SO ₄ mg/l)	4 (SO ₄ %)	5 (pH)	6 (pH)	7
DS-1	< 500	< 400	< 0.24	≥ 2.5	> 5.5 ^d 2.5–5.5	AC-1s AC-1 ^d AC-2z
DS-2	500–1500	400–1400	0.24–0.6	> 3.5 2.5–3.5	> 5.5 2.5–5.5	AC-1s AC-2 AC-2s AC-3z
DS-3	1600–3000	1500–3000	0.7–1.2	> 3.5 2.5–3.5	> 5.5 2.5–5.5	AC-2s AC-3 AC-3s AC-4
DS-4	3100–6000	3100–6000	1.3–2.4	> 3.5 2.5–3.5	> 5.5 2.5–5.5	AC-3s AC-4 AC-4s AC-5
DS-5	> 6000	> 6000	> 2.4	> 3.5 2.5–3.5	≥ 2.5	AC-4s AC-5

Notes

- a** Applies to locations on sites that comprise either undisturbed ground that is in its natural state (ie is not brownfield – Table C2) or clean fill derived from such ground.
b The limits of Design Sulfate Classes based on 2:1 water/soil extracts have been lowered relative to previous Digests (Box C7).
c Applies only to locations where concrete will be exposed to sulfate ions (SO₄) which may result from the oxidation of sulfides (eg pyrite) following ground disturbance (Appendix A1 and Box C8).
d For flowing water that is potentially aggressive to concrete owing to high purity or an aggressive carbon dioxide level greater than 15 mg/l (Section C2.2.3), increase the ACEC Class to AC-2z.

Explanation of suffix symbols to ACEC Class

- Suffix 's' indicates that the water has been classified as static.
- Concrete placed in ACEC Classes that include the suffix 'z' primarily have to resist acid conditions and may be made with any of the cements or combinations listed in Table D2 on page 42.

Table C2 Aggressive Chemical Environment for Concrete (ACEC) classification for brownfield locations^a

Sulfate and magnesium						Groundwater		ACEC
Design Sulfate Class for location	2:1 water/soil extract ^b		Groundwater		Total potential sulfate ^c	Static water	Mobile water	Class for location
1	2 (SO ₄ mg/l)	3 (Mg mg/l)	4 (SO ₄ mg/l)	5 (Mg mg/l)	6 (SO ₄ %)	7 (pH) ^d	8 (pH) ^d	9
DS-1	< 500		< 400		< 0.24	≥ 2.5	> 6.5 ^d 5.5–6.5 4.5–5.5 2.5–4.5	AC-1s AC-1 AC-2z AC-3z AC-4z
DS-2	500–1500		400–1400		0.24–0.6	> 5.5 2.5–5.5	> 6.5 5.5–6.5 4.5–5.5 2.5–4.5	AC-1s AC-2 AC-2s AC-3z AC-4z AC-5z
DS-3	1600–3000		1500–3000		0.7–1.2	> 5.5 2.5–5.5	> 6.5 5.5–6.5 2.5–5.5	AC-2s AC-3 AC-3s AC-4 AC-5
DS-4	3100–6000	≤ 1200	3100–6000	≤ 1000	1.3–2.4	> 5.5 2.5–5.5	> 6.5 2.5–6.5	AC-3s AC-4 AC-4s AC-5
DS-4m	3100–6000	> 1200 ^a	3100–6000	> 1000 ^a	1.3–2.4	> 5.5 2.5–5.5	> 6.5 2.5–6.5	AC-3s AC-4m AC-4ms AC-5m
DS-5	> 6000	≤ 1200	> 6000	≤ 1000	> 2.4	> 5.5 2.5–5.5	≥ 2.5	AC-4s AC-5
DS-5m	> 6000	> 1200 ^a	> 6000	> 1000 ^a	> 2.4	> 5.5 2.5–5.5	≥ 2.5	AC-4ms AC-5m

Notes

- a** Brownfield locations are those sites, or parts of sites, that might contain chemical residues produced by or associated with industrial production (Section C5.1.3).
b The limits of Design Sulfate Classes based on 2:1 water/soil extracts have been lowered from previous Digests (Box C7).
c Applies only to locations where concrete will be exposed to sulfate ions (SO₄), which may result from the oxidation of sulfides such as pyrite, following ground disturbance (Appendix A1 and Box C8).
d An additional account is taken of hydrochloric and nitric acids by adjustment to sulfate content (Section C5.1.3).
e The limit on water-soluble magnesium does not apply to brackish groundwater (chloride content between 12 000 mg/l and 17 000 mg/l). This allows 'm' to be omitted from the relevant ACEC classification. Seawater (chloride content about 18 000 mg/l) and stronger brines are not covered by this table.

Explanation of suffix symbols to ACEC Class

- Suffix 's' indicates that the water has been classified as static.
- Concrete placed in ACEC Classes that include the suffix 'z' have primarily to resist acid conditions and may be made with any of the cements in Table D2 on page 42.
- Suffix 'm' relates to the higher levels of magnesium in Design Sulfate Classes 4 and 5.

CONTAMINATION ANALYSIS RESULTS



2183

Final Report

Report No.: 21-39011-1

Initial Date of Issue: 12-Nov-2021

Client Sub Surface

Client Address: 3 Peel Street
Preston
Lancashire
PR2 2QS

Contact(s): Simon Gabbatt

Project M3554 Land @ Arthur St, Barnwell LE9
8GF

Quotation No.: **Date Received:** 08-Nov-2021

Order No.: **Date Instructed:** 08-Nov-2021

No. of Samples: 4

Turnaround (Wkdays): 5 **Results Due:** 12-Nov-2021

Date Approved: 12-Nov-2021

Approved By:



Details: Glynn Harvey, Technical Manager

Results - Water

Project: M3554 Land @ Arthur St, Barnwell LE9 8GF

Client: Sub Surface	Chemtest Job No.:				21-39011	21-39011	21-39011	21-39011
Quotation No.:	Chemtest Sample ID.:				1314870	1314871	1314872	1314873
	Client Sample ID.:				867-870	879-882	871-874	875-878
	Sample Location:				BH1	BH3	M2	M3
	Sample Type:				WATER	WATER	WATER	WATER
	Top Depth (m):				0.7	1.6	2.0	0.8
	Bottom Depth (m):				0.7	1.6	2.0	0.8
	Date Sampled:				04-Nov-2021	04-Nov-2021	04-Nov-2021	04-Nov-2021
Determinand	Accred.	SOP	Units	LOD				
pH	U	1010		N/A	8.4	8.2	8.3	8.4
Sulphate	U	1220	mg/l	1.0	210	460	450	420
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050
Sulphide	U	1325	mg/l	0.050	[B] < 0.050	[B] < 0.050	[B] < 0.050	[B] < 0.050
Arsenic (Dissolved)	U	1455	µg/l	0.20	0.45	1.1	0.69	0.44
Boron (Dissolved)	U	1455	µg/l	10.0	210	1200	240	200
Cadmium (Dissolved)	U	1455	µg/l	0.11	< 0.11	0.21	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	2.7
Copper (Dissolved)	U	1455	µg/l	0.50	1.9	17	6.5	2.4
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	µg/l	0.50	2.3	7.3	6.1	2.3
Lead (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	µg/l	0.50	2.7	5.0	36	6.4
Zinc (Dissolved)	U	1455	µg/l	2.5	< 2.5	8.3	9.8	3.6
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20	[B] < 20	[B] < 20	[B] < 20
Aliphatic TPH >C5-C6	N	1675	µg/l	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
Aliphatic TPH >C8-C10	N	1675	µg/l	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
Aliphatic TPH >C12-C16	N	1675	µg/l	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
Aliphatic TPH >C21-C35	N	1675	µg/l	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
Total Aliphatic Hydrocarbons	N	1675	µg/l	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
Aromatic TPH >C7-C8	N	1675	µg/l	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
Aromatic TPH >C10-C12	N	1675	µg/l	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
Aromatic TPH >C16-C21	N	1675	µg/l	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
Aromatic TPH >C35-C44	N	1675	µg/l	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
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Water

Project: M3554 Land @ Arthur St, Barnwell LE9 8GF

Client: Sub Surface	Chemtest Job No.:				21-39011	21-39011	21-39011	21-39011
Quotation No.:	Chemtest Sample ID.:				1314870	1314871	1314872	1314873
	Client Sample ID.:				867-870	879-882	871-874	875-878
	Sample Location:				BH1	BH3	M2	M3
	Sample Type:				WATER	WATER	WATER	WATER
	Top Depth (m):				0.7	1.6	2.0	0.8
	Bottom Depth (m):				0.7	1.6	2.0	0.8
	Date Sampled:				04-Nov-2021	04-Nov-2021	04-Nov-2021	04-Nov-2021
Determinand	Accred.	SOP	Units	LOD				
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	N	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 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	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 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	< 0.10
Total Of 16 PAH's	N	1700	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Water

Project: M3554 Land @ Arthur St, Barnwell LE9 8GF

Client: Sub Surface	Chemtest Job No.:				21-39011	21-39011	21-39011	21-39011
Quotation No.:	Chemtest Sample ID.:				1314870	1314871	1314872	1314873
	Client Sample ID.:				867-870	879-882	871-874	875-878
	Sample Location:				BH1	BH3	M2	M3
	Sample Type:				WATER	WATER	WATER	WATER
	Top Depth (m):				0.7	1.6	2.0	0.8
	Bottom Depth (m):				0.7	1.6	2.0	0.8
	Date Sampled:				04-Nov-2021	04-Nov-2021	04-Nov-2021	04-Nov-2021
Determinand	Accred.	SOP	Units	LOD				
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	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
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: M3554 Land @ Arthur St, Barnwell LE9 8GF

Client: Sub Surface	Chemtest Job No.:				21-39011	21-39011	21-39011	21-39011
Quotation No.:	Chemtest Sample ID.:				1314870	1314871	1314872	1314873
	Client Sample ID.:				867-870	879-882	871-874	875-878
	Sample Location:				BH1	BH3	M2	M3
	Sample Type:				WATER	WATER	WATER	WATER
	Top Depth (m):				0.7	1.6	2.0	0.8
	Bottom Depth (m):				0.7	1.6	2.0	0.8
	Date Sampled:				04-Nov-2021	04-Nov-2021	04-Nov-2021	04-Nov-2021
Determinand	Accred.	SOP	Units	LOD				
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: M3554 Land @ Arthur St, Barnwell LE9 8GF

Client: Sub Surface	Chemtest Job No.:				21-39011	21-39011	21-39011	21-39011
Quotation No.:	Chemtest Sample ID.:				1314870	1314871	1314872	1314873
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	Sample Location:				BH1	BH3	M2	M3
	Sample Type:				WATER	WATER	WATER	WATER
	Top Depth (m):				0.7	1.6	2.0	0.8
	Bottom Depth (m):				0.7	1.6	2.0	0.8
	Date Sampled:				04-Nov-2021	04-Nov-2021	04-Nov-2021	04-Nov-2021
Determinand	Accred.	SOP	Units	LOD				
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030

Report Information

Key

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"
SOP	Standard operating procedure
LOD	Limit of detection

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 30 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



2183

Final Report

Report No.: 21-36981-1

Initial Date of Issue: 02-Nov-2021

Client Sub Surface

Client Address: 3 Peel Street
Preston
Lancashire
PR2 2QS

Contact(s): Simon Gabbatt

Project M3554 LAND AT ARTHUR STREET,
BARWELL

Quotation No.: **Date Received:** 25-Oct-2021

Order No.: **Date Instructed:** 25-Oct-2021

No. of Samples: 13

Turnaround (Wkdays): 7 **Results Due:** 02-Nov-2021

Date Approved: 02-Nov-2021

Approved By:



Details: Glynn Harvey, Technical Manager

Results - Soil

Project: M3554 LAND AT ARTHUR STREET, BARWELL

Client: Sub Surface	Chemtest Job No.:				21-36981	21-36981	21-36981	21-36981	21-36981	21-36981	21-36981	21-36981	21-36981
Quotation No.:	Chemtest Sample ID.:				1304958	1304959	1304960	1304961	1304962	1304963	1304964	1304965	1304966
	Sample Location:				BH1	BH2	BH3	M1	M2	M3	M4	M5	BH2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0	0	0.1	0	0.2	0	0.2	0	1.2
	Bottom Depth (m):				0.3	0.3	0.65	0.2	0.4	0.4			1.7
	Date Sampled:				13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
	Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	
Moisture	N	2030	%	0.020	16	23	14	19	13	18	12	11	16
pH	U	2010		4.0	9.5	8.5	8.7	8.7	8.5	9.0	8.8	8.7	8.7
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.68	2.4	2.7	6.7	1.4	4.3	0.67	1.6	
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010			0.72		0.19	0.26			0.025
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	14	4.3	3.4	2.1	3.2	5.0	2.9	1.7	
Sulphate (Total)	U	2430	%	0.010	0.061	0.12	0.35	0.29	0.33	0.27	0.015	0.29	
Arsenic	U	2450	mg/kg	1.0	5.9	10	11	16	9.6	18	7.3	7.2	
Cadmium	U	2450	mg/kg	0.10	0.18	0.19	0.18	0.17	< 0.10	0.33	< 0.10	0.50	
Chromium	U	2450	mg/kg	1.0	24	20	26	36	24	33	22	31	
Copper	U	2450	mg/kg	0.50	270	170	190	500	97	210	150	140	
Mercury	U	2450	mg/kg	0.10	< 0.10	0.11	< 0.10	< 0.10	< 0.10	0.14	< 0.10	< 0.10	
Nickel	U	2450	mg/kg	0.50	44	20	27	55	24	39	17	29	
Lead	U	2450	mg/kg	0.50	40	58	100	180	27	140	30	37	
Selenium	U	2450	mg/kg	0.20	0.31	0.51	0.25	0.67	< 0.20	< 0.20	0.30	< 0.20	
Zinc	U	2450	mg/kg	0.50	71	110	110	260	58	230	67	140	
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 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	< 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	< 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	< 1.0	< 1.0	< 1.0	
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	7.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	83	< 1.0	< 1.0	110	< 1.0	< 1.0	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	38	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	130	< 5.0	< 5.0	110	< 5.0	< 5.0	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 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	< 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	< 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	< 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	< 1.0	< 1.0	< 1.0	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	9.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	350	< 1.0	< 1.0	410	< 1.0	< 1.0	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	18	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	380	< 5.0	< 5.0	410	< 5.0	< 5.0	

Results - Soil

Project: M3554 LAND AT ARTHUR STREET, BARWELL

Client: Sub Surface	Chemtest Job No.:				21-36981	21-36981	21-36981	21-36981	21-36981	21-36981	21-36981	21-36981	21-36981
Quotation No.:	Chemtest Sample ID.:				1304958	1304959	1304960	1304961	1304962	1304963	1304964	1304965	1304966
	Sample Location:				BH1	BH2	BH3	M1	M2	M3	M4	M5	BH2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0	0	0.1	0	0.2	0	0.2	0	1.2
	Bottom Depth (m):				0.3	0.3	0.65	0.2	0.4	0.4			1.7
	Date Sampled:				13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
	Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	
Determinand	Accred.	SOP	Units	LOD									
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	510	< 10	< 10	520	< 10	< 10	
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.3	
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.2	
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.58	
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.59	
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.70	
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.39	
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.38	
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	5.1	
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
Chloromethane	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
Bromomethane	U	2760	µg/kg	20	< 20		< 20		< 20	< 20			
Chloroethane	U	2760	µg/kg	2.0	< 2.0		< 2.0		< 2.0	< 2.0			
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0		< 5.0		< 5.0	< 5.0			
Trichloromethane	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0		< 2.0		< 2.0	< 2.0			
Trichloroethene	N	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
Dibromomethane	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			

Results - Soil

Project: M3554 LAND AT ARTHUR STREET, BARWELL

Client: Sub Surface	Chemtest Job No.:					21-36981	21-36981	21-36981	21-36981	21-36981	21-36981	21-36981	21-36981
Quotation No.:	Chemtest Sample ID.:					1304958	1304959	1304960	1304961	1304962	1304963	1304964	1304966
	Sample Location:					BH1	BH2	BH3	M1	M2	M3	M4	M5
	Sample Type:					SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):					0	0	0.1	0	0.2	0	0.2	0
	Bottom Depth (m):					0.3	0.3	0.65	0.2	0.4	0.4		1.7
	Date Sampled:					13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
	Asbestos Lab:					DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD									
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0		< 5.0		< 5.0	< 5.0			
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10		< 10		< 10	< 10			
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10		< 10		< 10	< 10			
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10		< 10		< 10	< 10			
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0		< 2.0		< 2.0	< 2.0			
Dibromochloromethane	U	2760	µg/kg	10	< 10		< 10		< 10	< 10			
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0		< 5.0		< 5.0	< 5.0			
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0		< 2.0		< 2.0	< 2.0			
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 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	< 1.0	< 1.0	< 1.0	
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Styrene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
Tribromomethane	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
Bromobenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50		< 50		< 50	< 50			
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50		< 50		< 50	< 50			
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0	< 1.0			
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0		< 2.0		< 2.0	< 2.0			
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50			
Phenol	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50			

Results - Soil

Project: M3554 LAND AT ARTHUR STREET, BARWELL

Client: Sub Surface	Chemtest Job No.:					21-36981	21-36981	21-36981	21-36981	21-36981	21-36981	21-36981	21-36981	21-36981
Quotation No.:	Chemtest Sample ID.:					1304958	1304959	1304960	1304961	1304962	1304963	1304964	1304965	1304966
	Sample Location:					BH1	BH2	BH3	M1	M2	M3	M4	M5	BH2
	Sample Type:					SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):					0	0	0.1	0	0.2	0	0.2	0	1.2
	Bottom Depth (m):					0.3	0.3	0.65	0.2	0.4	0.4			1.7
	Date Sampled:					13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
	Asbestos Lab:					DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	
Determinand	Accred.	SOP	Units	LOD										
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
Isophorone	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
Naphthalene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
Acenaphthene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
Fluorene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50				

Results - Soil

Project: M3554 LAND AT ARTHUR STREET, BARWELL

Client: Sub Surface	Chemtest Job No.:				21-36981	21-36981	21-36981	21-36981	21-36981	21-36981	21-36981	21-36981	21-36981
Quotation No.:	Chemtest Sample ID.:				1304958	1304959	1304960	1304961	1304962	1304963	1304964	1304965	1304966
	Sample Location:				BH1	BH2	BH3	M1	M2	M3	M4	M5	BH2
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0	0	0.1	0	0.2	0	0.2	0	1.2
	Bottom Depth (m):				0.3	0.3	0.65	0.2	0.4	0.4			1.7
	Date Sampled:				13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
	Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	
Determinand	Accred.	SOP	Units	LOD									
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50			
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50			
Azobenzene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50			
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50			
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50			
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50			
Phenanthrene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	1.0			
Anthracene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50			
Carbazole	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50			
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50			
Fluoranthene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	1.5			
Pyrene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	1.3			
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50			
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	0.64			
Chrysene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50			
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	3.0			
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50			
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50			
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50			
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50			
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50			
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50			
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50		< 0.50		< 0.50	< 0.50			
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	

Results - Soil

Project: M3554 LAND AT ARTHUR STREET, BARWELL

Client: Sub Surface	Chemtest Job No.:				21-36981	21-36981	21-36981	21-36981
Quotation No.:	Chemtest Sample ID.:				1304967	1304968	1304969	1304970
	Sample Location:				BH2	M1	M2	M3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				6.5	1.2	1.2	2.0
	Bottom Depth (m):					1.65	1.65	2.45
	Date Sampled:				13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
	Asbestos Lab:							
Determinand	Accred.	SOP	Units	LOD				
ACM Type	U	2192		N/A				
Asbestos Identification	U	2192		N/A				
Moisture	N	2030	%	0.020	12	12	9.3	13
pH	U	2010		4.0	8.9	8.3	8.3	8.6
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40				
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.012	0.021	0.13	0.015
Cyanide (Total)	U	2300	mg/kg	0.50				
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50				
Sulphate (Total)	U	2430	%	0.010				
Arsenic	U	2450	mg/kg	1.0				
Cadmium	U	2450	mg/kg	0.10				
Chromium	U	2450	mg/kg	1.0				
Copper	U	2450	mg/kg	0.50				
Mercury	U	2450	mg/kg	0.10				
Nickel	U	2450	mg/kg	0.50				
Lead	U	2450	mg/kg	0.50				
Selenium	U	2450	mg/kg	0.20				
Zinc	U	2450	mg/kg	0.50				
Chromium (Hexavalent)	N	2490	mg/kg	0.50				
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0				
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0				
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0				
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0				
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0				
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0				
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0				
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0				
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0				
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0				
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0				
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0				
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0				
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0				
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0				
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0				
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0				
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0				

Results - Soil

Project: M3554 LAND AT ARTHUR STREET, BARWELL

Client: Sub Surface	Chemtest Job No.:				21-36981	21-36981	21-36981	21-36981
Quotation No.:	Chemtest Sample ID.:				1304967	1304968	1304969	1304970
	Sample Location:				BH2	M1	M2	M3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				6.5	1.2	1.2	2.0
	Bottom Depth (m):					1.65	1.65	2.45
	Date Sampled:				13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
	Asbestos Lab:							
Determinand	Accred.	SOP	Units	LOD				
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0				
Naphthalene	U	2700	mg/kg	0.10				
Acenaphthylene	U	2700	mg/kg	0.10				
Acenaphthene	U	2700	mg/kg	0.10				
Fluorene	U	2700	mg/kg	0.10				
Phenanthrene	U	2700	mg/kg	0.10				
Anthracene	U	2700	mg/kg	0.10				
Fluoranthene	U	2700	mg/kg	0.10				
Pyrene	U	2700	mg/kg	0.10				
Benzo[a]anthracene	U	2700	mg/kg	0.10				
Chrysene	U	2700	mg/kg	0.10				
Benzo[b]fluoranthene	U	2700	mg/kg	0.10				
Benzo[k]fluoranthene	U	2700	mg/kg	0.10				
Benzo[a]pyrene	U	2700	mg/kg	0.10				
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10				
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10				
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10				
Total Of 16 PAH's	U	2700	mg/kg	2.0				
Dichlorodifluoromethane	U	2760	µg/kg	1.0				
Chloromethane	U	2760	µg/kg	1.0				
Vinyl Chloride	U	2760	µg/kg	1.0				
Bromomethane	U	2760	µg/kg	20				
Chloroethane	U	2760	µg/kg	2.0				
Trichlorofluoromethane	U	2760	µg/kg	1.0				
1,1-Dichloroethene	U	2760	µg/kg	1.0				
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0				
1,1-Dichloroethane	U	2760	µg/kg	1.0				
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0				
Bromochloromethane	U	2760	µg/kg	5.0				
Trichloromethane	U	2760	µg/kg	1.0				
1,1,1-Trichloroethane	U	2760	µg/kg	1.0				
Tetrachloromethane	U	2760	µg/kg	1.0				
1,1-Dichloropropene	U	2760	µg/kg	1.0				
Benzene	U	2760	µg/kg	1.0				
1,2-Dichloroethane	U	2760	µg/kg	2.0				
Trichloroethene	N	2760	µg/kg	1.0				
1,2-Dichloropropane	U	2760	µg/kg	1.0				
Dibromomethane	U	2760	µg/kg	1.0				

Results - Soil

Project: M3554 LAND AT ARTHUR STREET, BARWELL

Client: Sub Surface	Chemtest Job No.:				21-36981	21-36981	21-36981	21-36981
Quotation No.:	Chemtest Sample ID.:				1304967	1304968	1304969	1304970
	Sample Location:				BH2	M1	M2	M3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				6.5	1.2	1.2	2.0
	Bottom Depth (m):					1.65	1.65	2.45
	Date Sampled:				13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
	Asbestos Lab:							
Determinand	Accred.	SOP	Units	LOD				
Bromodichloromethane	U	2760	µg/kg	5.0				
cis-1,3-Dichloropropene	N	2760	µg/kg	10				
Toluene	U	2760	µg/kg	1.0				
Trans-1,3-Dichloropropene	N	2760	µg/kg	10				
1,1,2-Trichloroethane	U	2760	µg/kg	10				
Tetrachloroethene	U	2760	µg/kg	1.0				
1,3-Dichloropropane	U	2760	µg/kg	2.0				
Dibromochloromethane	U	2760	µg/kg	10				
1,2-Dibromoethane	U	2760	µg/kg	5.0				
Chlorobenzene	U	2760	µg/kg	1.0				
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0				
Ethylbenzene	U	2760	µg/kg	1.0				
m & p-Xylene	U	2760	µg/kg	1.0				
o-Xylene	U	2760	µg/kg	1.0				
Styrene	U	2760	µg/kg	1.0				
Tribromomethane	U	2760	µg/kg	1.0				
Isopropylbenzene	U	2760	µg/kg	1.0				
Bromobenzene	U	2760	µg/kg	1.0				
1,2,3-Trichloropropane	N	2760	µg/kg	50				
N-Propylbenzene	U	2760	µg/kg	1.0				
2-Chlorotoluene	U	2760	µg/kg	1.0				
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0				
4-Chlorotoluene	U	2760	µg/kg	1.0				
Tert-Butylbenzene	U	2760	µg/kg	1.0				
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0				
Sec-Butylbenzene	U	2760	µg/kg	1.0				
1,3-Dichlorobenzene	U	2760	µg/kg	1.0				
4-Isopropyltoluene	U	2760	µg/kg	1.0				
1,4-Dichlorobenzene	U	2760	µg/kg	1.0				
N-Butylbenzene	U	2760	µg/kg	1.0				
1,2-Dichlorobenzene	U	2760	µg/kg	1.0				
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50				
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0				
Hexachlorobutadiene	U	2760	µg/kg	1.0				
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0				
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0				
N-Nitrosodimethylamine	U	2790	mg/kg	0.50				
Phenol	U	2790	mg/kg	0.50				

Results - Soil

Project: M3554 LAND AT ARTHUR STREET, BARWELL

Client: Sub Surface	Chemtest Job No.:				21-36981	21-36981	21-36981	21-36981
Quotation No.:	Chemtest Sample ID.:				1304967	1304968	1304969	1304970
	Sample Location:				BH2	M1	M2	M3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				6.5	1.2	1.2	2.0
	Bottom Depth (m):					1.65	1.65	2.45
	Date Sampled:				13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
	Asbestos Lab:							
Determinand	Accred.	SOP	Units	LOD				
2-Chlorophenol	U	2790	mg/kg	0.50				
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50				
1,3-Dichlorobenzene	U	2790	mg/kg	0.50				
1,4-Dichlorobenzene	N	2790	mg/kg	0.50				
1,2-Dichlorobenzene	U	2790	mg/kg	0.50				
2-Methylphenol	U	2790	mg/kg	0.50				
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50				
Hexachloroethane	N	2790	mg/kg	0.50				
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50				
4-Methylphenol	U	2790	mg/kg	0.50				
Nitrobenzene	U	2790	mg/kg	0.50				
Isophorone	U	2790	mg/kg	0.50				
2-Nitrophenol	N	2790	mg/kg	0.50				
2,4-Dimethylphenol	N	2790	mg/kg	0.50				
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50				
2,4-Dichlorophenol	U	2790	mg/kg	0.50				
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50				
Naphthalene	U	2790	mg/kg	0.50				
4-Chloroaniline	N	2790	mg/kg	0.50				
Hexachlorobutadiene	U	2790	mg/kg	0.50				
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50				
2-Methylnaphthalene	U	2790	mg/kg	0.50				
4-Nitrophenol	N	2790	mg/kg	0.50				
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50				
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50				
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50				
2-Chloronaphthalene	U	2790	mg/kg	0.50				
2-Nitroaniline	U	2790	mg/kg	0.50				
Acenaphthylene	U	2790	mg/kg	0.50				
Dimethylphthalate	U	2790	mg/kg	0.50				
2,6-Dinitrotoluene	U	2790	mg/kg	0.50				
Acenaphthene	U	2790	mg/kg	0.50				
3-Nitroaniline	N	2790	mg/kg	0.50				
Dibenzofuran	U	2790	mg/kg	0.50				
4-Chlorophenylphenylether	U	2790	mg/kg	0.50				
2,4-Dinitrotoluene	U	2790	mg/kg	0.50				
Fluorene	U	2790	mg/kg	0.50				
Diethyl Phthalate	U	2790	mg/kg	0.50				

Results - Soil

Project: M3554 LAND AT ARTHUR STREET, BARWELL

Client: Sub Surface	Chemtest Job No.:				21-36981	21-36981	21-36981	21-36981
Quotation No.:	Chemtest Sample ID.:				1304967	1304968	1304969	1304970
	Sample Location:				BH2	M1	M2	M3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				6.5	1.2	1.2	2.0
	Bottom Depth (m):					1.65	1.65	2.45
	Date Sampled:				13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
	Asbestos Lab:							
Determinand	Accred.	SOP	Units	LOD				
4-Nitroaniline	U	2790	mg/kg	0.50				
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50				
Azobenzene	U	2790	mg/kg	0.50				
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50				
Hexachlorobenzene	U	2790	mg/kg	0.50				
Pentachlorophenol	N	2790	mg/kg	0.50				
Phenanthrene	U	2790	mg/kg	0.50				
Anthracene	U	2790	mg/kg	0.50				
Carbazole	U	2790	mg/kg	0.50				
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50				
Fluoranthene	U	2790	mg/kg	0.50				
Pyrene	U	2790	mg/kg	0.50				
Butylbenzyl Phthalate	U	2790	mg/kg	0.50				
Benzo[a]anthracene	U	2790	mg/kg	0.50				
Chrysene	U	2790	mg/kg	0.50				
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50				
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50				
Benzo[b]fluoranthene	U	2790	mg/kg	0.50				
Benzo[k]fluoranthene	U	2790	mg/kg	0.50				
Benzo[a]pyrene	U	2790	mg/kg	0.50				
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50				
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50				
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50				
Total Phenols	U	2920	mg/kg	0.10				

Report Information

Key

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"
SOP	Standard operating procedure
LOD	Limit of detection

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 30 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

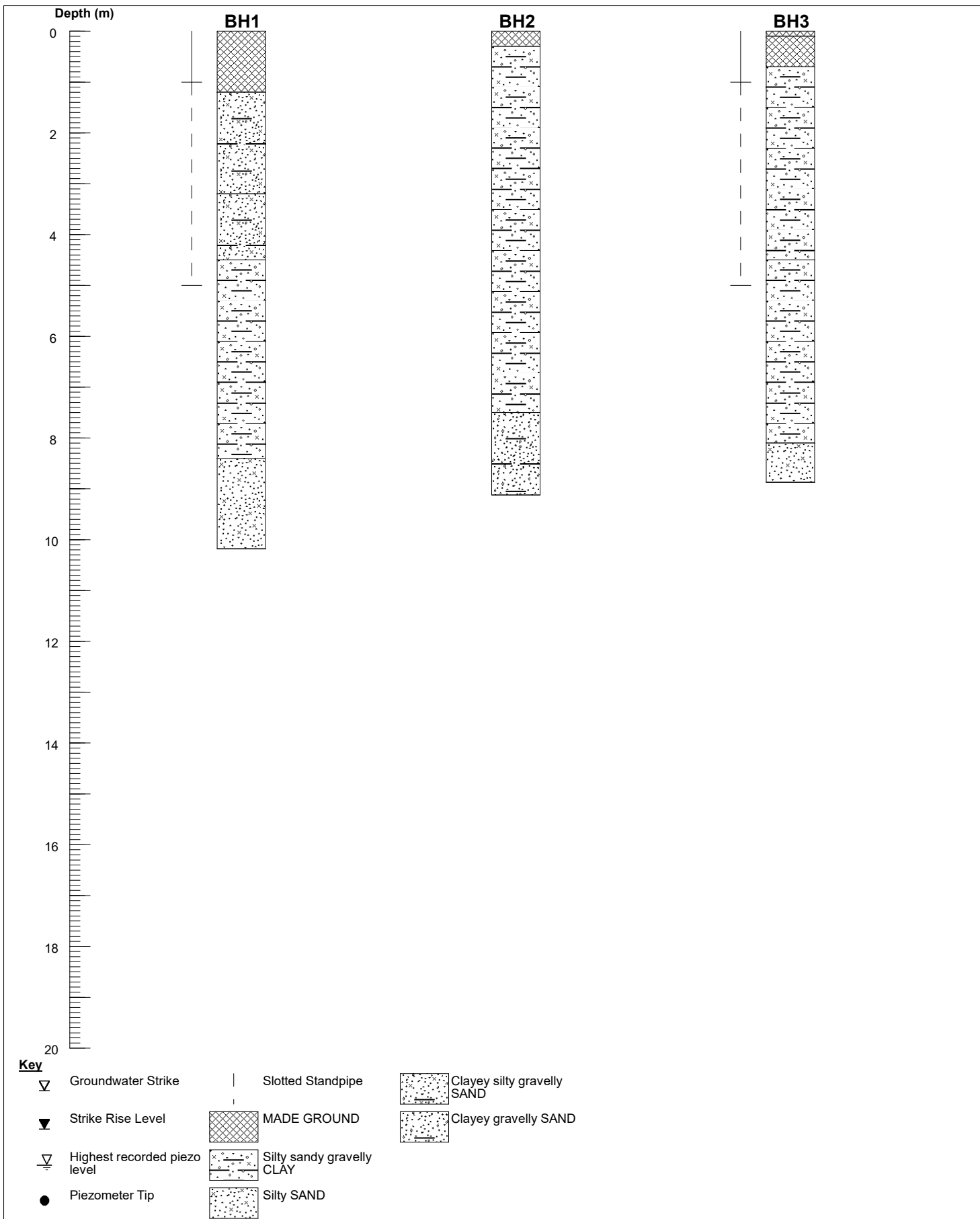
BOREHOLE RECORD SHEETS

SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907							Site LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE		Borehole Number BH1		
Boring Method LIGHT CABLE PERCUSSIVE		Casing Diameter			Ground Level (mOD)		Client THE NOVA CROWD LIMITED			Job Number M3554	
		Location AS PLAN			Dates 13/10/2021		Engineer ARCELLE CONSULTING			Sheet 1/2	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr	
0.00-0.30	B						MADE GROUND: dark brown gravelly clayey silty fine to coarse sand. Gravel sized fragments are fine to coarse stone and brick.				
0.50-1.20	B					(1.20)					
1.20-1.65 1.20-1.65 1.20-1.70	SPT N=14 D B			2,3/3,4,3,4		1.20	Medium dense reddish brown to brown slightly gravelly silty fine to medium SAND. Gravel is subrounded to rounded fine to coarse sandstone, quartz and siltstone.				
						(2.00)					
2.50-2.95 2.50-2.95 2.50-3.00	SPT N=20 D B			3,3/5,5,5,5		3.20	Dense brown gravelly silty medium SAND. Gravel is subrounded fine to coarse siltstone and sandstone.				
						(1.30)					
3.50-3.95 3.50-3.95 3.50-4.00	SPT N=33 D B			4,7/8,8,8,9		(1.30)	Soft low strength becoming stiff high strength brown and occasional greyish brown mottled slightly gravelly slightly sandy silty CLAY. Gravel is subangular to subrounded fine to coarse sandstone, siltstone, quartz and chalk.				
4.50 4.50-4.95	D U c=14kPa					4.50					
5.00	D										
5.50	D						 below 6.00m : stiff high strength				
6.00-6.45 6.00-6.45 6.00-6.50	SPT N=23 D B			2,3/4,6,6,7		(3.90)					
7.00	D										
7.50-7.95	U			HV@7.50m, c=115kPa			Very dense brown silty fine to medium SAND.				
8.00	D					8.40					
8.50	D										
9.00-9.30 9.00-9.30	SPT 50/150 D			9,10/15,35		(1.78)					
9.80-10.18 9.80-10.18	SPT 50/225 D			5,10/15,15,20							
Remarks Hand dug inspection pit from GL to 1.20m to check for services - 1hr Chiselling from 9.80m to 10.00m - 30mins On completion backfilled with arisings and installed a 50mm dia slotted standpipe with a gas valve and a gravel surround to 5.00m, a Bentonite seal from 1.00m to 0.20m and a concreted in lockable steel protective cover from 0.20m to GL. HV = Hand Shear Vane test								Scale (approx)	Logged By	Figure No. M3554.BH1	
								1:50	MSN/SJ		

 SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907							Site LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE		Borehole Number BH1	
Boring Method LIGHT CABLE PERCUSSIVE		Casing Diameter		Ground Level (mOD)		Client THE NOVA CROWD LIMITED		Job Number M3554		
		Location AS PLAN		Dates 13/10/2021		Engineer ARCELLE CONSULTING		Sheet 2/2		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
				13/10/2021: DRY		10.18	Very dense brown silty fine to medium SAND. Complete at 10.18m			
Remarks							Scale (approx) 1:50		Logged By MSN/SJ	
							Figure No. M3554.BH1			

SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907							Site LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE		Borehole Number BH2	
Boring Method LIGHT CABLE PERCUSSIVE		Casing Diameter			Ground Level (mOD)		Client THE NOVA CROWD LIMITED		Job Number M3554	
		Location AS PLAN			Dates 13/10/2021		Engineer ARCELLE CONSULTING		Sheet 1/1	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.00-0.30	B					(0.30) 0.30	MADE GROUND: dark grey gravelly slightly clayey sandy silt. Gravel sized fragments are fine to coarse stone and occasional brick.			
0.50-1.20	B						Firm medium strength becoming stiff high strength light brown to brown and occasional greyish brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular to rounded fine to coarse siltstone, quartz, chalk, sandstone and coal.			
1.20-1.65 1.20-1.65 1.20-1.70	SPT N=17 D B			3,4/4,4,4,5						
2.50-2.95	U			HV@2.50m, c=95kPa			 below 2.50m : stiff high strength			
3.00	D									
3.50-3.95 3.50-3.95 3.50-4.00	SPT N=20 D B			3,4/4,5,5,6		(7.20)				
4.50-4.95 4.50-4.95 4.50-5.00	SPT N=27 D B			4,5/6,7,7,7						
5.50	D									
6.00-6.45	U c=140kPa									
6.50	D									
7.00	D									
7.50-7.83 7.50-7.83	SPT 50/180 D			5,10/10,20,20		7.50	Very dense brown slightly gravelly slightly silty fine to medium SAND with occasional pockets of clay. Gravel is subrounded fine to medium siltstone, coal and quartz.			
						(1.62)				
9.00-9.12 9.00-9.12	SPT 25*/69 50/50 D			25/50 13/10/2021:DRY		9.12	Complete at 9.12m			
Remarks Hand dug inspection pit from GL to 1.20m to check for services -1hr Chiselling from 9.20m to 9.50m - 30mins HV = Hand Shear Vane test On completion backfilled with arisings.								Scale (approx)		Logged By
								1:50		MSN/SJ
								Figure No. M3554.BH2		

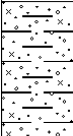
SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907							Site LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE		Borehole Number BH3		
Boring Method LIGHT CABLE PERCUSSIVE		Casing Diameter			Ground Level (mOD)		Client THE NOVA CROWD LIMITED			Job Number M3554	
		Location AS PLAN			Dates 13/10/2021		Engineer ARCELLE CONSULTING			Sheet 1/1	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr	
0.10-0.65	B					0.10	MADE GROUND: paving blocks.				
						(0.60)	MADE GROUND: light brown gravelly clayey silty sand. Gravel sized fragments are fine to coarse stone and brick.				
0.70-1.20	B					0.70	Firm medium strength brown gravelly sandy silty CLAY with pockets of gravelly sand. Gravel is subangular to subrounded fine to coarse sandstone, siltstone and quartz.				
1.20-1.65	U			HV@1.20m, c=40kPa							
1.70	D										
2.50-2.95 2.50-2.95 2.50-3.00	SPT N=17 D B			2,3/4,4,4,5		(3.80)					
3.50-3.95 3.50 3.50-4.00	SPT N=16 D B			2,3/4,4,4,4							
4.50-4.95 4.50-4.95 4.50-5.00	SPT N=29 D B			3,4/7,7,7,8		4.50	Stiff high strength brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular to rounded fine to coarse siltstone, chalk, sandstone and quartz.				
6.00-6.45 6.00-6.45 6.00-6.50	SPT N=22 D B			3,4/5,5,6,6		(3.60)					
7.00	U			HV@7.20m, c=130+kPa			 from 7.20m : very stiff greyish brown				
8.00-8.45 8.00-8.45	SPT N=50 D			4,10/10,12,14,14		8.10	Very dense brown slightly gravelly slightly silty fine to medium SAND. Gravel is angular to subangular fine to medium siltstone and chalk.				
8.50-8.85 8.50-8.85	SPT 50/200 D			8,10/10,22,18		(0.77)					
8.85-8.87 8.85-8.87	SPT 0*/0 50/20 D			/50 13/10/2021:DRY		8.87	Complete at 8.87m				
Remarks Hand dug inspection pit from GL to 1.20m to check for services - 1hr On completion backfilled with arisings and installed a 50mm dia slotted standpipe with a gas valve and a gravel surround to 5.00m, a Bentonite seal from 1.00m to 0.30m and a concreted in lockable steel protective cover from 0.20m to GL. HV = Hand Shear Vane test								Scale (approx)	Logged By		
								1:50	MSN/SJ		
								Figure No. M3554.BH3			



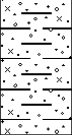
SS SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907	Nominal Section			
Site LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE	Date Drawn 04/01/2022	Date Checked	Sheet 1/1	Job Number M3554
Client THE NOVA CROWD LIMITED	Drawn By	Checked By	Scale 1:100[V]	Figure No. M3554.1

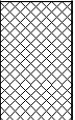
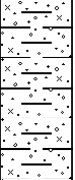
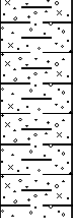
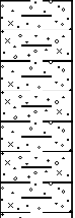
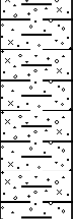
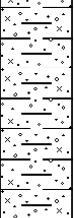
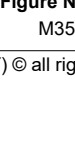
MINI BOREHOLE RECORD SHEETS

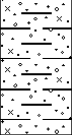
S S SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907						Site LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE		Borehole Number M1	
Boring Method MINI PERCUSSIVE		Casing Diameter		Ground Level (mOD)		Client THE NOVA CROWD LIMITED		Job Number M3554	
		Location AS PLAN		Dates 13/10/2021		Engineer ARCELLE CONSULTING		Sheet 1/2	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	B					(0.30)	MADE GROUND: dark brownish grey and black ashy very gravelly silty fine to coarse sand. Gravel sized fragments are fine to coarse clinker, brick and stone.		
0.40-1.20	B					0.30	Firm medium strength becoming stiff high strength brown slightly gravelly slightly sandy silty CLAY. Gravel is angular to subrounded fine to medium siltstone, chalk and coal.		
1.20-1.65 1.20-2.00 1.20-1.65	D C SPT N=13			1.20m to 2.00m - 100% recovery 2,2/2,3,4,4 HV@1.55m, c=69kPa HV@1.80m, c=57kPa					
2.00-2.45 2.00-3.00 2.00-2.45	D C SPT N=11			2.00m to 3.00m - 100% recovery 2,2/2,3,3,3 HV@2.55m, c=75kPa HV@2.65m, c=108kPa HV@2.75m, c=118kPa			 below 2.55m : stiff high strength		
3.00-3.45 3.00-4.00 3.00-3.45	D C SPT N=24			3.00m to 4.00m - 100% recovery 4,4/5,6,6,7 HV@3.55m, c=98kPa HV@3.75m, c=115kPa		(5.15)			
4.00-4.45 4.00-5.00 4.00-4.45	D C SPT N=36			4.00m to 5.00m - 60% recovery 5,10/11,11,7,7					
5.00-5.45	SPT N=34			6,6/8,7,9,10					
Remarks Hand dug inspection pit from GL to 1.20m to check for services. C = Plastic lined core sample Core diameter : 84mm to 2.00m, 74mm to 3.00m, 64mm to 4.00m and 54mm to 5.00m HV = Hand Shear Vane test On completion backfilled with arisings.								Scale (approx) 1:25	Logged By MSN/SJ
								Figure No. M3554.M1	

 SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907							Site LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE		Borehole Number M1	
Boring Method MINI PERCUSSIVE		Casing Diameter Location AS PLAN		Ground Level (mOD) Dates 13/10/2021		Client THE NOVA CROWD LIMITED		Job Number M3554		
						Engineer ARCELLE CONSULTING		Sheet 2/2		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
5.00-5.45	D			13/10/2021: DRY		5.45	Stiff high strength brown slightly gravelly slightly sandy silty CLAY. Gravel is angular to subrounded fine to medium siltstone, chalk and coal.			
							Complete at 5.45m			
Remarks							Scale (approx) 1:25		Logged By MSN/SJ	
							Figure No. M3554.M1			

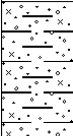
SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907							Site LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE			Borehole Number M2	
Boring Method MINI PERCUSSIVE		Casing Diameter		Ground Level (mOD)		Client THE NOVA CROWD LIMITED			Job Number M3554		
		Location AS PLAN		Dates 13/10/2021		Engineer ARCELLE CONSULTING			Sheet 1/2		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr	
0.00-0.10	B					(0.40)	MADE GROUND: dark greyish brown slightly ashy gravelly slightly sandy silty clay. Gravel sized fragments are fine to coarse stone, clinker, plastic and brick.				
0.40-0.60	B					0.40	Firm medium strength becoming stiff high strength greyish brown and brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular to rounded fine to coarse siltstone, quartz and coal.				
1.20-1.65 1.20-2.00 1.20-1.65	D C SPT N=11			1.20m to 2.00m - 100% recovery 1,2/2,3,3,3 HV@1.55m, c=74kPa HV@1.75m, c=86kPa HV@1.90m, c=77kPa 2.00m to 3.00m - 100% recovery 2,2/3,3,3,4			 from 1.75m to 1.90m : locally stiff high strength				
2.00-2.45 2.00-3.00 2.00-2.45	D C SPT N=13						 below 2.55m : stiff high strength				
3.00-3.45 3.00-4.00 3.00-3.45	D C SPT N=26			HV@2.55m, c=124kPa HV@2.70m, c=126kPa HV@2.90m, c=114kPa 3.00m to 4.00m - 100% recovery 4,4/4,7,7,8 HV@3.55m, c=129kPa		(5.05)					
4.00-4.45 4.00-5.00 4.00-4.45	D C SPT N=34			4.00m to 5.00m - 100% recovery 5,6/8,7,9,10							
5.00-5.45	SPT N=33			7,7/8,8,9,8							
Remarks Hand dug inspection pit from GL to 1.20m to check for services. C = Plastic lined core sample Core diameter : 84mm to 2.00m, 74mm to 3.00m and 64mm to 5.00m HV = Hand Shear Vane test On completion backfilled with arisings and installed a 50mm dia slotted standpipe with a gas valve and a gravel surround to 5.00m, a Bentonite seal from 1.00m to 0.30m and a concreted in lockable steel protective cover from 0.20m to GL.								Scale (approx)	Logged By	Figure No. M3554.M2	
								1:25	MSN/SJ		

 SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907							Site LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE		Borehole Number M2	
Boring Method MINI PERCUSSIVE		Casing Diameter		Ground Level (mOD)		Client THE NOVA CROWD LIMITED		Job Number M3554		
		Location AS PLAN		Dates 13/10/2021		Engineer ARCELLE CONSULTING		Sheet 2/2		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
5.00-5.45	D			13/10/2021: DRY		5.45	Firm medium strength becoming stiff high strength greyish brown and brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular to rounded fine to coarse siltstone, quartz and coal.			
							Complete at 5.45m			
Remarks								Scale (approx) 1:25	Logged By MSN/SJ	
								Figure No. M3554.M2		

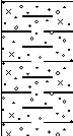
 SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907							Site LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE		Borehole Number M3	
Boring Method MECHANICAL EXCAVATOR		Casing Diameter			Ground Level (mOD)		Client THE NOVA CROWD LIMITED		Job Number M3554	
		Location AS PLAN			Dates 13/10/2021		Engineer ARCELLE CONSULTING		Sheet 1/2	
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: light brown to brownish grey slightly ashy silty very sandy fine to coarse gravel sized fragments of brick, stone and clinker with occasional pockets of clay.			
0.50-1.20	B					0.40	Soft low strength becoming firm medium strength and stiff high strength brown slightly gravelly slightly sandy silty CLAY. Gravel is angular to rounded fine to coarse flint, siltstone, chalk and quartz.			
1.20-1.65 1.20-2.00 1.20-1.65	D C SPT N=9			1.20m to 2.00m - 100% recovery 2,2/3,2,2,2						
2.00-2.45 2.00-3.00 2.00-2.45	D C SPT N=15			HV@1.75m, c=74kPa HV@1.90m, c=110kPa 2.00m to 3.00m - 100% recovery 3,3/4,3,4,4			 at 1.75m : firm medium strength at 1.90m : stiff high strength below 2.00m : firm medium strength			
				HV@2.55m, c=104kPa			 below 2.55m : stiff high strength			
3.00-3.45 3.00-4.00 3.00-3.45	D C SPT N=19			HV@2.90m, c=100kPa 3.00m to 4.00m - 95% recovery 3,3/4,5,4,6		(5.05)				
				HV@3.70m, c=122kPa						
4.00-4.45 4.00-5.00 4.00-4.45	D C SPT N=25			4.00m to 5.00m - 100% recovery 4,5/5,6,7,7			 from 4.55m : greyish brown			
5.00-5.45	SPT N=31			HV@4.90m, c=120kPa 6,6/6,8,8,9						
Remarks Hand dug inspection pit from GL to 1.20m to check for services. C = Plastic lined core sample Core diameter : 84mm to 2.00m, 74mm to 3.00m and 64mm to 5.00m HV = Hand Shear Vane test On completion backfilled with arisings and installed a 50mm dia slotted standpipe with a gas valve and a gravel surround to 5.00m, a Bentonite seal from 1.00m to 0.30m and a concreted in lockable steel protective cover from 0.20m to GL.								Scale (approx) 1:25	Logged By MSN/SJ	Figure No. M3554.M3

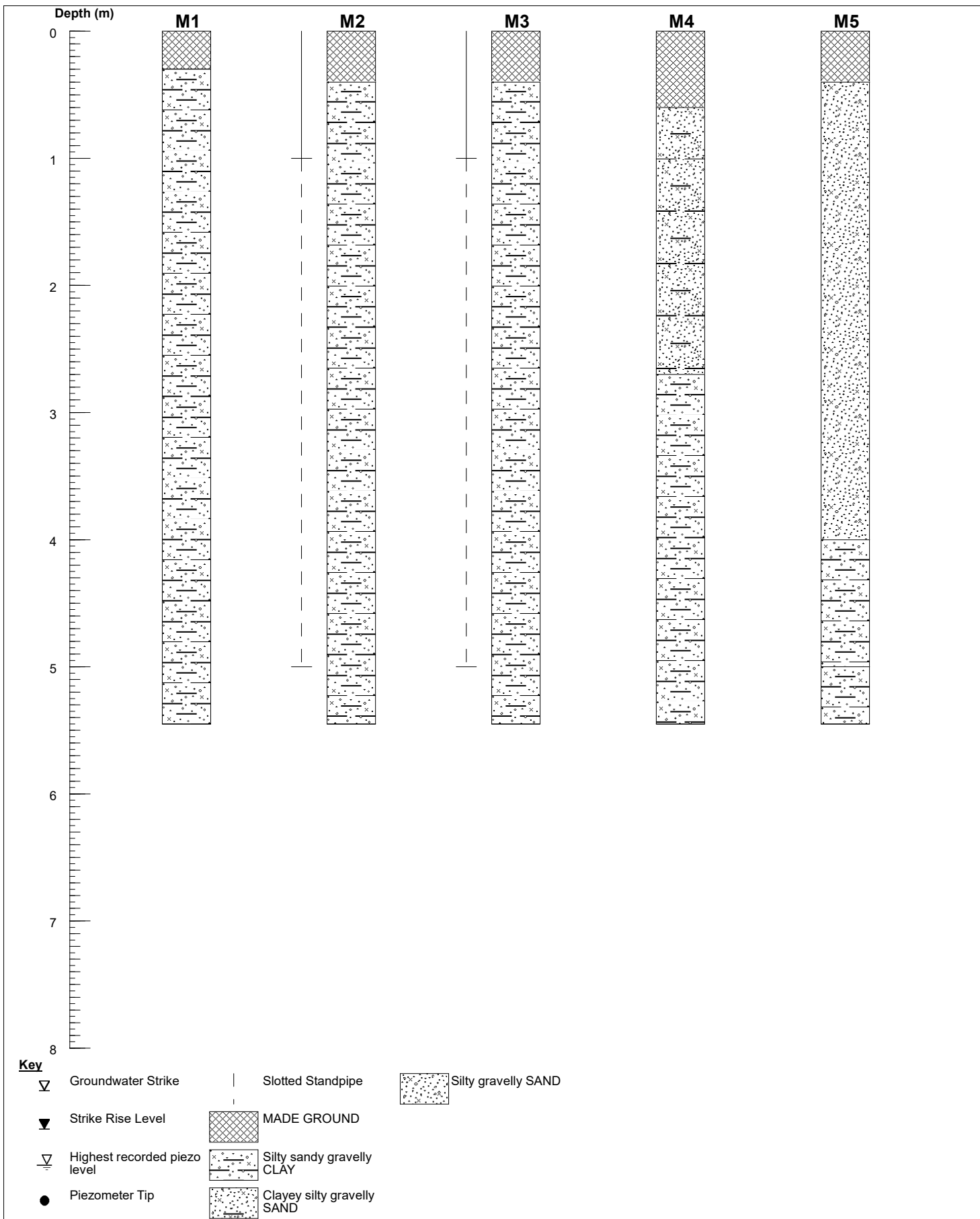
 SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907							Site LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE		Borehole Number M3	
Boring Method MECHANICAL EXCAVATOR		Casing Diameter		Ground Level (mOD)		Client THE NOVA CROWD LIMITED		Job Number M3554		
		Location AS PLAN		Dates 13/10/2021		Engineer ARCELLE CONSULTING		Sheet 2/2		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
5.00-5.45	D			13/10/2021: DRY		5.45	Stiff high strength brown slightly gravelly slightly sandy silty CLAY. Gravel is angular to rounded fine to coarse flint, siltstone, chalk and quartz. Complete at 5.45m			
Remarks								Scale (approx) 1:25	Logged By MSN/SJ	
								Figure No. M3554.M3		

SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907						Site LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE		Borehole Number M4	
Boring Method MINI PERCUSSIVE		Casing Diameter		Ground Level (mOD)		Client THE NOVA CROWD LIMITED		Job Number M3554	
		Location AS PLAN		Dates 13/10/2021		Engineer ARCELLE CONSULTING		Sheet 1/2	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	B						MADE GROUND: dark greyish brown and brown silty very sandy fine to coarse gravel sized fragments of brick, stone and metal with low cobble sized fragments of brick, pockets of clay and rootlets.		
0.20-0.50	B					(0.60)			
						0.60	Medium dense brown gravelly silty fine to coarse SAND. Gravel is subrounded to rounded fine to medium quartz, flint and siltstone.		
1.20-1.65 1.20-2.00 1.20-1.65	D C SPT N=13			1.20m to 2.00m - 100% recovery 2,3/3,3,4,3		(2.10)	 at 2.00m : wet		
2.00-2.45 2.00-3.00 2.00-2.45	D C SPT N=13			2.00m to 3.00m - 100% recovery 2,3/4,3,3,3		2.70	Firm medium strength locally soft low strength brown slightly gravelly sandy silty CLAY with occasional pockets of sand. Gravel is angular to subrounded fine to medium coal, siltstone and flint.		
3.00-3.45 3.00-4.00 3.00-3.45	D C SPT N=13			3.00m to 4.00m - 85% recovery 3,2/3,4,3,3			 at 3.85m : locally very low strength at 4.00m : locally soft low strength		
4.00-4.45 4.00-5.00 4.00-4.45	D C SPT N=9			HV@3.85m c=10kPa 4.00m to 5.00m - No recovery 2,1/2,2,2,3		(2.75)			
5.00-5.45	SPT N=17			3,3/4,4,4,5					
Remarks Hand dug inspection pit from GL to 1.20m to check for services. C = Plastic lined core sample Core diameter : 84mm to 2.00m, 74mm top 3.00m and 64mm to 4.00m HV = Hand Shear Vane test On completion backfilled with arisings								Scale (approx)	Logged By
								1:25	MSN/SJ
								Figure No. M3554.M4	

 SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907							Site LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE		Borehole Number M4	
Boring Method MINI PERCUSSIVE		Casing Diameter Location AS PLAN		Ground Level (mOD) Dates 13/10/2021		Client THE NOVA CROWD LIMITED		Job Number M3554		
						Engineer ARCELLE CONSULTING		Sheet 2/2		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
				13/10/2021:		5.45	Firm medium strength brown slightly gravelly sandy silty CLAY with occasional pockets of sand. Gravel is angular to subrounded fine to medium coal, siltstone and flint.			
							Complete at 5.45m			
Remarks							Scale (approx) 1:25		Logged By MSN/SJ	
							Figure No. M3554.M4			

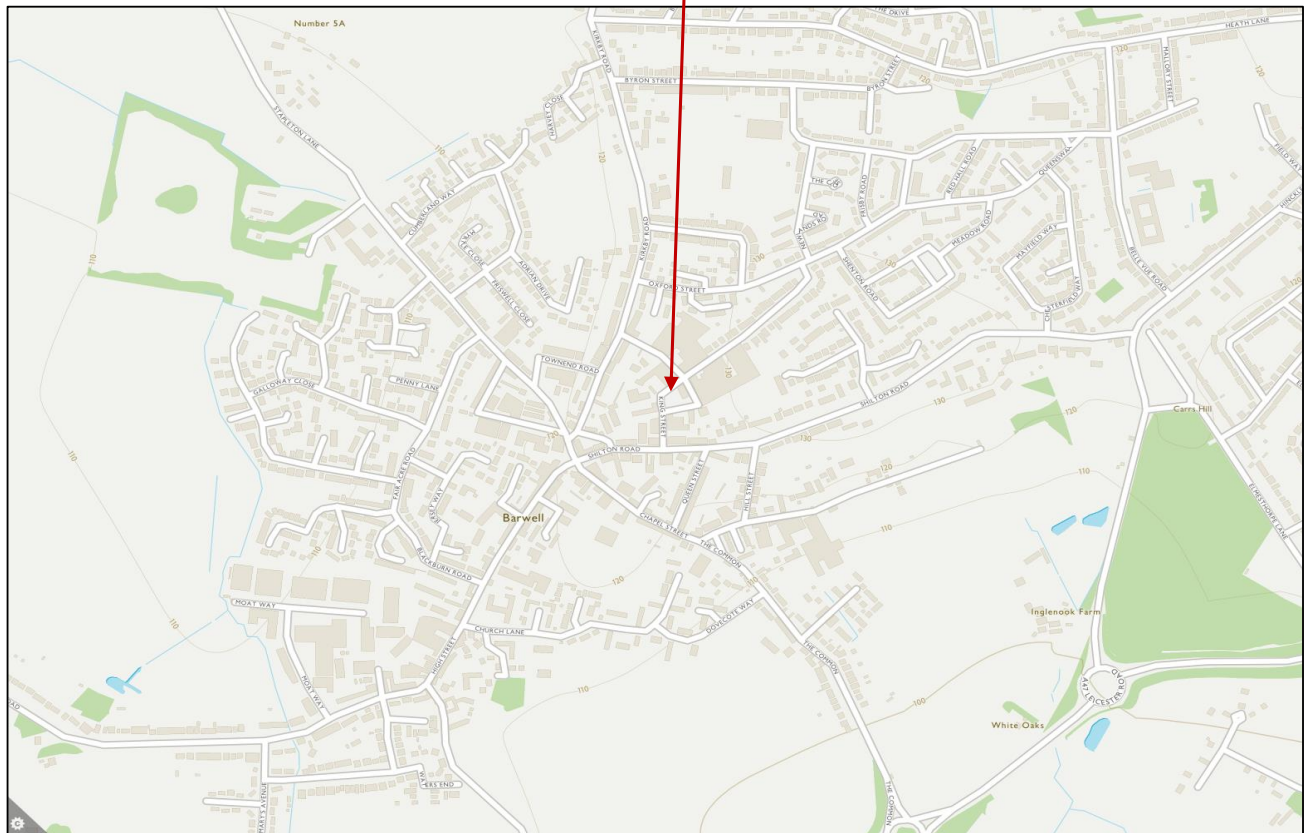
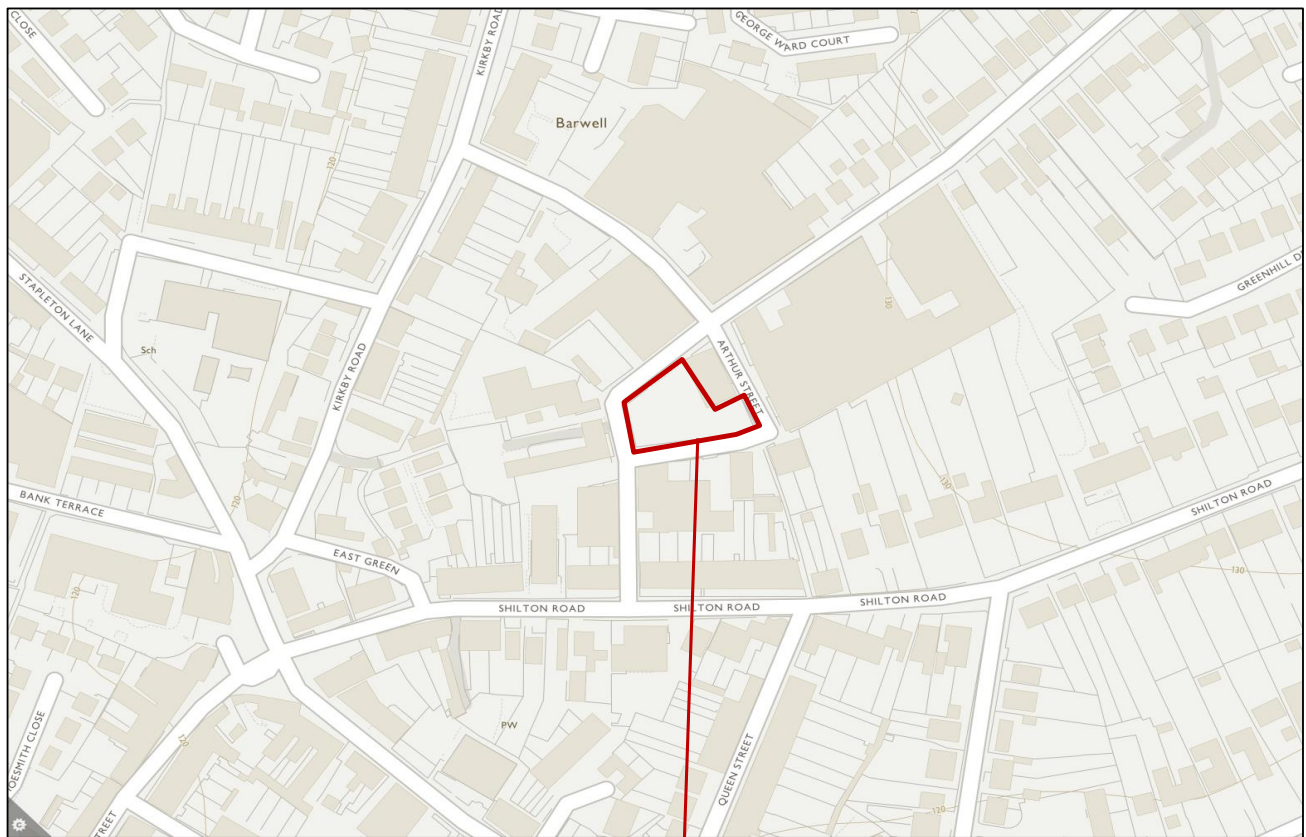
SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907						Site LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE		Borehole Number M5		
Boring Method MINI PERCUSSIVE		Casing Diameter			Ground Level (mOD)		Client THE NOVA CROWD LIMITED		Job Number M3554	
		Location AS PLAN			Dates 13/10/2021		Engineer ARCELLE CONSULTING		Sheet 1/2	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.00-1.00	B					(0.40)	MADE GROUND: dark brown slightly ashy slightly gravelly sandy silty clay. Gravel sized fragments are fine to coarse stone and brick. (Hydrocarbon odour).			
0.40-0.60	B					0.40	Medium dense becoming loose brown gravelly very silty fine to coarse SAND with occasional pockets of clay. Gravel is angular to rounded fine to coarse siltstone, flint and chalk.			
1.20-2.00 1.20-2.00 1.20-1.65	C D SPT N=13			1.20m to 2.00m - 100% recovery 2,2/3,3,4,3						
2.00-3.00 2.00-2.45	C SPT N=13			2.00m to 3.00m - 90% recovery 2,3/3,3,4,3		(3.60)	 at 2.00m : wet			
3.00-4.00 3.00-3.45	C SPT N=9			3.00m to 4.00m - 95% recovery 3,3/3,2,2,2			 below 3.15m : loose			
4.00-5.00 4.00-5.00 4.00-4.45	B C SPT N=6			4.00m to 5.00m - No recovery 2,2/1,2,1,2		4.00	Soft low strength brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular to subrounded fine to medium siltstone and coal.			
5.00-5.45	SPT N=18			3,3/4,4,5,5		(1.00)				
Remarks Hand dug inspection pit from GL to 1.20m to check for services. C = Plastic lined core sample Core diameter : 85mm to 2.00m, 75mm to 3.00m and 65mm to 5.00m On completion backfilled with arisings								Scale (approx) 1:25	Logged By MSN/SJ	
								Figure No. M3554.M5		

 SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907							Site LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE		Borehole Number M5	
Boring Method MINI PERCUSSIVE		Casing Diameter		Ground Level (mOD)		Client THE NOVA CROWD LIMITED		Job Number M3554		
		Location AS PLAN		Dates 13/10/2021		Engineer ARCELLE CONSULTING		Sheet 2/2		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
5.00-5.45	D			13/10/2021:		5.00 (0.45) 5.45	Firm medium strength thinly laminated brown slightly gravelly slightly sandy silty CLAY. Gravel is angular to subangular fine to coarse siltstone and coal. Complete at 5.45m			
Remarks							Scale (approx) 1:25		Logged By MSN/SJ	
							Figure No. M3554.M5			



SS SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907		Nominal Section		
Site	Date Drawn	Date Checked	Sheet	Job Number
LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE	04/01/2022		1/1	M3554
Client	Drawn By	Checked By	Scale	Figure No.
THE NOVA CROWD LIMITED			1:40[V]	M3554.1

FIGURES



SUB SURFACE

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

General Site Location

Site
LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE

Date Drawn
30-Nov-21

Date Checked

Orientation



Job No.

M3554

Client

THE NOVA CROWD LTD

Drawn By

TP

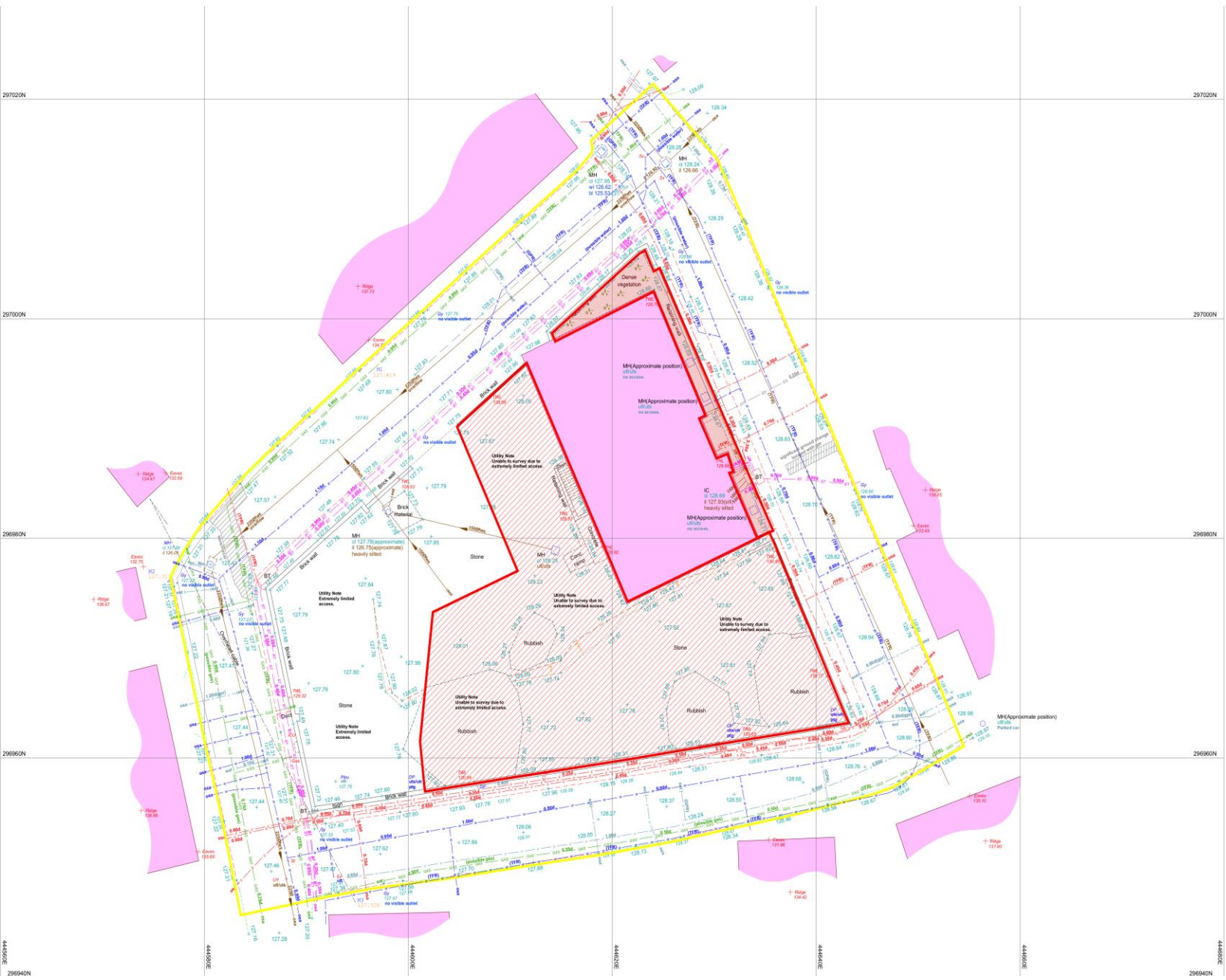
Checked By

Scale

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Figure No.

1



SUB SURFACE

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

Topographic Plan

Site

LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE

Date Drawn

30-NOV-21

Date Checked

Orientation



Job No.

M3554

Client

THE NOVA CROWD LTD

Drawn By

TP

Checked By

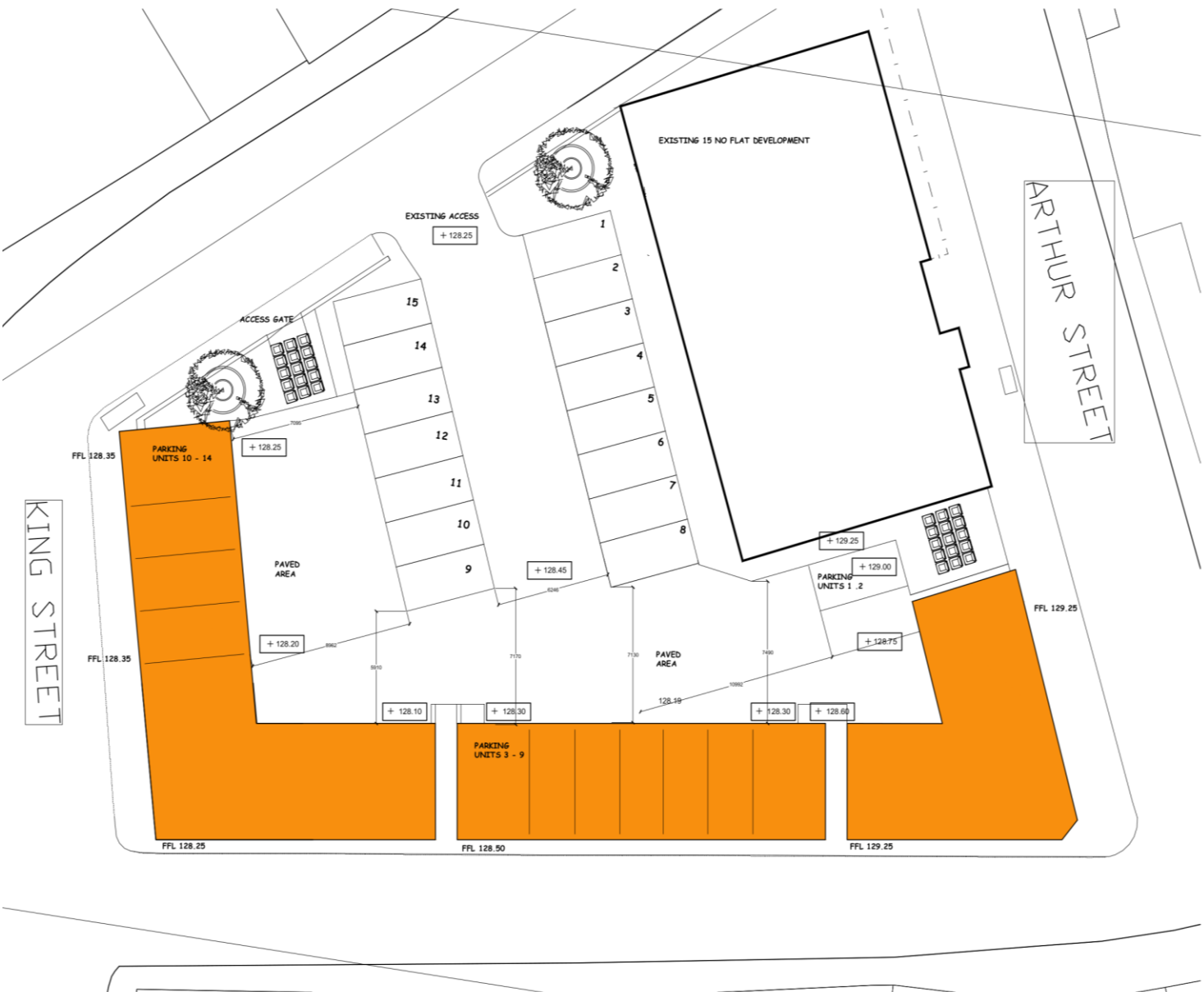
Scale

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Figure No.

2

ACCOMMODATION SCHEDULE		
FLAT NO	BEDROOMS	FLOOR AREA
1	ONE	35.0 SQ. M.
2	ONE	30.0 SQ. M.
3	ONE	30.0 SQ. M.
4	ONE	39.0 SQ. M.
5	ONE	41.0 SQ. M.
6	ONE	31.0 SQ. M.
7	TWO	67.0 SQ. M.
8	TWO	53.9 SQ. M.
9	TWO	53.9 SQ. M.
10	ONE	47.0 SQ. M.
11	ONE	41.0 SQ. M.
12	ONE	38.0 SQ. M.
13	TWO	63.0 SQ. M.
14	ONE	40.0 SQ. M.



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client
THE NOVA CROWD

PROJECT
SITE
ARTHUR STREET, BARWELL

PHASE 2
13 DWELLINGS

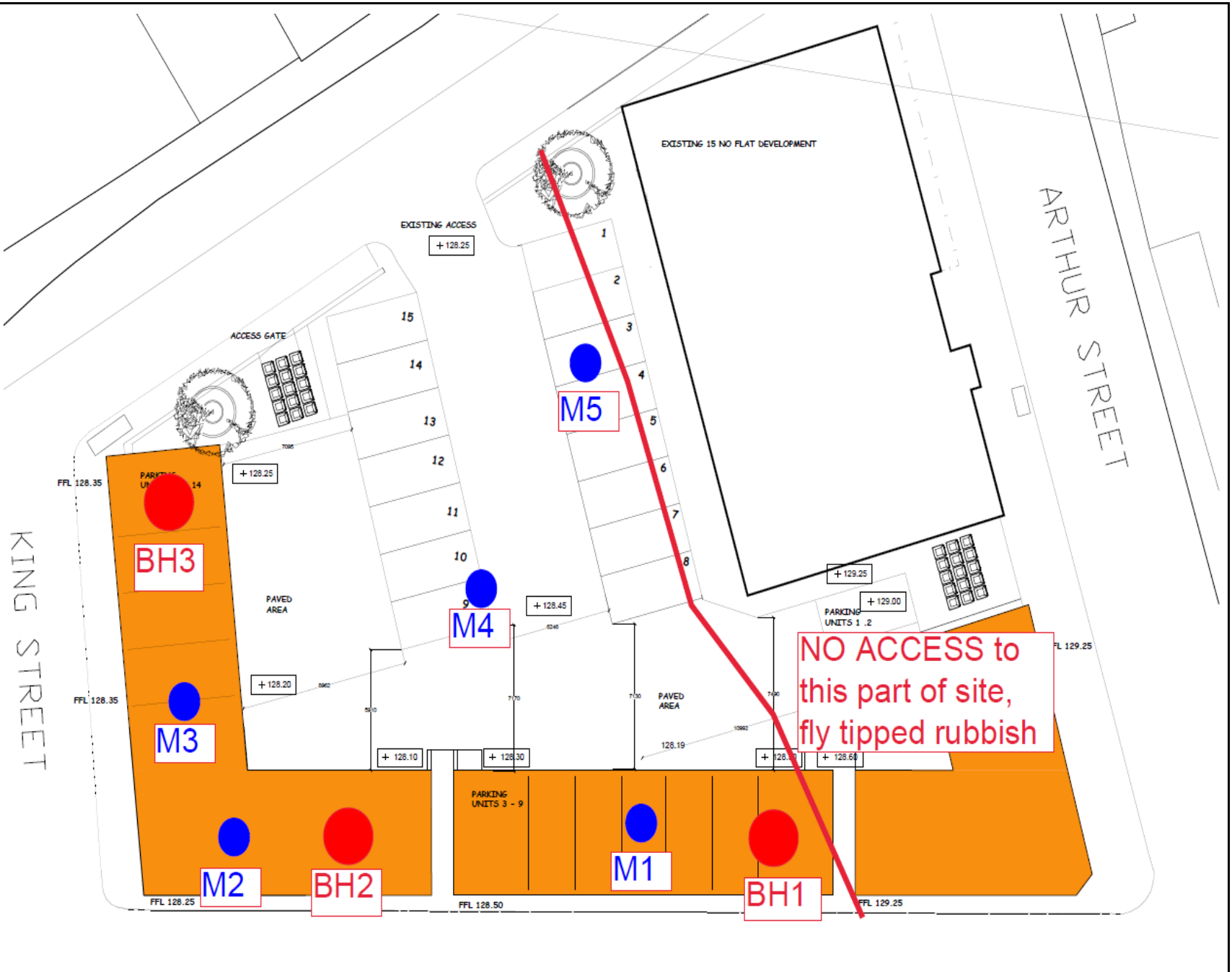
SUB SURFACE

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

Proposed Development Plan

Site
LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE

Client
THE NOVA CROWD LTD



SUB SURFACE

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

Borehole Location Plan

Site

LAND AT ARTHUR STREET, BARWELL, LEICESTERSHIRE

Date Drawn

30-NOV-21

Date Checked

Orientation



Job No.

M3554

Client

THE NOVA CROWD LTD

Drawn By

TP

Checked By

Scale

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Figure No.

4