The Brownfield Consultancy



Historical Aerial Photograph, 1999

LAND TO THE SOUTH OF SOUTH SIDE, STEEPLE ASTON, OXFORDSHIRE. OX25 4RX

SITE INVESTIGATION REPORT

Prepared for: RECTORY HOMES Report Reference: BC340 RE002 13th February 2018

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1 INTRODUCTION

The Brownfield Consultancy was instructed by Rectory Homes Ltd to carry out a Phase 2 Ground Investigation of a site in Steeple Aston, Oxfordshire (hereinafter referred to as 'the site').

The site currently comprises of a roughly rectangular field, recently cleared of all vegetation. It is proposed to construct 5No. residential houses with associated infrastructure and driveways. Access will be off South Side. A location plan and a proposed site layout is presented in Appendix A.

The purpose of the site investigation is to provide an assessment of the geotechnical engineering properties of the soils and the extent of any soil contamination at the site. The report is subject to limitations which are set out in Appendix F.

A previous Desk Top Study has been undertaken by The Brownfield Consultancy (Ref: BC340 RE001 26.07.2017) and the reader is referred to this report. The salient points of that report are presented in Section 3.

2 SITE DESCRIPTION

The site is located on the southwestern edge of the village of Steeple Aston, Oxfordshire. The site covers an area of approximately 0.83hectare and is roughly rectangular in shape. The entrance to the site is located in the northwest of the site, directly off South Side. At the time of the initial walkover undertaken on 20th July 2017, the site was overgrown with a healthy covering of a variety of small trees, plants, thistles and brambles. The far western area of the site is generally laid to grass with the ground surface showing signs of previous disturbance/reworking. The fenced boundary with an adjacent Car Repair shop is visible. There is a small area of concrete hardstanding (21m x 11m) with scattered building debris, traffic cones and traffic barriers to the immediate east of the site entrance. We understand from the site owners that there were some former sheds in this area used for storage of general agricultural supplies. There were 3No. stockpiles of imported soil in this location.

A soakaway investigation was also undertaken by the Brownfield Consultancy in mid-November 2017, by which time the site had been cleared of vegetation. The removal of the vegetation revealed the presence of some empty concrete sheds along the northwestern boundary, the base of a former static caravan and a sceptic tank housing. Photographs are presented below:-



Fridge freezer



Static Caravan Base



Static Caravan Base



Limited concrete slab near to caravan base



Underside of Concrete Slab



Sceptic Tank Housing

3 PREVIOUS WORK

The conclusions and recommendations made in the Desk Study report are set out below:-

- From the earliest historical maps, the site was part of a larger open field. Buildings appeared in the central northern area by 1900 which had extended westerly along the northern boundary. The owners of the site indicated that these buildings had been used as storage barns for agricultural goods and materials.
- The presence of on-site generated Made Ground including demolition fill as a result of the erection and subsequent demolition of the structures along the central northern boundary is considered a potential source of metal, hydrocarbon and asbestos contamination. The hydrocarbon components may also be a source of harmful vapours.

- Storage of agricultural materials and machinery is a potential source of metals, oils, solvents, asbestos, insecticides, e.g. organochlorines, organophosphates, pyrethroids, phenols and herbicides.
- The walkover did not identify any immediate pollution concerns.
- A Car Repair Yard is present immediately adjacent to the sites western boundary although it is unclear for how long this has been operating. This is a source of potential hydrocarbons, solvents and metals in close proximity to the western boundary.
- Reference to the on line BGS Mapping Index indicates that two different strata types outcrop below the site. The west of the site is underlain by the Chipping Norton Limestone and the East of the site is underlain by the Horseshay Sand Formation. Groundwater stored in both of these formations is considered vulnerable to pollution.
- The site is not located in an area considered at risk of flooding by the Environment Agency. The site is located in an area with 'Limited Potential' for groundwater flooding to occur.
- The Landmark report identifies no significant geological hazards.
- The latest BRE guidance on radon protective measures indicates that <u>no</u> radon protection measures are necessary for new build.

Should the residential proposals proceed then we would recommend that the following investigation works are undertaken:-

- One day of trial pitting to determine ground conditions. Samples of near surface soils (Made Ground) should be submitted to laboratory analysis for hydrocarbons, metals, solvents, pesticides, insecticides, asbestos and sulphates. A greater frequency of testing will be required along the northern central boundary in the vicinity of the former structures. The western boundary should also be targeted to determine whether or not pollutants may have migrated from the adjacent Car Repair Yard.
- One day of windowless sampling together with the installation of 4No. gas monitoring standpipes followed by a programme of 6No. gas monitoring visits at weekly intervals. If groundwater is encountered in the boreholes then samples should be retrieved and submitted to laboratory analysis for metals, hydrocarbons and solvents. At least one borehole installation should be located on the western boundary to determine impacts from the Car Repair Yard.
- It is recognised that access for the required plant to obtain any meaningful information from across the entire site is limited and that investigations should ideally be timed to coincide with tree/ vegetation clearance. This would allow for the necessary plant (JCB, mini-digger, drilling rig) to access the full site.

4 GEOLOGY, HYDROLOGY AND HYDROGEOLOGY

4.1 Geology

Reference to the on line BGS Mapping Index indicates that two different strata types outcrop below the site. The west of the site is underlain by the Chipping Norton Limestone described as.. 'Limestone, off-white to pale brown fine- to medium-grained ooidal and coated peloidal grainstone, with common fine burrows, medium- to coarse-grained shell debris and flakes of greenish grey mudstone and dark lignite and minor amounts of fine-grained sand'.

The East of the site is underlain by the Horseshay Sand Formation described as...

'Unbedded to weakly bedded and cross-bedded, pale grey and brown to off-white, mediumto fine-grained, quartzose sand, locally cemented into calcareous or weakly ferruginous sandstone with thin dark grey mudstone and siltstone beds in places, rootlets and lignitic debris common, shells and shell debris very rare'.

Superficial deposits are not denoted.

4.2 Hydrology

The nearest surface water feature is a small, spring fed stream located 185m northeast of the site. There is no water quality records for this watercourse.

The site is not located within an area considered at risk of flooding from rivers or the sea by the Environment Agency. The site is located in an area with 'Limited Potential' for groundwater flooding to occur.

There are no surface water abstractions within 1000m of the site.

4.3 Hydrogeology

The Groundwater Vulnerability map indicates that the Chipping Norton Limestone is designated a Principal Aquifer and the Horseshay Sandstone is designated a Secondary A Aquifer. Groundwater stored in both of these geological formations is considered vulnerable to pollution.

The site is not located within a groundwater source protection zone.

The nearest groundwater abstraction is located 735m northwest of the site at Brasenose Farm where groundwater is abstracted for general farming and domestic use.

5 FIELDWORK

The intrusive fieldwork was carried out on 13th and 14th December 2017 and comprised 15No. trial pits, 3No. dynamic windowless sampler boreholes and 6No. dynamic probes.

The site work was undertaken by The Brownfield Consultancy, with the ground investigation procedures and sample descriptions based on BS 5930 (2015) 'Code of Practice for Site Investigations' and BS 10175 "Investigation of potentially contaminated sites - code of practice". The locations of the exploratory holes are shown on the Drawing included in

Appendix A. The exploratory hole records are presented in Appendix B. The full details of the fieldwork undertaken are summarised in the following sections.

5.1 Trial Pits

The trial pits, designated TP4 to TP18, were excavated by a mechanical backhoe excavator and were backfilled with arisings upon completion. TP1, TP2 and TP3 were excavated in November 2017 as part of the soakaway investigation but are included in Appendix B. TP1 to TP14 were excavated to depths of 1.20m to 3.00m, many being terminated on reaching bedrock. TP15 and TP16 were excavated into the concrete slab to the immediate east of the gated entrance off Southside. TP17 and TP18 were excavated to investigate an elongated stockpile ('Stockpile 2') of imported soil to the immediate south of the concrete slab. A further 2No. pits were excavated into 2No. stockpiles denoted 'Stockpile 1' and 'Stockpile 3' to obtain samples of soil for contamination testing and to inspect the materials for asbestos.

An Exploratory Hole Location Plan of the whole site and one denoting the stockpile and concrete slab investigations are included in Appendix A.

5.2 Dynamic Windowless Boreholes

The dynamic windowless sampler boreholes, designated WS1 to WS3 were advanced to depths of 1.50m to 4.45m. WS1 and WS3 were terminated on reaching impenetrable bedrock.

The dynamic sampling technique uses a lightweight tracked rig to advance a borehole by 1m intervals using 1m long steel sampler tubes at diameters of 100mm reducing to 70mm. The soils are then recovered from each sampler tube as continuous core samples, which are then logged and sub-sampled on site.

In situ Standard Penetration Tests (SPTs) were undertaken in accordance with BS EN ISO 22476-3:2005+A1:2011 at 1.0m intervals in the sampler holes in order to provide strength parameters to assist in geotechnical design.

Standpipes were installed in all three boreholes to facilitate ground-borne gas and groundwater level monitoring.

5.3 Dynamic Probing

The dynamic probes, DP1 to DP6, were advanced to 1.60m to 7.00m depth, their purpose being to provide numerical data on ground strength. The super-heavy dynamic probe test (DPSH) used, comprises a 63.5kg weight falling through a constant drop of 760mm, driving a solid 51mm diameter steel cone of 90° angle into the deposits under test. The relative density of the deposit is determined by recording the number of blows per 100mm of penetration. The probe provides a continuous profile of the relative density of the soils. The energy and dynamics of the test are similar to that of the Standard Penetration Test (SPT) undertaken in the dynamic sampler boreholes.

The probe results are presented in Appendix B.

6 LABORATORY TESTING

6.1 Geotechnical

A programme of laboratory testing was scheduled to determine the geotechnical properties of selected soil samples obtained from the investigation. The details of the geotechnical testing are summarised below:-

| Determinant | No |
|---|----|
| BRE SD1 Suite B | 6 |
| Atterberg limits including moisture content | 7 |
| Particle Size Distribution (sieve only) | 1 |

 Table 1
 Summary of Geotechnical Laboratory Testing Suites

Tests were carried out in accordance with BS1377 (1990) "Methods of test for Soils for Civil Engineering purposes" and Building Research Establishment Special Digest 1 "Concrete in Aggressive Ground". The results of the geotechnical testing are presented in Appendix D.

6.2 Environmental

A programme of chemical laboratory testing was scheduled on 21No. soil samples taken from the Made Ground and Topsoil recovered from the boreholes. The samples were placed into suitable containers for the required chemical analysis. All samples were transported to 12 Laboratories who are UKAS and MCerts accredited. The following table summarises the contaminants scheduled:-

Summary of Soil Chemical Laboratory Testing Suites

| Determinant | No |
|---|----|
| Metals and semi-metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium and zinc) | 12 |
| Speciated polycyclic aromatic hydrocarbons (PAH) | 11 |
| Asbestos screen | 7 |
| TPH Texas banded | 1 |
| TPH Total (C8-C40) | 2 |
| Pesticide/Herbicide Screen | 1 |
| WAC | 1 |

The results of the laboratory chemical testing are interpreted in Section 9 and presented in full in Appendix C.

7 GROUND AND GROUNDWATER CONDITIONS

7.1 Strata Encountered

The exploratory holes revealed the site to be underlain by predominantly clay beds of the Oolite Group, with occasional granular beds, then bedrock. Other than the stockpile and concrete slab, very minor deposits of Made Ground were encountered.

7.2 Topsoil

Topsoil was present in most of the exploratory holes in thicknesses of 0.10m to 0.40m.

7.3 Made Ground

Made Ground was found below ground level only in TP3, TP15 and TP16. In TP3, timber fragments were present in the 0.2m thick topsoil. The Made Ground in TP15 and TP16 consisted of the hardstanding located on the northern boundary and consisted of 100mm thick concrete in both pits, over buried gravelly topsoil to 0.35m in TP15, and brick and concrete gravel and cobbles to 0.37m in TP16.

7.4 Oolite Group Deposits

The Oolite Group Deposits mainly comprised an upper horizon of clayey sandy limestone GRAVEL and COBBLES over stiff sandy, or very sandy CLAY. The gravel and cobble bed was overlain, locally, by a thin bed of clay. In those exploratory holes located on or near the footprints of the proposed houses, the lower clay bed was penetrated at depths of between 0.9m and 1.6m apart from in WS2 and WS3, located at the extreme western end of the site, where the granular layer was absent and clay was immediately beneath the topsoil. A rock bed was encountered beneath the clay at many locations at depths of 1.5m to 2.6m, but BC340 RE002 13.2.2018

generally between 2.0m and 2.6m. The rock bed was shown to be laterally discontinuous as it was not reached at some locations or was so thin that it was fully penetrated. In WS2, the clay was underlain at 3.5m by medium dense silty fine sand to the base of the borehole at 4.45m.

Atterberg Limit analyses undertaken on seven samples of the cohesive deposits of the Oolite Group Deposits yielded Liquid Limits of 44% to 60%, Plastic Limits of 17% to 21% and Plasticity Indices of 27% to 39% indicating them to be clays of intermediate or high plasticity (with respect to BS 5930, 1999) and medium volume change potential (with respect to NHBC Chapter 4.2).

7.5 Groundwater

Groundwater was not encountered in the exploratory holes during the fieldwork. On subsequent monitoring of the standpipe installations in the boreholes, all holes were dry with the exception of WS3 which contained a small amount of water in the initial 2No. monitoring visits but which subsequently were dry over the last 4No. monitoring visits.

7.6 Contamination

Evidence of contamination was not recorded in any of the trial pits with the exception of TP17 and TP18. TP17 and TP18 were excavated into a stockpile of soil ('Stockpile2') and fragments of suspected asbestos roof sheet were observed. (Photograph below)



The sceptic tank housing was empty and appeared free of residues and detritus.

Two other stockpiles located near to the concrete hardstanding contained largely inert material. Stockpile 1 comprised brown sandy GRAVEL and COBBLE with geotextile, lumps of soft clay and the occasional breeze block.

Stockpile 3 comprised of a visually clean TOPSOIL but with tin roof sheeting. (Photograph below)



8 HUMAN HEALTH QUANTITATIVE RISK ASSESSMENT

Qualitative assessment of risks may be sufficient in many cases to eliminate the possibility of significant pollutant linkages. However, quantitative risk assessment is formally required to determine whether there is a 'significant possibility of significant harm being caused'. Part IIA of the Environmental Protection Act 1990 recommends that 'authoritative and scientifically based guideline values for concentrations of the potential pollutants in or under the land' be used to quantify the risk posed by contamination.

Under the Planning Regime a quantitative risk assessment can be used to decide whether the site is suitable for the proposed use. In addition, the National Planning Policy Framework (March 2012) also indicates that after remediation as a minimum land should not be capable of being determined as contaminated land under Part IIA.

8.1 Current UK Screening Values

The UK technical guidance for assessing risks to human health is issued from various UK bodies including the Environment Agency (EA), DEFRA, Contaminated Land: Applications in Real Environment (CL:AIRE), Chartered Institute of Environmental Health (CIEH) and Land Quality Management (LQM) Ltd (part of the University of Nottingham).

New and updated screening values in the form of provisional Category Four Screening Levels (C4SL) (published in 2014) and Suitable for Use Levels (S4UL) (published 2015) have been produced by defra and CIEH / LQM respectively using modified versions of the EA's Contaminated Land Exposure Assessment (CLEA) software.

8.2 C4SL

Provisional C4SL have been derived by CL:AIRE following guidance and as a tool to assist in applying the Part IIA Category 1- 4 classifications to a site. The purpose of the C4SL is to provide a simple test for deciding that land is suitable for use and 'definitely not' contaminated land under Part IIA. They describe a level of risk that is above minimal but is still low. Six contaminants have been assigned provisional C4SL: arsenic; benzene; benzo[a]pyrene; cadmium; chromium VI and lead for the standard land uses (residential with and without plant uptake, allotments, commercial and public open space (parks and residential). The C4SL are also considered suitable to be used under the planning regime.

8.3 S4UL

The LQM / CIEH S4UL represent generic assessment criteria based on minimal or tolerable risk that are intended to be protective of human health. They represent values above which further assessment of the risks or remedial actions may be needed. S4UL have been derived for a comprehensive list of organic and inorganic determinants.

9 SOIL CHEMISTRY

9.1 Results

The results of chemical testing of 13No. samples of near surface soils are compared with the S4UL and C4SL for a residential end use with vegetable uptake in the following table:-

| Determinant | Maximum Measured Concentration (mg/kg) | C4SL / S4UL Residential (mg/kg) | No. of tests carried out | No. of exceedances |
|-------------------------|---|---------------------------------------|--------------------------|-----------------------|
| Arsenic | 19 | 37 | 12 | 0 |
| Cadmium | <dl< td=""><td>11</td><td>12</td><td>0</td></dl<> | 11 | 12 | 0 |
| Chromium (total) | 30 | 910 | 12 | 0 |
| Mercury | <dl< td=""><td>1.2</td><td>12</td><td>0</td></dl<> | 1.2 | 12 | 0 |
| Lead | 82 | 210 | 12 | 0 |
| Nickel | 26 | 180 | 12 | 0 |
| Selenium | <dl< td=""><td>250</td><td>12</td><td>0</td></dl<> | 250 | 12 | 0 |
| Copper | 52 | 2400 | 12 | 0 |
| Zinc | 150 | 3700 | 12 | 0 |
| Asbestos | Present | presence | 7 | TP18 @ 0.40m |
| Naphthalene | <dl< td=""><td>2.3</td><td>11</td><td>0</td></dl<> | 2.3 | 11 | 0 |
| Acenaphthylene | <dl< td=""><td>170</td><td>11</td><td>0</td></dl<> | 170 | 11 | 0 |
| Acenaphthene | <dl< td=""><td>210</td><td>11</td><td>0</td></dl<> | 210 | 11 | 0 |
| Fluorene | <dl< td=""><td>170</td><td>11</td><td>0</td></dl<> | 170 | 11 | 0 |
| Phenanthrene | <dl< td=""><td>95</td><td>11</td><td>0</td></dl<> | 95 | 11 | 0 |
| Anthracene | <dl< td=""><td>2400</td><td>11</td><td>0</td></dl<> | 2400 | 11 | 0 |
| Fluoranthene | <dl< td=""><td>280</td><td>11</td><td>0</td></dl<> | 280 | 11 | 0 |
| Pyrene | <dl< td=""><td>620</td><td>11</td><td>0</td></dl<> | 620 | 11 | 0 |
| Benzo(a)anthracene | <dl< td=""><td>7.2</td><td>11</td><td>0</td></dl<> | 7.2 | 11 | 0 |
| Chrysene | <dl< td=""><td>15</td><td>11</td><td>0</td></dl<> | 15 | 11 | 0 |
| Benzo(b)fluoranthene | <dl< td=""><td>2.6</td><td>11</td><td>0</td></dl<> | 2.6 | 11 | 0 |
| Benzo(k)fluoranthene | <dl< td=""><td>77</td><td>11</td><td>0</td></dl<> | 77 | 11 | 0 |
| Benzo(a)pyrene | <dl< td=""><td>2.2</td><td>11</td><td>0</td></dl<> | 2.2 | 11 | 0 |
| Indeno(1,2,3-c,d)pyrene | <dl< td=""><td>27</td><td>11</td><td>0</td></dl<> | 27 | 11 | 0 |
| Dibenzo(a,h)anthracene | <dl< td=""><td>0.24</td><td>11</td><td>0</td></dl<> | 0.24 | 11 | 0 |
| Benzo(g,h,i)perylene | <dl< td=""><td>320</td><td>11</td><td>0</td></dl<> | 320 | 11 | 0 |

9.2 Interpretation

Metals and Polycyclic Aromatic Hydrocarbons

Exceedances of the guideline values for metals and polycyclic aromatic hydrocarbons was not recorded.

Asbestos

7No. samples of soil were submitted to an asbestos screen and asbestos was only recorded in Stockpile 2. Visual evidence of asbestos roof sheet was recorded in TP17 and TP18 which was subsequently confirmed as *'Chrysotile - hard cement'* in TP17 at 0.10m and *'Chrysotile-Bitumen'* in TP18 at 0.40m. Loose asbestos fibres were not recorded in either sample. We estimate that the stockpile amounts to a volume of approximately 120m³.

Pestcides

1No. sample of shallow Topsoil was submitted to a pesticide screen and concentrations were not recorded above the laboratory limit of detection.

9.3 Controlled Waters

Groundwater was not encountered in the Oolite Formation. Based upon the recorded concentrations of contaminants in shallow soils we do not consider that controlled waters are at risk of impact.

9.4 Water Supply Pipework

Plastic water supply pipes are permeable to hydrocarbons such as petrol, diesel, heating fuel and white spirits. The site has not had a history of contaminative use. Samples of soil from typical pipework installation depths from TP5 (1.00m), TP6 (1.20m), TP10 (0.85m) and WS2 (1.00m) were submitted to analysis for common hydrocarbon determinants and the laboratory limit of detection for any of the compounds was not exceeded. Thus, protective pipework is not a requirement.

9.5 Waste Classification and Reuse

Existing topsoil at the site should be stockpiled and set aside for re-use. Foundation arisings will consist of virgin soil which will carry and 'inert' classification. A combined sample of virgin Oolite Group from WS1 and TP8 (1.00-1.45m) was submitted to WAC testing which demonstrates an inert classification. The results are included in Appendix C.

Asbestos was recorded in 'Stockpile 2' the location of which is denoted on the hand drawn plan in Appendix A. Visual evidence of asbestos roof sheet was recorded in TP17 and TP18 which was subsequently confirmed as '*Chrysotile - hard cement*' in TP17 at 0.10m and '*Chrysotile-Bitumen*' in TP18 at 0.40m. Loose asbestos fibres were not recorded in either sample. We estimate that the stockpile amounts to a volume of approximately 120m³. The concentrations of metals and PAH would render this stockpile suitable for re-use provided that the asbestos was removed by hand picking. Following removal of the asbestos validation testing would be required to demonstrate that the stockpile is free from asbestos.

Alternatively, the stockpile can be removed to landfill and based upon our visual assessment we consider that a 'non-hazardous' waste classification would be applicable as the content of asbestos within the matrix will be <0.1wt%.

We would recommend that the classification for the purposes of muck away should be confirmed with the closest relevant landfill site where pricing should be sought based upon the individual characteristics of the landfill site and haulier. Any excavated material and excess spoil should always be classified prior to removal from site as required by 'Duty of Care' (Environmental Protection Act 1990) legislation. This means that material has to be given a proper description and waste classification prior to removal consequently; details of the materials required for disposal, together with certificates of chemical analysis should be sent to a suitably licensed waste disposal contractor for classification and to confirm compliance with their license conditions.

10 GEOTECHNICAL ENGINEERING ASSESSMENT

10.1 Proposed Redevelopment

It is understood that it is proposed to construct six houses on the site, some with separate garages, with associated infrastructure. The layout indicated on the Exploratory Hole Location Plan is assumed to be valid.

10.2 Summary of Ground Conditions

The exploratory holes indicated the subsoils underlying the site to be Oolite Group Deposits mainly comprising clayey sandy limestone gravel and cobbles over stiff sandy clays. The gravel was overlain by a relatively thin bed of clay at some locations. In the areas where the houses will be located, the lower clay layer was encountered at depths of 0.90m to 1.60m. A rock bed was encountered at many locations, mainly at depths between 2.00m and 2.60m.

Groundwater was not encountered.

10.3 Foundations

Spread foundations bearing in the Oolite Group Deposits should be suitable for supporting the loads likely to be generated by the proposed low-rise residences. On the evidence of many of the exploratory holes and most of the dynamic probes, the soils above 1.50m depth are of relatively low strength requiring a limited allocated allowable bearing pressure. It may be more economical to found in the significantly stronger soils consistently found at 1.50m depth or below.

For foundations *up to* 1.0m wide, net allowable bearing pressures of 100kN/m² and 130kN/m² are recommended for the design of foundations bearing in either the granular or clay Oolite Group Deposits at depths of 0.90m and 1.50m respectively. These figures incorporate factors of safety of at least 3.0 against shear failure of the clays and should keep settlements to less than 10mm. However, it is strongly recommended that the foundations

are reinforced to counter differential rates of settlement through founding in variable soil types. It is recognised that this may not always be the case, but the variable depth of the clay horizon beneath the granular may still lead to differential movement where the upper surface of the clay is close to the base of the foundation.

It should be noted that none of the above takes into account the possibility that the new buildings are within the zone of influence of trees that previously stood on the site. Vegetation was recently cleared from the interior of the site but the pre-existence or otherwise is not known of trees or other deep-rooting vegetation that may have significantly depleted the clay moisture levels such that heave is now occurring as the soil rehydrates to its natural level. Such a process can take several years to complete. During the investigation roots and hair roots of a live appearance were recorded in TP4 to 2.00m, TP5 to 1.00m and TP6 to 2.00m.

If an assessment is made of the possible effects of trees and the requirement or otherwise for deeper footings, the clay soils should be assumed to be of *medium* volume-change potential with regard to the NHBC Standards classification. Although foundations may potentially be bearing in granular soils at many locations, should an increase in foundation depth be required to account for the pre-existence of trees, the depth of the underlying clay is unlikely to be sufficient to meet the criteria of NHBC Clause 4.2.9. This clause requires the shrinkable soil to be at least 0.75 x 'required depth' beneath the foundation, where the 'required depth' is that calculated using the methods of the Standards, assuming shrinkable soil to be present throughout. Furthermore, the clause also requires that consistent soil conditions exist across the plot, which is also unlikely.

10.4 Ground Floor Slabs

The near-surface soils are of variable composition but locally comprised soft clay. There may also be localised heave if, and where trees were removed (see above). It is recommended, therefore, that suspended ground floors are utilised. If an adjustment to the foundation depth has been necessary to account for the possible effect of trees, then a subjacent void should be provided of a dimension in accordance with the method of construction and types of materials used, as detailed in the NHBC guidelines (or other).

10.5 Road Pavement Design

As previously discussed, the near-surface soils are variable, seemingly randomly so, rendering it necessary adopt a lower-bound value of an overall California Bearing Ratio (CBR) for pavement design purposes. A CBR value of 2% is recommended, based on the localised presence of soft clays. This will be a conservative figure for many areas but delineating those areas immediately underlain by clay and those by granular soils is not practical. The soils are not considered to be frost-susceptible. The formation should be proof rolled and any significant soft spots removed and replaced with granular backfill.

10.6 Chemical Considerations for Buried Concrete

Chemical analysis of samples of the subsoils yielded water-soluble sulphate concentrations (SO4 in 2:1 soil aqueous extract) of 6mg/l to 143mg/l with pH values of 8.1 to 8.7. Calculation of the oxidisable sulphates using the methods of BRE SD1 (2005) "Concrete in aggressive ground", indicates an insignificant presence of pyrite in the soils. These factors, along with 'static' groundwater conditions, place the site in Design Sulphate Class DS-1 and ACEC Class AC-1s. Therefore, no special precautions will be necessary to protect buried concrete from potential chemical attack.

11 GAS PROTECTION REQUIREMENTS

11.1 Ground Gas

The current guidance on protecting buildings from ground gas hazards is contained in the document CIRIA C665 with updated risk assessment guidance contained within BS8485 (2015). It is intended that the proposed new build will be two storey apartments.

The level of gas protection is determined by comparing the following parameters to cut-off values prescribed within BS8485 (2015):

- "Typical Maximum Concentrations" for initial screening purposes.
- Risk based "Gas Screening Values" (GSV) for consideration where the typical maximum concentrations are exceeded.

The GSV is calculated using the following equation and the resulting GSV are compared to the Site Characteristic GSV given in Table 2 of BS8485 (2015).

Maximum gas concentration (%) x worst case borehole flow rate (I/h)

6No. gas monitoring visits were undertaken at the site from boreholes WS1, WS2 and WS3.

Methane was not recorded during any of the visits. Slightly elevated concentrations of CO_2 were recorded. The maximum CO_2 concentrations, the maximum flow rate and the screening values for the boreholes during the fieldwork period are summarised in the following table:-

| Location | Maximum CO ₂ Concentration (% v/v) | Maximum Flow Rate (l/hr) | Gas Screening Value (I/hr) | | |
|----------|---|-----------------------------|-------------------------------|--|--|
| WS1 | 3.3 | 0.2 | 0.0066 | | |
| WS2 | 2.9 | 0.4 | 0.0116 | | |
| WS3 | 1.9 | 0.1 | 0.0019 | | |

Table 9 Calculated GSV

The ground investigation has identified a maximum carbon dioxide concentration of 3.3% vol. (in WS1) and a worst case flow rate of 0.4 l/hr, giving a maximum GSV of 0.0132 l/h. These values are then compared to Table 2 within BS8485 (2015). Referring to Table 2 of BS8485 (2015), the site can be categorised as a Characteristic Situation 1 (CS1). Gas protection measures are not required. The results of gas monitoring are presented in Appendix E.

12 CONCLUSIONS AND RECOMMENDATIONS

12.1 Land Quality

The Brownfield Consultancy have determined through site investigation, chemical testing and detailed quantitative risk assessment that a risk to future residential end users is not present from recorded concentrations of contaminants at the site. Consequently, remediation is not required. The site is considered suitable for the proposed end use.

A stockpile of soil located in the northern area of the site (denoted Stockpile 2 on the drawing in Appendix A) contains fragments of asbestos. Visual evidence of asbestos roof sheet was recorded in TP17 and TP18 which was subsequently confirmed as *'Chrysotile - hard cement'* in TP17 at 0.10m and *'Chrysotile-Bitumen'* in TP18 at 0.40m. Loose asbestos fibres were not recorded in either sample. We estimate that the stockpile amounts to a volume of approximately 120m³.

The concentrations of metals and PAH would render this stockpile suitable for re-use provided that the asbestos and any oversize objects were removed by hand picking. Following removal of the asbestos validation testing would be required to demonstrate that the stockpile is free from asbestos. This exercise would be subject to regulatory approval.

Alternatively, the stockpile can be removed to landfill and based upon our visual assessment we consider that a 'non-hazardous' waste classification would be applicable as the content of asbestos within the matrix will be <0.1wt%.

Stockpile 1 and 2 were free from asbestos and again these materials can be reused subject to removing oversized objects.

There is a sceptic tank housing which will require careful removal. The presence of contamination below the sceptic tank cannot be ruled out.

It is possible that additional hotspots of contamination may be encountered during groundworks including additional incidences of asbestos contamination. The principal contractor should contact The Brownfield Consultancy who will attend site and advise on the best course of action in consultation with the Local Planning Authority.

12.2 Gas Protection Measures

The results of 6No. gas monitoring visits has determined that gas protection measures are not required for the development.

Radon gas protection measures are also not required.

12.3 Buried Services

The ground investigation and results of laboratory testing have confirmed that the site is free from contamination at pipework installation depths. Hence there is no requirement for protective pipework. The reader is referred to Section 9.4.

12.4 Soil Disposal and Reuse

The reader is referred to Section 9.4.

12.5 Geotechnical

The reader is referred to Section 10 where the geotechnical conclusions are presented in full.

Prepared and approved by

vaddo

JIM TWADDLE BSc (Hons) CGeol FGS Director

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APPENDIX A

Exploratory Hole Location Plan

STEEPLE ASTON – EXPLORATORY HOLE LOCATION PLAN





APPENDIX B

Exploratory Hole Logs

| hone: 0785 | 52881086 | | INAL | | | | |
|-----------------------|------------------------------------|---|--|--|---------------------|-------------------------------|---|
| Project | | | | | | T | RIAL PIT No |
| Sou | thside, Ste | eeple Aston | | | | | TP1 |
| lob No | 2.40 | Date | Ground Level (m) | Co-Ordina | tes () | | |
| BC | 340 | 15-11-17 | | | | CL | .t |
| Contractor | unfield C | oncultanov I td | | | | Snee | t of 1 |
| БІО | willield C | | | | | | 1 01 1 |
| | | | STRATA | | | SAMPLI | ES & TESTS |
| Douth | No | | DESCRI | DTION | | epth No | Remarks/Test |
| Depth 0.00-0.40 | No $\frac{\sqrt{h_{1}}}{\sqrt{1}}$ | Grass over TOPSOIL. (TO | DESCRI DPSOIL) | PHON | | | |
| | <u>NG</u> 12 NI | | | | | | |
|).40-2.20 | | Brown slightly clayey san occasionally tabular limes | dy GRAVEL & COBBI tone. Occasional boulde | E of subangular and r. (OOLITE GROU | d subrounded JP) | | |
| | | | | | | | |
| | | 1.00 Becoming very sandy | y below 1.00m. | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2.20-2.40 | | Firm brown sandy CLAY | with abundant shell frag | ments. (OOLITE G | ROUP) | | |
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| horing/S tability: | upport: Sides stal | ble. | | | | | LENERAL REMARKS |
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| D | A | B | | Ť | | | - |
| | С | ¥ | | | | | |
| All dimens Sca | sions in metr le 1:25 | res Client Rectory | Homes Ltd M P | lethod/ lant Used | JCB 3CX | Logged | By JT |

| Project | | | | | тр | IAL DIT No. |
|---|---|---|---------------------------------|-------------|-----------------------------------|--------------------------------------|
| Southside St | aanla Aston | | | | | AAL PIT NO |
| Job No | Date | Ground Level (m) | Co-Ordinates () | | - | TP2 |
| BC340 | 15-11-17 | | | | | |
| Contractor | | | | | Sheet | |
| Brownfield C | onsultancy Ltd | | | | | 1 of 1 |
| | | STRATA | | SAI | MPLE | S & TESTS |
| | | | | Depth | No | Remarks/Tests |
| Depth 0.00-0.20 No $\underbrace{\times^{1/2}}_{1 \times 1 \times 1}$ | Grass over TOPSOIL. (TO | DESCRIPTI DPSOIL) | ON | | | |
| 0.20-1.00 | Buff brown slightly clayey coarse limestone. (OOLIT | <pre>v very sandy GRAVEL of st E GROUP)</pre> | bangular and subrounded fine to |) | | |
| 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | | | | | |
| 1.00-1.90 | Firm brown sandy CLAY | with shell fragments. Shell | fragments abundant in places. | | | |
| | (OOLITE GROUP) | - | | | | |
| | | | | | | |
| 1.90 | No further progress due to | encountering bedrock. | | | | |
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| Shoring/Support: Stability: Sides sta | ble. | | | | G | ENERAL EMARKS |
| ► | > | | N 4 + | C e w | Froundw ncounter with arisi | rater not red. Backfilled ngs. |
| D | B | | A | | | |
| | T | 1 | | | | |

| Project | 5200 | 1000 | | | | | TF | RIAL PIT No |
|-------------------------|-----------------|------------------|---|--|-----------------------------|-------|---|--|
| Sou Jah Na | ıthsi | de, St | eeple Aston | Crown d Lowel (m) | Co Ordinatas () | | | TP3 |
| JOD NO | 7340 | | 15-11-17 | Ground Level (m) | Co-Ordinates () | | | |
| Contractor | -940 | | 15-11-17 | | | | Sheet | t |
| Bro | ownf | ield C | Consultancy Ltd | | | | | 1 of 1 |
| | | | | STRATA | | SAN | MPLE | S & TESTS |
| | 1 | | | | | Depth | No | Remarks/Tests |
| Depth 0.00-0.20 | No | | Black humic TOPSOIL w | DESCRIPTI ith timber. (MADE GROUN | ON ND) | | | |
| 0.20-0.90 | | | Soft brown sandy CLAY. | Rare gravel of limestone. (C | OOLITE GROUP) | | | |
| 0.90-1.50 | | 0 4° 0 0 0 0 | Brown slightly clayey san occasionally tabular limes | dy GRAVEL & COBBLE o tone. (OOLITE GROUP) | f subangular and subrounded | | | |
| 1.50-3.00 | | | Firm brown sandy CLAY | with abundant shell fragme | nts. (OOLITE GROUP) | | | |
| Shoring/S Stability: | Supp Sid | port: les sta | ble. B | | N 4 1 8 | Gerw | G R roundv counter ith aris | ENERAL EMARKS vater not rred. Backfilled ings. |
| All dimen | sions ale 1: | in met 25 | res Client Rectory | Homes Ltd Meth Plant | od/ Used JCB 3CX | | ogged l | By JT |

| Project TRIAL | |
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| | ∠ PIT No |
| Southside, Steeple Aston | 'P4 |
| Job No Date Ground Level (m) Co-Ordinates () | |
| BC340 13-12-17 | |
| Dressential Consultances Ltd | of 1 |
| Brownneid Consultancy Ltd | |
| STRATA SAMPLES & | TESTS |
| Depth No Re | marks/Tests |
| Depth No DESCRIPTION $0.00-0.30$ Grass over TOPSOIL. Roots and rootlets. (TOPSOIL) | |
| | |
| 0.30-1.60 22 Dark brown becoming light brown at 0.50m slightly clayey very sandy GRAVEL & 0.20 | |
| $\begin{array}{c} 0.504100 \\ \hline 0 \\ \hline 0 \\ \hline 0 \\ \hline \end{array} \end{array} \begin{array}{c} 0 \\ \hline 0 \\ \hline 0 \\ \hline 0 \\ \hline \end{array} \end{array} \begin{array}{c} 0 \\ \hline 0 \\ \hline 0 \\ \hline 0 \\ \hline \end{array} \begin{array}{c} 0 \\ \hline \end{array} \begin{array}{c} 0 \\ \hline \end{array} \begin{array}{c} 0 \\ \hline \end{array} \begin{array}{c} 0 \\ \hline \end{array} \begin{array}{c} 0 \\ \hline \end{array} \begin{array}{c} 0 \\ \hline 0 \\ \hline 0 \\ \hline 0 \\ \hline \end{array} \begin{array}{c} 0 \\ \hline 0 \hline$ | |
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| | |
| 1.60-2.50 Firm and stiff sandy very shelly CLAY. Becoming a very weak shelly mudstone below | |
| 2.20m. Fine hair roots of a live appearence to 2.00m. 1.70 D | |
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| | |
| 2.50 No further progress due to encountering bedrock. Bedrock is a grey calcareous siltstone. | |
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| Shoring/Support: | ERAL |
| Stability: Sides stable. | ARKS |
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| All dimensions in metres Scale 1:25 Chent Rectory Homes Ltd Method/ Plant Used JCB 3CX Logged By | Т |

| Project | 1.1.1 | | | | | | TR | IAL PIT No |
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| Depth | No | | DESCI | RIPTION | | Depui | | Remarks/ 103 |
|).00-0.40 | <u>x¹/z</u> 1/2 <u>x¹/</u> | Grass over TOPSOIL. (| TOPSOIL) | | | | | |
| 0.40-1.40 | | Brown slightly clayey v frequently tabular limes | ery sandy GRAVEL & C tone. (OOLITE GROUP | COBBLE of subang) | gular and angular | | | |
| | | 1.00 Live rootlets to 1.0 | 0m. | | | 1.00 | ES | |
| 40-2.20 | | Stiff brown very sandy | shelly CLAY. (OOLITE | GROUP) | | | | |
| 2.20-2.30 | | Hard LIMESTONE. Re | covered as tabular COBI | BLE & BOULDER | of tabular blue | | | |
| 2.50 | | No further progress due | to encountering hard be | lrock. | | | | |
| Shoring/Stability: | Support: Sides st | able. | | | | | G | ENERAL EMARKS |
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| Bro | wnfield (| | 1 of 1 | | | | | | |
| | | | STRATA | | SAI | MPLE | S & TESTS | | |
| | | | | | Depth | No | Remarks/Tes | | |
| Depth 0.00-0.20 | No $\frac{\sqrt{l_{\chi}}}{l_{\chi}}$ | Grass over TOPSOIL. (TO | | | | | | | |
| 0.20-1.60 | | Brown slightly clayey ver frequently tabular limesto | y sandy GRAVEL & COB ne. (OOLITE GROUP) | BLE of subangular and angular | | | | | |
| | | | | | 1.20 | ES | | | |
| 1.60-2.00 | | Very stiff brown sandy ve GROUP) | ry shelly CLAY. Fine hair | roots of a live appearance. (OOLI | TE | | | | |
| 2.00-2.60 | | Very stiff light brown san Grading into a very weak | dy locally very sandy shell shelly mudstone. (OOLITE | y CLAY with mudstone lithorelic: E GROUP) | s. 2.00 | D | | | |
| 2.60 | | No further progress due to | encountering bedrock. | | | | | | |
| | | | | | | | | | |
| Shoring/Support: Stability: Sides stable. | | | | | | | GENERAL REMARKS | | |
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| Project | | | | | | TR | IAL PIT No |
| Sou | thside, S | Steeple Aston | | | | _ | TP7 |
| Job No | 10.40 | Date 12, 12, 17 | Ground Level (m) | Co-Ordinates () | | | |
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| Bro | whiteld | Consultancy Ltd | | | | | 1 OF 1 |
| | | | STRATA | | SA | MPLE | S & TESTS |
| | | | | | Depth | No | Remarks/Tests |
| Depth $0.00-0.30$ | No | Grass over soft brown sand | DESCRIPTI w gravelly CLAY with root | ON tlets (TOPSOIL) | | | |
| 0.00 0.20 | 1 <u>/ \</u> 1 | Gruss over solt blown suite | | | 0.10 | ES | |
| | <u></u> | | | | | | |
| 0.30-1.50 | | Brown slightly clayey very frequently tabular limeston | sandy GRAVEL & COBB e. (OOLITE GROUP) | LE of subangular and angular | | | |
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| | | | | | | | |
| 1.50-2.00 | | Stiff brown sandy shelly lo | cally very shelly CLAY. (C | OOLITE GROUP) | 1.60 | р | |
| | | | | | 1.00 | | |
| | | | | | | | |
| 2 00-2 60 | | Very stiff light brown sand | y locally very sandy shelly | CLAY with mudstone lithoreli | rs. | | |
| 2.00-2.00 | | Grading into a very weak s | helly mudstone. (OOLITE | GROUP) | | | |
| | | | | | | | |
| | | | | | 2.30 | D | |
| | | | | | | | |
| 2.60 | | No further progress due to | encountering bedrock. | | | | |
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| All dimen | sions in me | etres Client Rectory H | Homes Ltd Meth | od/ | | Logged B | By T |
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| Project | | | | | | TR | IAL PIT No |
| Soi | uthside, Ste | eeple Aston | | | | | TDS |
| Job No | | Date | Ground Level (m) | Co-Ordinates () | | | IFO |
| BC | 2340 | 13-12-17 | | | | | |
| Contractor | | | | | | Sheet | |
| Bro | wnfield C | onsultancy Ltd | | | | | 1 of 1 |
| | | | STRATA | | SAN | MPLE | S & TESTS |
| | | | | | Depth | No | Remarks/Tests |
| Depth | No | - | DESCRIPTI | ON | | | |
| 0.00-0.20 | | Grass over TOPSOIL. Roo | ots and rootlets. (TOPSOIL) |) | 0.10 | FS | |
| 0.20-0.70 | | Brown clayey sandy GRA | VEL & COBBLE of subang | gular and angular frequently tabular | | | |
| | | limestone. (OOLITE GRO | UUP) | | | | |
| | - 0 - 0 | | | | 0.50 | FS | |
| | | | | | 0.50 | | |
| 0.70-1.30 | | Firm brown and buff brow | n sandy gravelly shelly CL | AY. Gravel is subangular fine to | 0.75 | D | |
| | | medium limestone. (OOLI | TE GROUP) | | | | |
| | | | | | | | |
| | | | | | | | |
| 1 20 2 40 | | P' 1 | | AV Coursel's solution of the first | 1.20 | | |
| 1.30-2.40 | | coarse limestone. (OOLIT | E GROUP) | A I. Gravel is subangular line to | 1.50 | | |
| | | | | | | | |
| | | | | | 1.60 | HV | 90kPa |
| | <u> </u> | | | | | | |
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| | | | | | 2.30 | D | |
| 2.40 | 1 | No further progress due to | encountering bedrock. | | | | |
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| Sc | ale 1:25 | 5 | Plant | Used JCB 3CX | | | JT |

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|-------------------------|------------------------|--|--|-----------------------------------|--------------|----------|---------------------------|
| Project | | ~ 1 . | | | | TR | IAL PIT No |
| Sou L L N | ithside, | Steeple Aston | | | | | TP9 |
| Job No | 7240 | Date 12 12 17 | Ground Level (m) | Co-Ordinates () | | | |
| Contractor | .340 | 13-12-17 | | | | Sheet | |
| Bro | wnfield | d Consultancy I td | | | | Sheet | 1 of 1 |
| | whitek | | | | <u> </u> | | |
| | | | SIRAIA | | 5AI Depth | No | S & IESIS Remarks/Test |
| Depth 0.00-0.20 | No No | Grass over TOPSOIL. Ro | DESCRIPTI ots and rootlets. (TOPSOIL) | ON) | | | Tentarks Test |
| 0.20-1.00 | | Brown clayey sandy GRA limestone. (OOLITE GRO | VEL & COBBLE of suban DUP) | gular and angular frequently tabu | lar | | |
| | | | | | | | |
| 1.00-1.20 | | Firm brown and buff brow medium limestone. (OOL | vn sandy gravelly shelly CL. ITE GROUP) | AY. Gravel is subangular fine to | | | |
| 1.20 | · · | Trial Pit terminated. | | | | | |
| | | | | | | | |
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| | | | | | | | |
| Shoring/S Stability: | Support Sides | : stable. | | | | G | ENERAL EMARKS |
| k | | ► | | N ∳ | В | ackfille | d with arisings. |
| D | A | В | | Ť | | | |
| | С | | TT T.1 | | | | |
| All dimen | sions in r ale 1:25 | netres Client Rectory | Homes Ltd Meth Plant | t Used JCB 3CX | | ogged E | ,, JT |

| Phone: 078 | 5288108 | 86 | | INIA | | J | | | | |
|--------------------|------------------|---------------|--|---|------------------------|--------------------------|--------|------------|------------------|--|
| Project | | | | | | | | TR | IAL PIT No | |
| | uthside, | Steepl | e Aston | | | 1 • • • • | | TP10 | | |
| lob No | 72.40 | | Date 12, 12, 17 | Ground Level (n | n) Co-Or | dinates () | | | | |
| BC | 2340 | | 13-12-17 | | | | | | | |
| Contractor | C" 1 | 10 | 1. T.I | | | | | Sneet | 1 6 1 | |
| Bro | ownfield | a Cons | ultancy Ltd | | | | | | 1 of 1 | |
| | | | | STRATA | | | SA | MPLES | S & TESTS | |
| D .1 | N | | | DEGG | DIDTION | | Depth | n No | Remarks/Tes | |
| Depth 0.00-0.20 | | Gras | s over TOPSOIL. Roo | DESC ts and rootlets. (TOP | RIPTION SOIL) | | 0.10 | ES | | |
| 0.20-1.40 | | | n clayey sandy GRA' stone. (OOLITE GRO | VEL & COBBLE of UP) | subangular and an | gular frequently tabular | 0.85 | ES | | |
| 1.40-2.40 | | Soft | becoming firm at 2.10 | m very sandy shelly | CLAY. (OOLITE | GROUP) | 1.60 | HV | 35kPa | |
| | | | | | | | 2.00 | HV | 45kPa | |
| 2.40-2.50 2.50 | | Very No fu | soft orange brown ve urther progress due to | ry sandy slightly shel encountering bedroc | lly SILT/CLAY. (k. | OOLITE GROUP) | - 2.45 | D | | |
| | | | | | | | | | | |
| Shoring/Stability: | Support Sides | : stable. | | | | | | GI | ENERAL EMARKS | |
| D | A | | B | | N + 1 | | | Backfilled | d with arisings. | |
| All dimen | sions in r | netres | Client Rectory H | Homes Ltd | Method/ Plant Used | ICD 2CV | | Logged B | by IT | |
| Sc | ale 1:25 | | | | Plant Used | JCB 3CX | | | JI | |

| Project | | | | TDIAL DIT No. | | | | |
|--|---|--|-------|--|--|--|--|--|
| Southside Steenle Aston | | | | IRIAL PII NO | | | | |
| Job No Date | Ground Level (| (m) Co-Ordinates () | | - TP11 | | | | |
| BC340 13- | 12-17 | | | | | | | |
| Contractor | | | | Sheet | | | | |
| Brownfield Consultancy I | Ltd | | | 1 of 1 | | | | |
| | STRATA | | SAN | APLES & TESTS | | | | |
| | | | Depth | No Remarks/Test | | | | |
| Depth 0.00-0.30 No $(\frac{\sqrt{L_2}}{\sqrt{L_2}})$ Grass over TO $(\frac{\sqrt{L_2}}{\sqrt{L_2}})$ Grass over TO $(\frac{\sqrt{L_2}}{\sqrt{L_2}})$ Soft brown slip | DESC PSOIL. Roots and rootlets. (TO | CRIPTION PSOIL) Y. Fine hair roots (OOL ITE GROUP) | | | | | | |
| $0.50-0.90 \qquad \underbrace{\bigcirc \overline{\partial} \ \overline{\partial} $ | Buff brown clayey locally very clayey sandy GRAVEL of subangular fine to coarse limestone. (OOLITE GROUP) | | | | | | | |
| 0.90-2.40 Stiff buff brown 1.80 - 2.40 Ver | n very sandy shelly locally very y hard digging. Becoming pale | grey. | 1.60 | D | | | | |
| Shoring/Support: Stability: Sides stable. | | N ∳ | B | GENERAL REMARKS ackfilled with arisings. | | | | |
| A D C | | † ≬ | | | | | | |
| All dimensions in metres Scale 1:25 | Rectory Homes Ltd | Method/ Plant Used JCB 3CX | | ogged By JT | | | | |

| Phone: 0785 Project | 52881086 | 3 | | II LOO | | | TP | |
|-------------------------|--|--|--|--------------------------------------|--|--------------|---------|--------------------------------------|
| Sou | thside S | Steenle Aston | | | | | | IAL FIT NO |
| Job No | | Date | Ground Level (m) | Co-Ordin | ates () | | - | TP12 |
| BC | 340 | 13-12-17 | | | | | | |
| Contractor | | | | | | | Sheet | |
| Bro | wnfield | Consultancy Ltd | | | | | | 1 of 1 |
| | | | STRATA | | | SAI | MPLE | S & TESTS |
| | | | | | | Depth | No | Remarks/Test |
| Depth 0.00-0.20 | No $\left \frac{\frac{\sqrt{1}}{\sqrt{1}}}{\frac{1}{\sqrt{1}}} \right $ | Grass over TOPSOIL. Roo | DESCRIPT ts and rootlets. (TOPSOII | FION L) | | | | |
| 0.20-0.60 | | Soft brown slightly sandy s medium limestone. Fine ha | lightly shelly gravelly CL ir roots. (OOLITE GROU | LAY. Gravel is s JP) | ubanagular fine to | | | |
| | | - ā | | | | 0.45 0.50 | ES D | |
| 0.60-1.90 | | Buff brown clayey locally limestone. Infrequent horiz GROUP) | very clayey sandy GRAV ons of friable shelly muds | EL of subangula stone and firm sl | ar fine to coarse helly clay. (OOLITE | | | |
| 1.90-2.10 | | Brown poorly laminated sh | elly MUDSTONE. (OOL | ITE GROUP) | | _ | | |
| | | | | | | | | |
| Shoring/S Stability: | upport: Sides st | table. | | N + | | B | G RI | ENERAL EMARKS d with arisings. |
| All dimens | ions in m le 1:25 | etres Client Rectory H | Homes Ltd Met Plan | thod/ nt Used | JCB 3CX | | ogged E | ^{3y} JT |

| Phone: 078 | 528810 | 086 | | | | U | | _ | |
|-------------------------|-----------------|-----------------|---|------------------------|-----------------------|-----------------------------|-------------|------------|---------------------------|
| Project | .1 • 1 | C. | 1 | | | | | TF | RIAL PIT No |
| SOI | uthside | e, Steej | ple Aston | Cround Loyal (| \mathbf{r} | Indinatas () | | _ | TP13 |
| | 7240 | | 12 12 17 | Ground Lever (1 | | Juliates () | | | |
| Contractor | | | 13-12-17 | | | | | Sheet | |
| Bro | ownfie | ld Cor | sultancy Ltd | | | | | bliect | 1 of 1 |
| | | | | | | | <u> </u> | | |
| | | | | SIRAIA | | | SA Denth | MPLE No | S & TESTS Remarks/Test |
| Depth | No | | | DESC | RIPTION | | | | Remarks/ Test |
| 0.00-0.10 | <u>74</u> | <u>//</u> Gra | ass over TOPSOIL. Roo | ots and rootlets. (TOI | PSOIL) | | | | |
| 0.10-0.30 | | | ft brown slightly sandy OLITE GROUP) | CLAY. Rare fine to 1 | nedium subangu | lar limestone gravel. | | | |
| 0.30-1.20 | | - Bro | own clayey sandy GRA | VEL & COBBLE of | subangular and | angular frequently tabular | - | | |
| | 0. 0 | -⊅ lim | nestone. (OOLITE GRO | OUP) | | | | | |
| | - 4 | 20 | | | | | | | |
| | | 20 | | | | | | | |
| | , P | ₹) 9-e | | | | | | | |
| | 0 | Δ | | | | | | | |
| | <i>.</i> 0 | 2 | | | | | | | |
| 1.20-1.60 | | Fir | m buff brown and brow | n very sandy very gr | avelly CLAY. G | ravel is subangular fine to | 1.20 | D | |
| | | | alse innestone. Elseuny | a enayey sandy grave | | | 1.30 | в | |
| | | · | | | | | | | |
| 1.60-1.90 | | Ho | rizon of blue LIMESTO | ONE. Recovered as b | oulders. (OOLIT | 'E GROUP) | | | |
| | | | | | | | | | |
| 1.90-2.50 | | Fir | m locally stiff brown sa | ndy very shelly CLA | Y. (OOLITE G | ROUP) | | | |
| | | | | | | | | | |
| | | -1 | | | | | | | |
| | | | | | | | | | |
| 2.50 | | | further progress due to | encountering bedroc | k | | - | | |
| 2.00 | | 110 | radio progress dae to | encountering course | | | | | |
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| Shoring/S Stability: | Suppor Sides | rt: s stable | 2 | | | | | G | ENERAL |
| Stability. | Side | stable | | | | | | Pookfille | d with origing |
| ha | | | | | N I | | | Dackillie | a with ansings. |
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| D | 1 | | | | Á | | | | |
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| | (| 2 | | | | | | | |
| All dimen | isions in | metres | Client Rectory I | Homes Ltd | Method/ Plant Used | ICB 2CV | | Logged I | Ву ИТ |
| Sc | ale 1:25 |) | | | riant Used | JUB JUX | | | JI |

| Phone: 078 | 52881086 | 211 | | 1. | RIAL PL | LOG | THC I | DIOWIN | liciu | consultancy |
|-------------------------|-----------------------------|-------------------------------------|--|--------------------------------------|-----------------------------------|--------------|--------------------------------|--------|---------|--------------------|
| Project | | | | | | | | | Г | RIAL PIT No |
| Sou | thside, St | eeple Aste | on | C 11 | 1 () | | | | _ | TP14 |
| Job No | 340 | Date | 3 12 17 | Ground L | evel (m) | Co-Ordin | ates () | | | |
| Contractor | .540 | | 13-12-17 | | | | | | She | et |
| Bro | wnfield C | Consultanc | ey Ltd | | | | | | | 1 of 1 |
| | | | | STRATA | | | | S | AMPL | ES & TESTS |
| | | | | | | | | Dept | h No | Remarks/Tests |
| Depth 0.00-0.20 | No $\frac{\sqrt{1/2}}{1/2}$ | Grass over | TOPSOIL. R | oots and rootlets | DESCRIPTIO S. (TOPSOIL) | N | | | | |
| 0.20-1.50 | | Dark brown COBBLE o (OOLITE C | a becoming lig f subangular a GROUP) | ght brown at 0.5 and angular free | Om slightly cla uently tabular | vey very san | dy GRAVEL & oots and rootlets. | | | |
| 1.50-2.50 | | Firm brown | very sandy v | ery shelly CLA | Y. (OOLITE G | ROUP) | | | | |
| 2.50 | | No further p | progress due t | o encountering | bedrock. | | | 2.43 | | JUKPA |
| Shoring/S Stability: | Support: Sides sta | ble. | | | | | | | | GENERAL REMARKS |
| D | A | F | 3 | | | N + | | | Backfil | led with arisings. |
| All dimens | sions in met ale 1:25 | res Client | t Rectory | Homes Ltd | Metho Plant U | l/ Ised | JCB 3CX | | Logged | JT |

| Project | 5288 | 1086 | | | | | • | | Т | |
|------------|--------|----------|---------------------------------|--------------------------------|------------------------------------|-----------------------|---------------------------|---------|-----------|-------------------|
| Sol | ıthsi | de Ste | enle Astor | 1 | | | | | | MALIII NO |
| Job No | 41151 | ue, 50 | Date | | Ground Level (r | n) Co-Or | dinates () | | - | TP15 |
| BC | 2340 |) | 13 | -12-17 | | , | | | | |
| Contractor | | | 10 | | | | | | Sheet | t |
| Bro | own | field C | onsultancy | Ltd | | | | | | 1 of 1 |
| | | | | | STR Δ T Δ | | | S A I | | S & TESTS |
| | | | | | SIKAIA | | | Depth | | Remarks/Tests |
| Depth | No | | | | DESC | RIPTION | | - Depui | 110 | 101111110/ 10000 |
| 0.00-0.10 | | × 💥 | CONCRETE. | (MADE GR | OUND) | | | | | |
| 0.10-0.35 | | | Dark grey slig prick. Buried | ghtly sandy sl Topsoil. (MA | ightly gravelly CLA` DE GROUND) | Y. Gravel is suban | igular fine to medium red | 0.20 | FS | |
| 0.25.0.60 | | XX, | P' 1 | | | | | 0.20 | 1.5 | |
| 0.35-0.60 | | | Firm brown sa | andy CLAY. | (OOLITE GROUP) | | | | | |
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| Shoring/S | Supr | ort: | | | | | | | G | ENERAL |
| Stability: | Sic | les stal | ole. | | | | | | R | EMARKS |
| | | | | | | N | | E | Backfille | ed with arisings. |
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| D | | | В | Ţ | | N. | | | | |
| | | C | | ¥ | | | | | | |
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| All dimen | sions | in metr | res Client | Rectory H | Homes Ltd | Method/ Plant Used | JCB 3CX | L | ogged I | By JT |
| 30 | uie I. | <u> </u> | | | | | JCD JCA | | | 51 |

| Project | | | | | | | | TF | RIAL PIT No |
|------------|-----------------|------------------------------|--------------------------------|--------------------------|-------------------|----------------------|-------|----------|------------------|
| Sou | uthside | , Steeple Asto | on | | | | | | TP16 |
| Job No | | Date | | Ground Level (m | i) Co-Ordi | nates () | | | |
| BC | 2340 | 1 | 3-12-17 | | | | | ~ | |
| Contractor | | | | | | | | Sheet | |
| Bro | ownfiel | ld Consultanc | y Ltd | | | | | | 1 of 1 |
| | | | | STRATA | | | SAN | APLE | S & TESTS |
| Domth | Na | | | DESCI | | | Depth | No | Remarks/Tes |
| 0.00-0.10 | | CONCRET | E. (MADE GR | OUND) | AIPTION | | | | |
| 0.10-0.37 | | Loose red at and concrete | nd brown sandy e. (MADE GRO | y GRAVEL & COBB OUND) | LE of angular and | subangular red brick | 0.20 | ES | |
| 0.37-0.60 | | Firm brown | sandy CLAY. | (OOLITE GROUP) | | | _ | | |
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| horing/S | Suppor Sides | t: stable | | | | | | G | ENERAL EMARKS |
| | 21405 | | | | N | | В | ackfille | d with arisings |
| - | A | > | Ŧ | | 4 | | | | |
| D | | E | 3 | | N | | | | |
| A 11 -L' | C | matras Client | Dootom | Jomes I td | Method/ | | | Juned I | 3v |
| Sc: | ale 1:25 | metres Chem | Rectory F | | Plant Used | JCB 3CX | | sgcu I | JT |

| hone: 078 | 3528810 | 86 | | 111 200 | | | | |
|--------------------|-----------|---|--|--|---|-------|----------|------------------|
| Project | | | | | | | TF | RIAL PIT No |
| So | uthside | , Steeple Aston | | | | | | TP17 |
| lob No | | Date | Ground Level (m) | Co-Ordin | ates () | | | |
| BC | C340 | 13-12-17 | | | | | C1 | |
| Contractor | ст. 1 | | | | | | Sheet | 1 C 1 |
| Bro | ownfiel | d Consultancy Ltd | | | | | | 1 of 1 |
| | | | STRATA | | | SAI | MPLE | S & TESTS |
| | | | | | | Depth | No | Remarks/Tes |
| Depth 0.00-0.40 | No | Loose brown and grey brick, concrete slab, til clay. 2 pieces of suspec | DESCRI clayey locally very clayey s e and occasional pieces of b cted asbestos roofing sheet. | PTION slightly sandy GRA preeze block. Pock (MADE GROUN | AVEL & COBBLE of ets of soft brown D) | 0.10 | ES | |
|).40-0.60 | | Dark grey slightly sand | ly slightly gravelly CLAY. | Gravel is subangu | ar fine to medium red | 0.30 | ES | |
| 0.60.0.00 | | Firm brown sandy CL | (MADE GROUND) | | | _ | | |
| 1.00-0.90 | | | AT. (OOLITE OKOUP) | | | | | |
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| horing/ | Suppor | t: | | | | | G | ENERAL |
| tability: | Sides | stable. | | | | | R | EMARKS |
| | | | | | | | | |
| | | | | N | | T | rial pit | excavated into |
| 1 | | - 1 | | | | W | estern a | area of the |
| - | | — | | • | | st | ockpile | near to the site |
| | А | L | | + | | e | itrance. | Backfilled wit |
| | | ↓ | | | | a | risings. | |
| D | | В | | я | | | | |
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| L | C | | | | | | | |
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| | | Client Desta | | F (1 1/ | | | ogged I | 2. |
| All dimon | icione in | merrec (Cincin reaction | ry Homes I to I h | lethod/ | | | |) V |
| All dimen | isions in | metres Chefit Recto | ry Homes Ltd | lethod/ lant Used | ICB 3CY | | 055001 | у IT |

| Project | | | | | | TF | RIAL PIT No |
|--------------------|------------------|--|---|--|----------------------|---|---|
| Sou | thside, S | Steeple Aston | Cround Loval (m) | Co Ordinatas () | | | TP18 |
| JOD NO | 240 | Date 12 12 17 | Ground Level (m) | Co-Ordinates () | | | |
| Contractor | .340 | 13-12-17 | | | | Sheet | |
| Bro | wnfield | Consultancy I td | | | | Sheet | 1 of 1 |
| DIO | winnend | | | | | | |
| | | | SIKAIA | | SAN Depth | IPLE No | S & IESIS Remarks/Test |
| Depth 0.00-0.60 | No | Fill comprising slightly sa and half bricks, plastic she fragments. Rare pieces of | DESCRIPTI ndy slightly gravelly and co eting, geotextile. Suspected slate. (MADE GROUND) | ON bbly CLAY and TOPSOIL. Whole asbestos containing roof sheet | 0.40 | ES | - Remarks, rest |
| 0.60-0.80 | | Dark grey slightly sandy s | lightly gravelly CLAY. Gra | vel is subangular fine to medium | | LS | |
| 0.80-1.00 | | Firm brown sandy CLAY. | (MADE GROUND) (OOLITE GROUP) | | _ | | |
| Shoring/S | upport: | | | | | G | ENERAL |
| D | Sides st | | | | Tr ea ne Ba | ial pit of stern a ar to th ackfille | EMARKS excavated into the rea of the stockp the site entrance. d with arisings. |
| All dimens | C sions in me | etres Client Rectory | Homes Ltd Meth | nod/ | | ogged I | Зу IT |

| Project | 020010 | 00 | | | | | | | | | | | BOREH | OLE | No |
|---|----------|--------|-------|-------|---------------|---------------|----------------|-------------------------------|-------------------------|---------------------------|-------------------------|-------------------------------------|----------------|--------|-------|
| Sou | ıthside | , Stee | ple A | Asto | n | | | | | | | | - w | S1 | |
| Job No | 1240 | | Date | • | 1 10 17 | - | Ground L | evel (m) | Co-Oi | rdinates () | | | | 0. | |
| Contractor | .340 | | | 14 | +-12-1 | / | | | | | | | Sheet | | |
| Bro | wnfie | ld Cor | sult | ancy | / Ltd | | | | | | | | 1 0 | of 1 | |
| SAMPI | FS & | TEST | 'S | | Lia | | | | STR Δ | ТА | | | 1 | | it/ |
| SAMIL | | | .5 | ater | D . 1 | 4 | Depth | | SIKA | | | | | ogy | umen |
| Depth | No I ype | Resi | alt | W | Level | Legend | (Thick- | | | DESCI | RIPTION | | | Geolo | nstru |
| | | | | | | NIX NIX | | Grass over 7 | TOPSOIL. | . (TOPSOII | L) | | / | | |
| | | | | | | | (0.40) 0.50 | Stiff brown | sandy CL | AY. (OOLI | TE GROU | P) | | | |
| | | | | | | 0000 | - (0.50) | Brown sligh | tly clayey | slightly sa | ndy GRAV | EL & COBB | LE of | | |
| | | | | | | | 1.00 | subangular i | intestone. | (OOLITE) | GROUI) | | | | E |
| 1.00 1.00 | D | N1 | 8 | | | | (0.40) | Medium der | ise buff bi | rown very c | layey SAN | D. (OOLITE | GROUP) | | |
| | | 10, | 7/ | | | | 1.40 | Firm buff br | own very | sandy sligh | tly gravelly | CLAY. Gra | vel is | | E |
| | | 0,0, | .,. | | | | t1.55/ - | Shattered or | ine to me | dium limest | tone. (OOL | $\frac{\text{ITE GROUP}}{\text{F}}$ |) GROUP) | | E |
| 2.00 | D | | | | | | - | Very stiff br | own sand | y locally ve | ery sandy sh | elly CLAY. | Poorly | | E |
| 2.00 | | N2 | 3 | | | | | laminated. C into a very s |)range sta helly wea | ining along k mudstone | laminated e. (OOLITE | surfaces. Gra GROUP) | ding at depth | | |
| 2 (0 | | 5,6,5 | 5,7 | | | | 2.60 | N. C. 4 | | | - | | | | ÈÈ |
| 2.60 | | 25,2 | .5/ | | | | - | No further p | rogress. C | .P1 driven. | | | | | |
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| Bor | ing Pro | ogress | and | l Wa | ater Ob | servati | ons | C | hisellin | g | Water | Added | GENE | RAL | |
| Date | Time | De | pth | D | Casin epth | ng Dia. mm | Water Dpt | From | То | Hours | From | То | REMA | RKS | |
| | | | | | | | | | | | | | Gas and ground | lwater | |
| | | | | | | | | | | | | | installed. | WORK | |
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| All dimen | sions in | metree | Cl | lient | Rect | ory Hor | nes Ltd | Metho | od/ | | | | Logged Bv | | |
| Scale 1:50 Cheft Rectory Homes Ltd Plant Used Dynamic Sampling Rig JT | | | | | | | | | | | | | | | |

| BOREHOLE LOC | j |
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| bit No Date Ground Level (m) Co-Ordinates () WUS2 Contractor II-12-17 State 1 1 1 SAMPLES & TESTS Image: Solution of the solution of | So | uthside | , Steej | ple A | sto | n | | | | | | | | | 10/ | 50 | |
| BC340 14-12-17 Sile Contractor Sile 1 of 1 SAMPLES & TESTS Breach Stratt 1 of 1 Sile Even Feast Criss over TOPSOIL (TOPSOIL) Stratt 0.10 ES Value Stratt Stratt< | Job No | | | Date | | | | Ground L | evel (r | n) | Co-O | rdinates () | | | V | 52 | |
| Contract State I of 1 Browniefd Consultancy Lut STRATA I of 1 Depth Take I endered Contactor STRATA I endered I endered <tdi endered<="" td=""> <tdi endered<="" td=""> <td< td=""><td>BO</td><td>C340</td><td></td><td></td><td>14</td><td>4-12-17</td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<></tdi></tdi> | BO | C340 | | | 14 | 4-12-17 | 1 | | | | | | | | | | |
| Borwnfield Consultancy Lid I of 1 SAMPLES & TESTS STRATA Drph Tree Test Reduced Level Level Level STRATA 0.0 LS Image: Strate in the strate in t | Contractor | r | | | | | | | | | | | | | Sheet | | |
| SAMPLES & TESTS Image: Test and the second seco | Bro | ownfie | ld Cor | sulta | ncy | / Ltd | | | | | | | | | 1 0 | of 1 | |
| $\begin{array}{ c c c c c c c c c c c c c c c c c c c$ | SAMPI | LES & | TEST | S | er | | | | | | STRA | TA | | | | Ś | nent/ |
| 0.10 ES 100 ES 100 Staff dark brown ery sandy shelly CLAY. (OOLITE GROUP) 1.00 ES N53 2.3/4.5 Staff dark brown ery sandy shelly CLAY. (OOLITE GROUP) 1.00 ES N15 3.3/4.5 Staff dark grey very sandy shelly CLAY. (OOLITE GROUP) 2.40 ES N15 3.3/4.5 Staff dark grey very sandy shelly CLAY. Locally a clayey sand. 3.00 D N19 4.3/ 3.5/5.5 Staff dark grey and brown motifed very sandy shelly CLAY. Locally a clayey sand. 3.00 N N9 4.3/ 3.5/5.5 Staff dark grey and brown motifed very sandy shelly CLAY. Locally a clayey sand. 3.00 N N9 4.3/ 3.5/5.5 Staff dark grey and brown motifed very sandy clay. (OOLITE GROUP) 2.40 Staff dark grey and brown motifed very sandy CLAY. (OOLITE GROUP) 3.00 N N8 8.8/ 8.7/8.7 Staff dark grey and brown motifed very sandy CLAY. (OOLITE GROUP) 2.40 Staff dark grey and brown motifed very sandy CLAY. (OOLITE GROUP) Staff dark grey and brown motifed very sandy CLAY. (OOLITE GROUP) 3.00 N30 N30 Staff dark grey and brown motifed very sandy shelly CLAY. (OOLITE GROUP) Staff dark grey and brown motifed very sandy clay. (OOLITE GROUP) 4.45 Staff dark grey and brown motifed very sandy shelly clay. Comparison of the transport of | Depth | Type No | Tes Resi | st ilt | Wat | Reduced Level | Legend | Depth (Thick- ness) | | | | DESCH | RIPTION | | | Geolog | Instrun Backfi |
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| 2.40 FS 3.34/2 3.34.5 Image: Constraint of the second secon | 2.00 | | N1 | 5 | | | <u> </u> | - 2.00 | Very | v stiff d | ark grey v | ery sandy sl | helly CLAY | . Locally a c | clayey sand. | | |
| 2.40 ES Image: Constraint of the set o | - | | 3,3 3,3,4 | 4,5 | 1 | | | (0.50) | (00) | LITE C | GROUP) | | | | | | |
| 3.00 D N19 4.37 3.56.5 | 2.40 | ES | | - | <u>.</u> | | | | Stiff | dark g | rey and br | own mottled | d very sand | y CLAY. (O | OLITE | | |
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| A00 143/3 3.5.6.5 8.W 8.7.8.7 1 1 1 Medium dense light gey slightly silty fine SAND. (OOLITE GROUP) 4.45 Boring Progress and Water Observations Date 4.45 1 1 1 Boring Progress and Water Observations Date Chiselling Water Added GENERAL REMARKS Date Time Depth Depth Depth Depth From To Hours From To All dimensions in metres Scale 1:50 Client Rectory Homes Ltd Method/ Plant Used Dynamic Sampling Rig Logged By JT | - 3.00 | D | NI | 9 | | | | -(1.00) | | | | | | | | | |
| 4.00 N30 8.87 8.7.8.7 | 5.00 | | 4,3 | 1 | | | | 3.50 | | | | | | | | | 目 |
| 4.00 N30 8.87 8.7.8,7 N30 8.97 8.7.8,7 | - | | 5,5,0 | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | | -: <u>-</u> : | 1 [| Med | Medium dense light grey slightly silty fine SAND. (OOLITE GROU | | | | | | | |
| 4.00 8.80 8.7.8.7 Image: Constraint of the second sec | | | NO | | | | | (0.95) | | | | | | | | | |
| Boring Progress and Water Observations Chiselling Water Added Boring Progress and Water Observations Chiselling Water Added Date Time Depth Depth Dia, mm Water From To Hours From To Gas and groundwater monitoring pipework installed. All dimensions in metres Scale 1:50 Client Rectory Homes Ltd Method/ Plant Used Dynamic Sampling Rig Logged By | 4.00 | | N3 8,8 | V | | | $\overline{\overline{}}$ | | | | | | | | | | |
| Boring Progress and Water Observations Chiselling Water Added Date Time Depth Depth From To Hours From To Image: Solution of the solu | - | | 8,7,8 | 3,7 | | | | <u>- 4.45</u> | | | | | | | | | - |
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| Date Time Depth Depth Dia. mm Water Dpt From To Hours From To REMARKS All dimensions in metres Scale 1:50 Client Rectory Homes Ltd Method/ Method/ Method/ Image: Scale 1:50 Logged By | Bor | ing Pro | ogress | and | Wa | ater Ob | servati | ons | | (| Chisellin | g | Water | Added | GENE | RAI | |
| All dimensions in metres Scale 1:50 Client Rectory Homes Ltd Method/ Plant Used Method/ Plant Used Logged By Dynamic Sampling Rig Logged By JT | Date | Time | De | pth | D | Casir enth 1 | ig Dia mm | Water Dpt | Fi | rom | То | Hours | From | То | REMA | RKS | |
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| All dimensions in metres Scale 1:50 Client Rectory Homes Ltd Method/ Plant Used Dynamic Sampling Rig Logged By JT | | | | | | | | | | | | | | | monitoring pipe installed. | ework | |
| All dimensions in metres Scale 1:50 Client Rectory Homes Ltd Method/ Plant Used Method/ Plant Used Logged By JT | | | | | | | | | | | | | | | | | |
| All dimensions in metres Scale 1:50 Client Rectory Homes Ltd Method/ Plant Used Dynamic Sampling Rig Logged By JT | | | | | | | | | | | | | | | | | |
| All dimensions in metres Scale 1:50 Client Rectory Homes Ltd Method/ Plant Used Dynamic Sampling Rig Logged By JT | | | | | | | | | | | | | | | | | |
| All dimensions in metres Scale 1:50 Ctient Rectory Homes Ltd Method/ Plant Used Dynamic Sampling Rig JT | | | | | at | | | | | M 1 | | | | | Lagard D | | |
| | All dimensions in metres Scale 1:50 Client Rectory Homes Ltd Method/ Plant Used Dynamic Sampling Rig JT | | | | | | | | | | | | | | | | |

| BOREHOLE LOC | j |
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| Southside, Steeple Aston Job No BC340 Date Ground Level (m) Co-Ordinates () Sheet Southside, Steeple Aston BC340 14-12-17 Contractor Brownfield Consultancy Ltd STRATA Depth Type Type Test Result Reduced Legend 0.50 HV 80kPa 1.00 D Ni5 1.50 N50220mm 9.25/ 27,14,9 1.50 N50220mm 9.25/ 1.50 No further progress. CPT driven. | | | | | |
|---|-----------------|--|--|--|--|
| Job No Date Ground Level (m) Co-Ordinates () BC340 14-12-17 Sheet Contractor Sheet 1 of SAMPLES & TESTS Image: Consultancy Ltd Strata Depth Type Test Image: Consultancy Ltd Strata 0.50 HV 80kPa Image: Consultancy Ltd Ground Level (m) Co-Ordinates () 1.00 D Nis Consultancy Ltd Consultancy Ltd Stiff borown slightly sandy slightly gravelly CLAY. Gravel is 1.00 D Nis Consultancy Ltd Consultancy Ltd Consultancy Ltd 1.00 D Nis Consultancy Ltd Consultancy Ltd Consultancy Ltd 1.00 D Nis Consultancy Ltd Consultancy Ltd Consultancy Ltd 1.00 D Nis Consultancy Ltd Consultancy Ltd Consultancy Ltd 1.00 D Nis Consultancy Ltd Consultancy Ltd Consultancy Ltd 1.00 D Nis Consultancy Ltd Consultancy Ltd Consultancy Ltd 1.00 D Nis Consultancy Ltd Consultancy Ltd Consultancy Ltd 1.00 Consultancy Ltd Consultancy Ltd Consultancy Ltd Consultanc | | | | | |
| BC340 14-12-17 Contractor Sheet Brownfield Consultancy Ltd 1 of SAMPLES & TESTS Educed Legend (Thick-ness) Depth (Thick-ness) Depth Type (Test Result) Educed Legend (Thick-ness) DESCRIPTION 0.50 HV 80kPa Subargiant file to medium limestone. (OOLTE GROUP) 1.00 D N15 1.00 N15 1.50 1.50 N50/220mm 1.50 1.50 N50/220mm No further progress. CPT driven. | | | | | |
| Sided Brownfield Consultancy Ltd I of SAMPLES & TESTS Sector Topsol Depth Type Test Beduced Depth Depth Type Test Beduced Depth Colspan="2">STRATA 0.50 HV 80kPa Stiff brown slightly sandy slightly gravelly CLAY. Gravel is subangular fine to medium limestone. (OOLITE GROUP) Stiff brown slightly sandy shelly CLAY. Locally very shelly. (OOLITE GROUP) 1.00 D N15 1.50 1.50 N50/220mm 1.50 No further progress. CPT driven. | | | | | |
| Solume a constraint y Eu SAMPLES & TESTS Depth Type Test Educed Depth 0.50 HV 80kPa Stiff burn slightly sandy slightly gravelly CLAY. Gravel is subangular fine to medium limestone. (OOLTTE GROUP) 0.50 HV 80kPa 1.00 D 1.00 D 1.50 N50/220mm 9.25/ 27,14.9 | | | | | |
| SIRATA Depth Type Test Result Depth Depth Depch 0.50 HV 80kPa 0.30 Grass over TOPSOIL. (TOPSOIL) 0.50 HV 80kPa 0.30 Stiff brown slightly sandy slightly gravelly CLAY. Gravel is subangular fine to medium limestone. (OOLTTE GROUP) 1.00 D N15 0.30 Stiff buff brown very sandy shelly CLAY. Locally very shelly. (OOLTTE GROUP) 1.50 N50/220mm 9.25/ 27,14,9 1.50 | | | | | |
| Depth Type No Test Result Reduced Level Legend (Thick- ness) Grass over TOPSOIL. (TOPSOIL) 0.50 HV 80kPa 0.30 0.30 0.30 0.50 HV 80kPa 0.50 Stiff brown slightly sandy slightly gravelly CLAY. Gravel is subangular fine to medium limestone. (OOLITE GROUP) 1.00 D N15 0.30 1.50 N15 0.30 2.3/ 3.4,5.3 0.150 NS0/220mm 9.225/ 27,14.9 | men | | | | |
| 0.50 HV 80kPa 1.00 D 1.00 D 1.00 N15 2.3/ 3.45.3 1.50 N50/220mm 9.25/ 27,14.9 No further progress. CPT driven. | Instru Rackf | | | | |
| 0.50 HV 80kPa 1.00 D 1.00 N115 2.3/ 3.4,5,3 1.50 9.25/ 27,14,9 No further progress. CPT driven. | | | | | |
| 0.50 HV 80kPa 1.00 D 1.00 N15 2.3/ 3.4,5,3 1.50 N50/220mm 9,25/ 27,14,9 No further progress. CPT driven. | | | | | |
| 1.00 D N15 2.3/ 3.4,5,3 1.50 9.25/ 27,14,9 No further progress. CPT driven. | | | | | |
| 1.00 N15 2.3/ 3.4,5,3 N50/220mm 9.25/ 27,14,9 No further progress. CPT driven. | | | | | |
| 1.50 3,4,5,3 N50/220mm No further progress. CPT driven. 9,25/ 27,14,9 - - | | | | | |
| 1.50 N50/220mm 9.25/ 27,14,9 | <u> ⊟</u> . | | | | |
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| Boring Progress and Water Observations Chiselling Water Added GENER | | | | | |
| Date Time Depth Casing Depth Water Dia From To Hours From To | 5 | | | | |
| Gas and groundwa | ſ | | | | |
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| All dimensions in metres Scale 1:50 Client Rectory Homes Ltd Method/ Plant Used Dynamic Sampling Rig JT | | | | | |

DYNAMIC PROBE LOG

| Project | ne: 0/852881086 | | | | | | | | | |
|--|-----------------|------------------|------------------|---------------|------|----------------|--------------------|--|--|--|
| Southside, Steeple As | ton | | | | | | DD1 | | | |
| Job No Date | | Ground Level (n | n) Co | -Ordinates () | | | DET | | | |
| BC340 | 14-12-17 | | | | | | | | | |
| Contractor | T , 1 | | | | | | Sheet | | | |
| Brownfield Consultan | | | | | | 1 | 1 of 1 | | | |
| Depth Readings (m) (blows/100mm) | 5 | Diagram (N 10 | 100 Valu 15 2 | les) 20 2. | 5 30 | Torque (Nm) | Remarks | | | |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | | | | | | | | | | |
| Hammer Wt (kg) | 63.5 | | | | | | GENERAL REMARKS | | | |
| Hammer Drop (mm) | 760 | | | | | | KLIVIAKKS | | | |
| Cone Dia (mm) | 50.5 | - | | | | | | | | |
| G Cone Type Fixed B Damper | | | | | | | | | | |
| All dimensions in metres Scale 1:50 Client Rectory Homes Ltd Plant Used Dynamic Sampling Ri | | | | | | | logged By JT | | | |

DYNAMIC PROBE LOG

| Project | oject | | | | | | | | | | | PROBE No |
|---|---|---|----------|--|---------------|-----------------|-------------|-------------|--------|----|---------------|-----------|
| Sout | thside, Stee | ple As | ton | | | | | | | | | 290 |
| Job No | | Date | | | Ground Le | vel (m) |) | Co-Ordina | tes () | | | |
| BC3 | 340 | | 14-12-17 | | | | | | | | | |
| Contractor | C 11 C | 1. | T / 1 | | | | | | | | | Sheet |
| Brov | whiteld Cor | isuitar | | | | | | | | | 1 | 1 01 1 |
| Depth (m) (| Readin blows/100 | gs)mm) | 5 | | Diagrai 10 | m (N 1 | 100 Va 5 | lues) 20 | 25 | 30 | Torqu (Nm) | e Remarks |
| - 1 - 2 - 3 - 4 - 5 - 6 - 81721 1001 ESEM 015 - 7 - 7 - 7 - 7 - 7 | $ \begin{array}{cccccccccccccccccccccccccccccccccccc$ | 1 1 3 10 5 4 2 3 4 4 2 5 | | | | | | | | | | |
| Hammer | Wt (kg) | | 63.5 | | | | | | | | | GENERAL |
| Hammer | Drop (mm) | | 760 | | | | | | | | | NLWARRS |
| | (mm) | | 50.5 | | | | | | | | | |
| Cone Typ | Cone Type Fixed | | | | | | | | | | | |
| | | | | | | | | | | | | |
| All dimensions in metres Scale 1:50ClientRectory Homes LtdMethod/ Plant UsedIImage: Plant Used Dynamic Sampling RigImage: Plant Used Dynamic Sampling RigImage: Plant Used Dynamic Sampling RigImage: Plant Used Dynamic Sampling Rig | | | | | | Logged By JT | | | | | | |

DYNAMIC PROBE LOG

| Project | ect | | | | | | | | | |
|---|--|----------|---------------|-----------------|---------------|---------|----------------|----------------|--------------------|--|
| Southside, S | teeple A | ston | | | | | | | DP3 | |
| Job No | Date | 14 10 17 | Ground Lev | vel (m) | Co-Ordina | ites () | | | 210 | |
| BC340 | | 14-12-17 | | | | | | | Sheet | |
| Brownfield | Consulta | nev Ltd | | | | | | | 1 of 1 | |
| Diowiniera | consultu | | | | | | | | 1 01 1 | |
| Depth Rea (m) (blows/ | lings 100mm |) 5 | Diagran 10 | n (N100) 15 | Values) 20 | 25 | 30 | Torque (Nm) | Remarks | |
| $ \begin{array}{cccccccccccccccccccccccccccccccccccc$ | 0 1 2 1 3 5 3 4 18 16 5 4 7 8 10 11 | | | | | | | | | |
| Hammer Wt (kg) | | 63.5 | | | | | | | GENERAL REMARKS | |
| Hammer Drop (n | ım) | 760 | | | | | | | NLWAKKO | |
| Cone Dia (mm) | | 50.5 | _ | | | | | | | |
| Damper | | Fixed | | | | | | | | |
| Damper Method/ All dimensions in metres Client Rectory Homes Ltd Scale 1:50 Plant Used Dynamic Sampling Rig | | | | | | | ogged By JT | | | |

DYNAMIC PROBE LOG

| Project | | | PROBE No | | | | | | | |
|--|--|---------|----------|----------------|--------|------------|----------------|---------|--------|--------------------|
| So | uthside, Stee | ple As | ton | | | | | | | DP4 |
| Job No | 7240 | Date | 14 10 17 | Ground Level (| (m) | Co-Ordinat | tes () | | | |
| Contractor | | | 14-12-17 | | | | | | | Sheet |
| Bro | ownfield Co | nsultar | ncv Ltd | | | | | | | 1 of 1 |
| Depth | Readin | gs | | Diagram (| N100 V | alues) | | | Torque | Demortes |
| (m) | (blows/100 | 0mm) | 5 | 10 | 15 | 20 | (Nm) | Remarks | | |
| | 0 0 0 | | | | | | | | | |
| | 0 | 0 0 | | | | | | | - | |
| | $\begin{bmatrix} 0 & 1 \\ & 1 & 0 \end{bmatrix}$ | | | | | | | | - | |
| - 1 | 1 | 1 1 | | | | | | | - | |
| F | 2 1 | 3 | | | | | | | - | |
| - | 50 | 11 | | | | | | 50 | - | |
| F a | | | | | | | | İ | - | |
| F 2 | | | | | | | | İ | | |
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| - | | | | | | | | | - | |
| - 3 | | | | | | | | | - | |
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| - | | | | | | | | | - | |
| | | | | | | | | | - | |
| - 4 | | | | | | | | | | |
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| - 5 | | | | | | | | | | |
| E | | | | | | | | | - | |
| - | | | | | | | | | - | |
| | | | | | | | | | - | |
| - 0 | | | | | | | | | - | |
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| | | | | | | | | İ | - | |
| 7 | | | | | | | | İ | - | |
| GDT | | | | | | | | | - | |
| 20 | | | | | | | | | - | |
| | | | | | | | | | | |
| Hammer | r Wt (kg) | | 63.5 | | | | | | | GENERAL REMARKS |
| ig Hammer | r Drop (mm) |) | 760 | | | | | | | |
| Cone Di | a (mm) | | 50.5 | | | | | | | |
| Cone Ty | pe | | Fixed | | | | | | | |
| Damper | | | | | | | | | | |
| All dimensions in metres Scale 1:50 Client Rectory Homes Ltd Method/ Plant Used Dynamic Sampling Rig | | | | | | L | ogged By JT | | | |

DYNAMIC PROBE LOG

| Project | 02001000 | | PROBE No | | | | | | | |
|-------------|---|---------|----------|-----------|----------|------------------|----------|----------|--------|--------------------|
| So | uthside, Stee | ple As | ston | | | | | | | DD5 |
| Job No | | Date | | Ground Le | evel (m) | Co-Ordina | ites () | | | DFJ |
| B | C340 | | 14-12-17 | | | | | | | |
| Contractor | r C 11C | 1. | T (1 | | | | | | | Sheet |
| Br | ownfield Co | nsultar | | | | | | | | 1 of 1 |
| Depth | Readin | gs | | Diagra | m (N100 | Values) | | | Torque | |
| (m) | (blows/10 | Ĵmm) | 5 | 10 | 15 | 20 | 25 | 30 | (Nm) | Remarks |
| - | 0 0 | | | | | | | | - | |
| - | 1 | 0 1 | | | | | | | | |
| - | 1 0 1 | 1 | | | | | | İ | | |
| - | | 1 0 | | | | | | ļ | - | |
| | $\begin{bmatrix} 2 & 1 \\ & 1 & 1 \end{bmatrix}$ | _ | | | | | | | | |
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| - | 11 6 | 4 | | | | | | ļ | - | |
| - 2 | 2 3 | 3 | | | | | | | | |
| - | 2 | 2 3 | | | | | | | | |
| | $\begin{bmatrix} 2 & & \\ & 2 & & \\ & & 3 & \end{bmatrix}$ | 5 | | | | | | | | |
| - 3 | 1 | 3 3 | | | | | | | | |
| | ⁴ ³ ₂ | 2 | | | | | | Ì | | |
| | 2 2 | 2 | | | | | | İ | | |
| - | 3 6 | 8 | | | | | | į | | |
| - 4 | 4 4 | 9 | | | | | | ļ | | |
| E E | 4 | 5 5 | | | | | | | | |
| - | $\begin{bmatrix} 5 & & \\ & 3 & \\ & & 3 \end{bmatrix}$ | _ | | | | | | ļ | | |
| - 5 | 6 | 3 3 | | | | | | ļ | - | |
| - | 7 5 | 4 | | | | | | | - | |
| - | 3 3 | . 4 | | | | | | | - | |
| | 3 | 5 2 | | | | | | | | |
| - 6 | 6 6 | 2 | | | | | | | - | |
| - | | 4 4 | | | | | | İ | | |
| - - - | 4 4 4 | 4 | | | | | | į | | |
| 7 | | 4 4 | | | | | | į | - | |
| GDT | | | | | | | | ļ | | |
| S3 1 | | | | | | | | ļ | | |
| | | | | | | | | | | |
| Hamme | r Wt (kg) | | 63.5 | | | | | | | GENERAL REMARKS |
| B Hamme | r Drop (mm |) | 760 | | | | | | | |
| Cone Di | ia (mm) | | 50.5 | _ | | | | | | |
| Cone Ty | ype | | Fixed | _ | | | | | | |
| Damper | | | | | Γ_ | | | | | |
| All dimer | All dimensions in metres Scale 1:50 Client Rectory Homes | | | | | d/ Used Dynan | nic Samp | ling Rig | L | ogged By JT |

DYNAMIC PROBE LOG

| Project | Project | | | | | | | | | |
|--|---|---------------------|------------------|---------------|----------------|-------|---------------|--------------------|--|--|
| Southsid | e, Steeple As | ston | | | | | | DDG | | |
| Job No | Date | | Ground Level (r | n) | Co-Ordinates (|) | | DFU | | |
| BC340 | | 14-12-17 | | | | | | | | |
| Contractor | 110 1 | T . 1 | | | | | | Sheet | | |
| Brownfie | eld Consulta | ncy Ltd | | | | | | l of l | | |
| Depth R (m) (blow | (eadings ws/100mm) |) 5 | Diagram (N 10 | N100 Va 15 | lues) 20 2 | 25 30 | Torqu (Nm) | e Remarks | | |
| $= 1 \qquad 1 \qquad 0 \qquad 0 \qquad 0 \qquad 0 \qquad 0 \qquad 0 \qquad 0 \qquad 0 \qquad$ | 1 1 1 1 0 1 2 7 9 kg) 1 1 i 0 1 i 0 1 i 2 7 9 kg) 1 1 i 0 1 i 0 (mm) n) 1 1 | 63.5 760 50.5 | | | | | 0 | GENERAL REMARKS | | |
| S Cone Type | | 11120 | - | | | | | | | |
| | n metros Clie | ent Rectory U | mes I td | Method/ | | | | Logged By | | |
| All dimensions in metres Scale 1:50 Client Rectory Homes Ltd Method/ Plant Used Dynamic Sampling Rig | | | | | | JT | | | | |

APPENDIX C

Chemical Laboratory Results



Jim Twaddle The Brownfield Consultancy Woodstock Memorial Road Fenny Compton Warwickshire CV47 2XU



i2 Analytical Ltd. 7 Woodshots Meadow, Croxley Green Business Park, Watford, Herts, WD18 8YS

t: 01923 225404 f: 01923 237404 e: reception@i2analytical.com

e: jim.twaddle@brownfieldconsultancy.co.uk

Analytical Report Number : 17-71017

| Project / Site name: | Steeple Aston | Samples received on: | 15/12/2017 |
|----------------------|---------------------------------|------------------------|------------|
| Your job number: | BC340 | Samples instructed on: | 15/12/2017 |
| Your order number: | | Analysis completed by: | 28/12/2017 |
| Report Issue Number: | 1 | Report issued on: | 28/12/2017 |
| Samples Analysed: | 1 bulk sample - 21 soil samples | | |



Jordan Hill Reporting Manager For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

| soils | 4 weeks from reporting |
|-----------|--|
| leachates | 2 weeks from reporting |
| waters | - 2 weeks from reporting |
| asbestos | - 6 months from reporting |

Excel copies of reports are only valid when accompanied by this PDF certificate.





| Sample Reference 174 175 177 177 178 Beagh (m) 0.0 0.00 1.00 1.00 0.00 0.00 Beagh (m) 0.0 0.00 1.00 1.00 0.00 0.00 Beagh (m) 0.0 1.00 1.00 1.00 0.00 0.00 0.00 Beagh (m) 0.00 1.01/2001 1.01/2001 1.01/2001 0.01 0.00 0.00 Store Content 50 0.1 0.00 1.00 0.0 0.00 | Lab Sample Number | | | | 877644 | 877645 | 877646 | 877647 | 877648 |
|--|--|----------|-----------------------|-----------------------|---------------|---------------|---------------|---------------|---------------|
| Sample Number None Supplied None Sup | Sample Reference | | | | TP4 | TP5 | TP6 | TP7 | TP8 |
| Depth (m) 0.0 1.00 1.00 1.00 1.00 0.00 0.00 Bete Sampled 13/12/017 13/12/017 13/12/017 13/12/017 13/12/017 Time Taken Nore Supplied Nore Supplied Nore Supplied Nore Supplied Nore Supplied Analytical Parameter (solid natypes) G g < | Sample Number | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Date Sampled Trial Table Trial Table Trial Table None Supplied None Supplied None Supplied None Supplied Analytical Parameter (soil Analysis) gr gr gr gr gr gr gr gr gr gr gr gr gr g | Depth (m) | | | | 0.20 | 1.00 | 1.20 | 0.10 | 0.10 |
| Time Trainen None Supplied None Suplied None Supplied None Suppl | Date Sampled | | | | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 |
| Analytical Parameter (Soil Analysis) gr of g | Time Taken | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter (\$01 Analysis) gr | | | | A | | | | | |
| Stane Content % 0.1 NORE < 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 | Analytical Parameter (Soil Analysis) | Units | Limit of detection | creditation Status | | | | | |
| Moisture Content % N/A NORe 18 13 6.6 15 19 Asbeatos in Soll Screen / Identification Name Type N/A ISO 17025 -< | Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Total mass of sample received top 0.001 NOME 0.41 0.45 0.39 0.40 0.44 Asbestos in Soil Soreen / Identification Name Type N/A ISO 17025 - - Not-detected - Asbestos in Soil Soreen / Identification Name Type N/A ISO 17025 - - Not-detected - General Inorganics - | Moisture Content | % | N/A | NONE | 18 | 13 | 6.6 | 15 | 19 |
| Achestos in Soil Soreen / Identification Name Type N/A ISO 17025 Asbestos in Soil Type N/A ISO 17025 . . NOL-detected . General Longanics pt Units N/A MCRTS . . 0.134 . . Bit Automated Stophate as SO, 16hr extraction (2:1) mages 2.5 MCRTS . | Total mass of sample received | kg | 0.001 | NONE | 0.41 | 0.45 | 0.39 | 0.40 | 0.46 |
| Asbestos in Soll Type N/A ISO 17025 - - Not detected General Longanies pt Jubros Sol, 16h extraction (2:1) mg/kg 0.005 MCERTS - 0.134 - - Total Subplate as SO, 16h extraction (2:1) mg/kg 2.5 MCERTS - - 0.134 - - Water Solube Solubin extraction (2:1) mg/kg 2.5 MCERTS - - 0.014 - - Equivalent) gl 0.00125 MCERTS - - 0.014 - - Speciated PAHs mg/kg 0.05 MCERTS - 0.053 - - Speciated PAHs mg/kg 0.05 MCERTS - 0.05 < | Asbestos in Soil Screen / Identification Name | Туре | N/A | ISO 17025 | - | - | - | - | - |
| General Inorganics pt - utures N/A MCRRTS · · 8.7 · | Asbestos in Soil | Туре | N/A | ISO 17025 | - | - | - | Not-detected | - |
| General Inorganics PH Lats N/A MCERTS - - 8.7 - < | | | | | | | | | |
| $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | General Inorganics | | | | | | 0.7 | | |
| $ \begin{array}{c} 1 \ \mbox{cm} \mbo$ | pH - Automated | pH Units | N/A | MCERTS | - | - | 8.7 | - | - |
| Water Soluble Subjets as SQ, 16hr extraction (2:1) m_{R}/q 2.5 MERTS . Station of the extraction (| Total Sulphate as SO ₄ | % | 0.005 | MCERTS | - | - | 0.134 | - | - |
| Equivalent) 0.00125 MCERTS - 0.014 - - Equivalent) mg/l 1.25 MCERTS - 1.3.5 - - Total Sulphur % 0.005 MCERTS - 0.053 - - Speciated PAHs - 0.055 < 0.05 | Water Soluble Sulphate as SO₄ 16hr extraction (2:1) Water Soluble SO4 16hr extraction (2:1 Leachate | mg/kg | 2.5 | MCERTS | - | - | - | - | - |
| Water Soluble SO4 16hr extraction (2:1 Leachate mg/l 1.25 MCERTS . . 1.3.5 . . Total Sulphur % 0.005 MCERTS . 0.053 . . Speciated PAHS . . 0.05 < 0.05 | Equivalent) | g/l | 0.00125 | MCERTS | - | - | 0.014 | - | - |
| Display India Display ay< th=""> <thdisplay< th=""> <thdis< td=""><td>Water Soluble SO4 16hr extraction (2:1 Leachate</td><td>ma/l</td><td>1 25</td><td>MCEDTS</td><td>_</td><td>_</td><td>13.5</td><td>_</td><td></td></thdis<></thdisplay<></thdisplay<> | Water Soluble SO4 16hr extraction (2:1 Leachate | ma/l | 1 25 | MCEDTS | _ | _ | 13.5 | _ | |
| Speciated PAHs Naphthalene mg/kg 0.05 MCERTS < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < | Total Sulphur | % | 0.005 | MCERTS | - | - | 0.053 | - | - |
| Speciated PAHs Speciated PAHs mg/kg 0.05 MCERTS < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 <td>· · · · · · · · · · · · · · · · · · ·</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> | · · · · · · · · · · · · · · · · · · · | | | | | | | | |
| Naphthalene mg/kg 0.05 MCERTS < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0. | Speciated PAHs | | | | | | | | |
| Acenaphthylene mg/kg 0.05 MCERTS < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < | Naphthalene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | - |
| Acenaprifiene mg/kg 0.05 MCERTS < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < | Acenaphthylene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | - |
| $ \begin{array}{c c c c c c c c c c c c c c c c c c c $ | Acenaphthene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | - |
| $\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$ | Phenanthrone | mg/kg | 0.05 | MCEDTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | - |
| $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | Anthracene | ma/ka | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | - |
| Pyrene mg/kg 0.05 MCERTS < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 <td>Fluoranthene</td> <td>ma/ka</td> <td>0.05</td> <td>MCERTS</td> <td>< 0.05</td> <td>< 0.05</td> <td>< 0.05</td> <td>< 0.05</td> <td>-</td> | Fluoranthene | ma/ka | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | - |
| Benzo(a)anthracene mg/kg 0.05 MCERTS < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < | Pyrene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | - |
| $\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$ | Benzo(a)anthracene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | - |
| Benzo(b)fluoranthene mg/kg 0.05 MCERTS < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 | Chrysene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | - |
| Benzo(k)fluoranthene mg/kg 0.05 MCERTS < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 | Benzo(b)fluoranthene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | - |
| Benzo(a)pyrene mg/kg 0.05 MCERTS < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < | Benzo(k)fluoranthene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | - |
| Inden(1,2,3-cd) pyrene mg/kg 0.05 MCERTS < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 <th< td=""><td>Benzo(a)pyrene</td><td>mg/kg</td><td>0.05</td><td>MCERTS</td><td>< 0.05</td><td>< 0.05</td><td>< 0.05</td><td>< 0.05</td><td>-</td></th<> | Benzo(a)pyrene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | - |
| Diberiz(a)right indicate in the gray of the second secon | Dibona(1,2,3-cd)pyrene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | - |
| Total PAH Speciated Total EPA-16 PAHs Marking 0.8 MCERTS < 0.80 | Benzo(abi)pervlene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | - |
| Total PAH Speciated Total EPA-16 PAHs mg/kg 0.8 MCERTS < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 | benzo(gni)per yene | mg/kg | 0.05 | HELKIS | x 0.05 | < 0.05 | 0.05 | < 0.05 | |
| Speciated Total EPA-16 PAHs mg/kg 0.8 MCERTS < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 < 0.80 | Total PAH | | | | | | | | |
| Heavy Metals / Metalloids Arsenic (aqua regia extractable) mg/kg 1 MCERTS 14 - - 12 15 Boron (water soluble) mg/kg 0.2 MCERTS 1.3 - - 1.7 1.6 Cadmium (aqua regia extractable) mg/kg 0.2 MCERTS - - < | Speciated Total EPA-16 PAHs | mg/kg | 0.8 | MCERTS | < 0.80 | < 0.80 | < 0.80 | < 0.80 | - |
| Arsenic (aqua regia extractable) mg/kg 1 MCERTS 14 - - 12 15 Boron (water soluble) mg/kg 0.2 MCERTS 1.3 - - 1.7 1.6 Cadmium (aqua regia extractable) mg/kg 0.2 MCERTS <.0.2 | Heavy Metals / Metalloids | | | | | | | | |
| Boron (water soluble) mg/kg 0.2 MCERTS 1.3 - - 1.7 1.6 Cadmium (aqua regia extractable) mg/kg 0.2 MCERTS < 0.2 | Arsenic (aqua regia extractable) | mg/kg | 1 | MCERTS | 14 | - | - | 12 | 15 |
| Cadmium (aqua regia extractable) mg/kg 0.2 MCERTS < 0.2 - - < 0.2 < 0.2 < 0.2 Chromium (hexavalent) mg/kg 4 MCERTS - <t< td=""><td>Boron (water soluble)</td><td>mg/kg</td><td>0.2</td><td>MCERTS</td><td>1.3</td><td>-</td><td>-</td><td>1.7</td><td>1.6</td></t<> | Boron (water soluble) | mg/kg | 0.2 | MCERTS | 1.3 | - | - | 1.7 | 1.6 |
| Chromium (hexavalent) mg/kg 4 MCERTS - <th< td=""><td>Cadmium (aqua regia extractable)</td><td>mg/kg</td><td>0.2</td><td>MCERTS</td><td>< 0.2</td><td>-</td><td>-</td><td>< 0.2</td><td>< 0.2</td></th<> | Cadmium (aqua regia extractable) | mg/kg | 0.2 | MCERTS | < 0.2 | - | - | < 0.2 | < 0.2 |
| Chromium (III) mg/kg 1 NONE - | Chromium (hexavalent) | mg/kg | 4 | MCERTS | - | - | - | - | - |
| Chromium (aqua regia extractable) mg/kg 1 MCERTS 21 - - 16 25 Copper (aqua regia extractable) mg/kg 1 MCERTS 21 - - 14 15 Lead (aqua regia extractable) mg/kg 1 MCERTS 32 - - 26 29 Mercury (aqua regia extractable) mg/kg 0.3 MCERTS < | Chromium (III) | mg/kg | 1 | NONE | - | - | - | - | - |
| Lead (aqua regia extractable) mg/kg 1 MCERTS 21 - - 14 15 Lead (aqua regia extractable) mg/kg 1 MCERTS 32 - - 26 29 Mercury (aqua regia extractable) mg/kg 0.3 MCERTS - - 26 29 Nickel (aqua regia extractable) mg/kg 1 MCERTS - - <0.3 | Chromium (aqua regia extractable) | mg/kg | 1 | MCERTS | 21 | - | - | 16 | 25 |
| Lead (aqua regia extractable) mg/kg 1 MCERTS 32 - - 2b 29 Mercury (aqua regia extractable) mg/kg 0.3 MCERTS < 0.3 | Lopper (aqua regia extractable) | mg/kg | 1 | MCERTS | 21 | - | - | 14 | 15 |
| Intercury (aqua regia extractable)mg/kgU.3MCERTS< U.3< (U.3)< (U.3)Nickel (aqua regia extractable)mg/kg1MCERTS139.813Selenium (aqua regia extractable)mg/kg1MCERTS z 9.813 | Leau (aqua regia extractable) | mg/kg | 1 | MCERTS | 32 | - | - | 26 | 29 |
| $\frac{1}{2} \frac{1}{2} Nickel (aqua regia extractable) | mg/kg | 0.3 | MCEDIS | < 0.3 13 | - | - | < U.3 9.8 | < 0.3 13 |
| | Selenium (aqua regia extractable) | mg/kg | 1 | MCERTS | < 1.0 | - | - | < 1.0 | < 1.0 |
| Zinc (aqua regia extractable) mg/kg 1 MCERTS 48 38 45 | Zinc (aqua regia extractable) | mg/kg | 1 | MCERTS | 48 | - | - | 38 | 45 |





Project / Site name: Steeple Aston

| Lab Sample Number | | | | 877644 | 877645 | 877646 | 877647 | 877648 |
|---|-------|-----------------------|-------------------------|---------------|---------------|---------------|---------------|---------------|
| Sample Reference | | TP4 | TP5 | TP6 | TP7 | TP8 | | |
| Sample Number | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied | | |
| Depth (m) | | 0.20 | 1.00 | 1.20 | 0.10 | 0.10 | | |
| Date Sampled | | | | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 |
| Time Taken | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter (Soil Analysis) | Units | Limit of detection | Accreditation Status | | | | | |

Petroleum Hydrocarbons

| | | · | | | | | | |
|--------------------------------------|-------|-----|--------|---|-------|---|---|---|
| TPH C10 - C40 | mg/kg | 10 | MCERTS | - | - | - | - | - |
| | | | | | | | | |
| TPH5 (C6 - C10) | mg/kg | 0.1 | MCERTS | - | < 0.1 | - | - | - |
| TPH5 (C10 - C20) | mg/kg | 10 | MCERTS | - | < 10 | - | - | - |
| TPH5 (C20 - C30) | mg/kg | 10 | NONE | - | < 10 | - | - | - |
| TPH5 (C30 - C40) | mg/kg | 10 | NONE | - | < 10 | - | - | - |
| TPH5 (C6 - C40) | mg/kg | 10 | NONE | - | < 10 | - | - | - |
| | | | | | | | | |
| Pesticide and Herbicide Screen | | | | | | | | |
| Pesticides/Herbicides Screen in Soil | P/A | N/A | NONE | - | - | - | - | - |





| ab Sample Number | | | | 877640 | 877650 | 877651 | 877652 | 877653 |
|---|-----------|-----------------------|-------------------------|---------------|---------------|---------------|---------------|---------------|
| Sample Reference | | | | TP8 | TP10 | TP10 | TP12 | TP12 |
| Sample Number | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m) | | | | 0.50 | 0.10 | 0.85 | 0.45 | 0.50 |
| Date Sampled | | | | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 |
| Time Taken | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| | | | Þ | | | | | |
| Analytical Parameter (Soil Analysis) | Units | Limit of detection | occreditation Status | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Moisture Content | % | N/A | NONE | 8.3 | 26 | 12 | 17 | 15 |
| Total mass of sample received | kg | 0.001 | NONE | 0.17 | 0.32 | 0.43 | 0.38 | 1.0 |
| | - | | | | - | | | |
| Asbestos in Soil Screen / Identification Name | Туре | N/A | ISO 17025 | - | - | - | - | - |
| Asbestos in Soil | Туре | N/A | ISO 17025 | - | - | - | - | - |
| | | | | | | | | |
| General Inorganics | | | | | | | | |
| pH - Automated | pH Units | N/A | MCERTS | - | - | 8.5 | - | 8.5 |
| Total Sulphate as SO ₄ | % | 0.005 | MCERTS | - | - | 0.140 | - | 0.144 |
| Water Soluble Sulphate as SO₄ 16hr extraction (2:1) Water Soluble SO4 16hr extraction (2:1 Leachate | mg/kg | 2.5 | MCERTS | - | - | - | - | - |
| Equivalent) | g/l | 0.00125 | MCERTS | - | - | 0.0065 | - | 0.0074 |
| Water Soluble SO4 16hr extraction (2:1 Leachate | | | | | | | | |
| Equivalent) | mg/l | 1.25 | MCERTS | - | - | 6.5 | - | 7.4 |
| Total Sulphur | % | 0.005 | MCERTS | - | - | 0.051 | - | 0.051 |
| Consident al DALLS | | | | | | | | |
| Speciated PARS | | 0.05 | MOSBER | | . 0.05 | . 0.05 | | |
| Aconomic to the second s | mg/kg | 0.05 | MCERTS | - | < 0.05 | < 0.05 | - | - |
| Acenaphthono | mg/kg | 0.05 | MCEDIC | - | < 0.05 | < 0.05 | - | - |
| Eluorene | mg/kg | 0.05 | MCEDTS | - | < 0.05 | < 0.05 | - | - |
| Phenanthrene | mg/kg | 0.05 | MCERTS | - | < 0.05 | < 0.05 | - | - |
| Anthracene | ma/ka | 0.05 | MCERTS | - | < 0.05 | < 0.05 | - | - |
| Fluoranthene | ma/ka | 0.05 | MCERTS | - | < 0.05 | < 0.05 | - | - |
| Pyrene | ma/ka | 0.05 | MCERTS | - | < 0.05 | < 0.05 | - | - |
| Benzo(a)anthracene | mg/kg | 0.05 | MCERTS | - | < 0.05 | < 0.05 | - | - |
| Chrysene | mg/kg | 0.05 | MCERTS | - | < 0.05 | < 0.05 | - | - |
| Benzo(b)fluoranthene | mg/kg | 0.05 | MCERTS | - | < 0.05 | < 0.05 | - | - |
| Benzo(k)fluoranthene | mg/kg | 0.05 | MCERTS | - | < 0.05 | < 0.05 | - | - |
| Benzo(a)pyrene | mg/kg | 0.05 | MCERTS | - | < 0.05 | < 0.05 | - | - |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.05 | MCERTS | - | < 0.05 | < 0.05 | - | - |
| Dibenz(a,h)anthracene | mg/kg | 0.05 | MCERTS | - | < 0.05 | < 0.05 | - | - |
| Benzo(ghi)perylene | mg/kg | 0.05 | MCERTS | - | < 0.05 | < 0.05 | - | - |
| Total PAH | | | | | | | | |
| Speciated Total EPA-16 PAHs | mg/kg | 0.8 | MCERTS | - | < 0.80 | < 0.80 | - | - |
| | | | | | | | | |
| Heavy Metals / Metalloids | | | | | | | | |
| Arsenic (aqua regia extractable) | mg/kg | 1 | MCERTS | 3.4 | 13 | - | 15 | - |
| Boron (water soluble) | mg/kg | 0.2 | MCERTS | 0.3 | 2.6 | - | 1.1 | - |
| Cadmium (aqua regia extractable) | mg/kg | 0.2 | MCERTS | < 0.2 | < 0.2 | - | < 0.2 | - |
| Chromium (hexavalent) | mg/kg | 4 | MCERTS | - | - | - | - | - |
| Chromium (III) | mg/kg | 1 | NONE | - | - | - | - | - |
| Chromium (aqua regia extractable) | mg/kg | 1 | MCERTS | /.2 | 23 | - | 26 | - |
| Loopper (aqua regia extractable) | mg/kg | 1 | MCERTS | 5.8 | 26 | - | 13 | - |
| | mg/kg | 1 | MCERTS | 4.0 | 32 | - | 1/ | - |
| Mickel (aqua regia extractable) | mg/kg | 0.3 | MCEDIC | < 0.3 | < 0.3 | - | < U.3 1E | - |
| Selenium (aqua regia extractable) | mg/kg | 1 | MCERTS | т.2 < 1.0 | < 1.0 | - | < 1.0 | - |
| Zinc (aqua regia extractable) | ma/ka | 1 | MCEDIS | 13 | 56 | | 38 | |
| בווים (מקום וכקום כאנומנומטוכ) | iiig/Kg | 1 | MCER13 | IJ | 50 | | 50 | |





| I ah Samnle Number | | | | 877649 | 877650 | 877651 | 877652 | 877653 |
|---|-------|-----------------------|-------------------------|---------------|---------------|---------------|---------------|---------------|
| Sample Reference | | | | TD9 | TP10 | TD10 | TD12 | TD12 |
| Sample Number | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Donth (m) | | | | | | | | |
| Depth (III) | | | | 12/12/2017 | 12/12/2017 | 12/12/2017 | 12/12/2017 | 12/12/2017 |
| Time Teken | | | | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 |
| | 1 | 1 | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter (Soil Analysis) | Units | Limit of detection | Accreditation Status | | | | | |
| Petroleum Hydrocarbons | | | | | | | | |
| TPH C10 - C40 | mg/kg | 10 | MCERTS | - | - | - | - | - |
| TPH5 (C6 - C10) | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| TPH5 (C10 - C20) | mg/kg | 10 | MCERTS | - | - | - | - | - |
| TPH5 (C20 - C30) | mg/kg | 10 | NONE | - | - | - | - | - |
| TPH5 (C30 - C40) | mg/kg | 10 | NONE | - | - | - | - | - |
| TPH5 (C6 - C40) | mg/kg | 10 | NONE | - | - | - | - | - |
| Pesticide and Herbicide Screen | | | | | | | | |
| Pesticides/Herbicides Screen in Soil | P/A | N/A | NONE | - | - | - | - | - |





| ab Sample Number | | | | 077654 | 077655 | 077656 | 077657 | 077650 |
|---|----------|-----------------------|-------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| | | | | 877654 | 877055 | 877656 | 8//05/ | 877658 |
| Sample Reference | | | | IP13 | Stockpile 1 | IP15 | IP16 | IP1/ |
| Sample Number | | | | None Supplied | None Supplied | | | None Supplied |
| Depth (m) | | | | 1.30-1.40 | 12/12/2017 | 0.20 | 0.20 | 0.30 |
| Date Sampled | | | | 13/12/2017 None Supplied | 13/12/2017 None Supplied | 13/12/2017 None Supplied | 13/12/2017 None Supplied | 13/12/2017 None Supplied |
| | | | | None Supplied |
| Analytical Parameter (Soil Analysis) | Units | Limit of detection | Accreditation Status | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | - | < 0.1 |
| Moisture Content | % | N/A | NONE | 12 | 16 | 16 | - | 20 |
| Total mass of sample received | kg | 0.001 | NONE | 1.1 | 1.7 | 1.3 | - | 1.1 |
| | | | | | | | | |
| Asbestos in Soil Screen / Identification Name | Туре | N/A | ISO 17025 | - | - | - | - | - |
| Asbestos in Soil | Туре | N/A | ISO 17025 | - | Not-detected | Not-detected | Not-detected | Not-detected |
| | | | | | | | | |
| General Inorganics | | | | | | | | |
| pH - Automated | pH Units | N/A | MCERTS | 8.6 | 8.4 | - | - | - |
| Total Sulphate as SO ₄ | % | 0.005 | MCERTS | 0.092 | - | - | - | - |
| Water Soluble Sulphate as SO ₄ 16hr extraction (2:1) | mg/kg | 2.5 | MCERTS | - | 290 | - | - | - |
| Equivalent) | a/l | 0.00125 | MCERTS | 0.0082 | 0.14 | - | - | - |
| Water Soluble SO4 16hr extraction (2:1 Leachate | 9/- | 0.00120 | HOLITO | 010002 | 0121 | | | |
| Equivalent) | mg/l | 1.25 | MCERTS | 8.2 | 143 | - | - | - |
| Total Sulphur | % | 0.005 | MCERTS | 0.033 | - | - | - | - |
| | | | | | | | | |
| Speciated PAHs | | | | | | | | |
| Naphthalene | mg/kg | 0.05 | MCERTS | - | < 0.05 | - | - | - |
| Acenaphthylene | mg/kg | 0.05 | MCERTS | - | < 0.05 | - | - | - |
| Acenaphthene | mg/kg | 0.05 | MCERTS | - | < 0.05 | - | - | - |
| Fluorene | mg/kg | 0.05 | MCERTS | - | < 0.05 | - | - | - |
| Phenanthrene | mg/kg | 0.05 | MCERTS | - | < 0.05 | - | - | - |
| Anthracene | mg/kg | 0.05 | MCERTS | - | < 0.05 | - | - | - |
| Fluoranthene | mg/kg | 0.05 | MCERTS | - | < 0.05 | - | - | - |
| Pyfelle Bonzo(2)2nthracono | mg/kg | 0.05 | MCEDITC | - | < 0.05 | - | - | - |
| | mg/kg | 0.05 | MCEPTS | - | < 0.05 | - | - | - |
| Benzo(h)fluoranthene | mg/kg | 0.05 | MCEDTS | | < 0.05 | _ | | |
| Benzo(k)fluoranthene | mg/kg | 0.05 | MCERTS | _ | < 0.05 | | _ | |
| Benzo(a)pyrene | ma/ka | 0.05 | MCERTS | - | < 0.05 | - | - | - |
| Indeno(1,2,3-cd)pyrene | ma/ka | 0.05 | MCERTS | - | < 0.05 | - | - | - |
| Dibenz(a,h)anthracene | mg/kg | 0.05 | MCERTS | - | < 0.05 | - | - | - |
| Benzo(ghi)perylene | mg/kg | 0.05 | MCERTS | - | < 0.05 | - | - | - |
| | | | | | | | | |
| Speciated Total EPA-16 PAHs | ma/ka | 0.8 | MCERTS | - | < 0.80 | - | - | - |
| | ing/kg | 0.0 | HOLINO | | 1 0100 | | | |
| Heavy Metals / Metalloids | | | | | | | | |
| Arsenic (aqua regia extractable) | mg/kg | 1 | MCERTS | - | 14 | 19 | - | 16 |
| Boron (water soluble) | mg/kg | 0.2 | MCERTS | - | - | 7.8 | - | 1.4 |
| Cadmium (aqua regia extractable) | mg/kg | 0.2 | MCERTS | - | < 0.2 | < 0.2 | - | < 0.2 |
| Chromium (hexavalent) | mg/kg | 4 | MCERTS | - | < 4.0 | - | - | - |
| Chromium (III) | mg/kg | 1 | NONE | - | 14 | - | - | - |
| Chromium (aqua regia extractable) | mg/kg | 1 | MCERTS | - | 14 | 23 | - | 30 |
| Copper (aqua regia extractable) | mg/kg | 1 | MCERTS | - | 15 | 52 | - | 18 |
| Lead (aqua regia extractable) | mg/kg | 1 | MCERTS | - | 15 | 82 | - | 36 |
| Mercury (aqua regia extractable) | mg/kg | 0.3 | MCERTS | - | < 0.3 | < 0.3 | - | < 0.3 |
| Nickel (aqua regia extractable) | mg/kg | 1 | MCERTS | - | 13 | 26 | - | 22 |
| Selenium (aqua regia extractable) | mg/kg | 1 | MCERTS | - | < 1.0 | < 1.0 | - | < 1.0 |
| zinc (aqua regia extractable) | mg/kg | 1 | MCERTS | - | 49 | 150 | - | 91 |





| Lab Sample Number | | | | 877654 | 877655 | 877656 | 877657 | 877658 |
|---|-------|-----------------------|-------------------------|---------------|---------------|---------------|---------------|---------------|
| Sample Reference | | | | TP13 | Stockpile 1 | TP15 | TP16 | TP17 |
| Sample Number | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m) | | | | 1.30-1.40 | 1.00 | 0.20 | 0.20 | 0.30 |
| Date Sampled | | | | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 |
| Time Taken | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter (Soil Analysis) | Units | Limit of detection | Accreditation Status | | | | | |
| Petroleum Hydrocarbons | | | | | | | | |
| TPH C10 - C40 | mg/kg | 10 | MCERTS | - | < 10 | - | - | - |
| | - | | | | | | | |
| TPH5 (C6 - C10) | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| TPH5 (C10 - C20) | mg/kg | 10 | MCERTS | - | - | - | - | - |
| TPH5 (C20 - C30) | mg/kg | 10 | NONE | - | - | - | - | - |
| TPH5 (C30 - C40) | mg/kg | 10 | NONE | - | - | - | - | - |
| TPH5 (C6 - C40) | mg/kg | 10 | NONE | - | - | - | - | - |
| Pesticide and Herbicide Screen | | | | | | | | |
| Pesticides/Herbicides Screen in Soil | P/A | N/A | NONE | - | - | - | - | - |
| | | | | | | | | |





| ab Sample Number | | | | 077650 | 077660 | 077661 | 077660 | 077(() |
|--|----------|-----------------------|-------------------------|------------------------|---------------|-----------------------------|-----------------------------|-----------------------------|
| | | | | 877659 | 877660 | 877001 | 877662 | 877663 |
| Sample Reference | | | | IP18 | Stockpile 3 | IP/ | WS2 | WS2 |
| Sample Number | | | | None Supplied | | None Supplied | None Supplied | None Supplied |
| Deptn (m) | | | | 0.40 | 0.30 | 12/12/2017 | 0.10 | 1.00 |
| Date Sampled | | | | 13/12/2017 | 13/12/2017 | 13/12/2017 None Supplied | 14/12/2017 None Supplied | 14/12/2017 None Supplied |
| | | | | None Supplied | None Supplied | None Supplied | None Supplieu | None Supplieu |
| Analytical Parameter (Soil Analysis) | Units | Limit of detection | Accreditation Status | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Moisture Content | % | N/A | NONE | 20 | 20 | 13 | 27 | 18 |
| Total mass of sample received | kg | 0.001 | NONE | 1.3 | 0.42 | 1.2 | 0.39 | 0.43 |
| •ł | | | | | | | | |
| Asbestos in Soil Screen / Identification Name | Туре | N/A | ISO 17025 | Chrysotile- Bitumen | - | - | - | - |
| Asbestos in Soil | Туре | N/A | ISO 17025 | Detected | Not-detected | - | - | - |
| | | | | | | | | |
| General Inorganics | | | | | | | | |
| pH - Automated | pH Units | N/A | MCERTS | 8.1 | - | 8.5 | - | - |
| Total Sulphate as SO ₄ | % | 0.005 | MCERTS | - | - | 0.083 | - | - |
| Water Soluble Sulphate as SO ₄ 16hr extraction (2:1) Water Soluble SO4 16hr extraction (2:1 Leachate | mg/kg | 2.5 | MCERTS | 64 | - | - | - | - |
| Equivalent) | g/l | 0.00125 | MCERTS | 0.032 | - | 0.0057 | - | - |
| Water Soluble SO4 16hr extraction (2:1 Leachate | | | | | | | | |
| Equivalent) | mg/l | 1.25 | MCERTS | 32.0 | - | 5./ | - | - |
| Total Sulphur | % | 0.005 | MCERTS | - | - | 0.033 | - | - |
| Speciated BAHs | | | | | | | | |
| Nanhthalana | ma/ka | 0.05 | MCEDTS | < 0.05 | < 0.05 | _ | < 0.05 | < 0.05 |
| Acenandthylene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | | < 0.05 | < 0.05 |
| Acenaphthylene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | _ | < 0.05 | < 0.05 |
| Fluorene | ma/ka | 0.05 | MCERTS | < 0.05 | < 0.05 | - | < 0.05 | < 0.05 |
| Phenanthrene | ma/ka | 0.05 | MCERTS | < 0.05 | < 0.05 | - | < 0.05 | < 0.05 |
| Anthracene | ma/ka | 0.05 | MCERTS | < 0.05 | < 0.05 | - | < 0.05 | < 0.05 |
| Fluoranthene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | - | < 0.05 | < 0.05 |
| Pyrene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | - | < 0.05 | < 0.05 |
| Benzo(a)anthracene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | - | < 0.05 | < 0.05 |
| Chrysene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | - | < 0.05 | < 0.05 |
| Benzo(b)fluoranthene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | - | < 0.05 | < 0.05 |
| Benzo(k)fluoranthene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | - | < 0.05 | < 0.05 |
| Benzo(a)pyrene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | - | < 0.05 | < 0.05 |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | - | < 0.05 | < 0.05 |
| Dibenz(a,h)anthracene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | - | < 0.05 | < 0.05 |
| Benzo(gni)perviene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | - | < 0.05 | < 0.05 |
| Tetal DAH | | | | | | | | |
| Speciated Total EDA-16 DAHs | malka | 0.0 | MCEDTC | < 0.80 | < 0.90 | _ | < 0.90 | < 0.90 |
| Specialed Total LFA-10 FAIls | iiig/kg | 0.0 | PICER15 | < 0.80 | < 0.80 | - | < 0.60 | < 0.80 |
| Heavy Metals / Metalloids | | | | | | | | |
| Arsenic (aqua regia extractable) | ma/ka | 1 | MCERTS | 12 | 16 | - | 14 | - |
| Boron (water soluble) | ma/ka | 0.2 | MCERTS | - | 1.3 | - | 1.8 | - |
| Cadmium (aqua regia extractable) | mg/kg | 0.2 | MCERTS | < 0.2 | < 0.2 | - | < 0.2 | - |
| Chromium (hexavalent) | mg/kg | 4 | MCERTS | < 4.0 | - | - | - | - |
| Chromium (III) | mg/kg | 1 | NONE | 28 | - | - | - | - |
| Chromium (aqua regia extractable) | mg/kg | 1 | MCERTS | 29 | 25 | - | 26 | - |
| Copper (aqua regia extractable) | mg/kg | 1 | MCERTS | 17 | 17 | - | 16 | - |
| Lead (aqua regia extractable) | mg/kg | 1 | MCERTS | 29 | 36 | - | 27 | - |
| Mercury (aqua regia extractable) | mg/kg | 0.3 | MCERTS | < 0.3 | < 0.3 | - | < 0.3 | - |
| Nickel (aqua regia extractable) | mg/kg | 1 | MCERTS | 17 | 17 | - | 17 | - |
| Selenium (aqua regia extractable) | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | - | < 1.0 | - |
| Zinc (aqua regia extractable) | mg/kg | 1 | MCERTS | /2 | 89 | - | 49 | - |





| Lab Sample Number | | | | 877659 | 877660 | 877661 | 877662 | 877663 |
|---|-------|-----------------------|-------------------------|---------------|---------------|---------------|---------------|---------------|
| Sample Reference | | | | TP18 | Stockpile 3 | TP7 | WS2 | WS2 |
| Sample Number | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m) | | | | 0.40 | 0.30 | 1.60 | 0.10 | 1.00 |
| Date Sampled | | | | 13/12/2017 | 13/12/2017 | 13/12/2017 | 14/12/2017 | 14/12/2017 |
| Time Taken | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter (Soil Analysis) | Units | Limit of detection | Accreditation Status | | | | | |
| Petroleum Hydrocarbons | | | | | | | | |
| TPH C10 - C40 | mg/kg | 10 | MCERTS | < 10 | - | - | - | - |
| TPH5 (C6 - C10) | mg/kg | 0.1 | MCERTS | - | - | - | - | - |
| TPH5 (C10 - C20) | mg/kg | 10 | MCERTS | - | - | - | - | - |
| TPH5 (C20 - C30) | mg/kg | 10 | NONE | - | - | - | - | - |
| TPH5 (C30 - C40) | mg/kg | 10 | NONE | - | - | - | - | - |
| TPH5 (C6 - C40) | mg/kg | 10 | NONE | - | - | - | - | - |
| Pesticide and Herbicide Screen | | | | | | | | |
| Pesticides/Herbicides Screen in Soil | P/A | N/A | NONE | - | - | - | Absent | - |





| | | | | 077664 | | | |
|--|-------------|--------------------|-------------------------|---------------|---|------|---|
| Lab Sample Number | | | | 87/664 | | | |
| Sample Reference | | | | WS2 | | | |
| Sample Number | | | | None Supplied | | | |
| Depth (m) | | | | 2.40 | | | |
| Date Sampled | | | | 14/12/201/ | | | |
| | | | | None Supplied | | | |
| Analytical Parameter (Soil Analysis) | Units | Limit of detection | Accreditation Status | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | | | |
| Moisture Content | % | N/A | NONE | 20 | | | |
| Total mass of sample received | kg | 0.001 | NONE | 0.36 | | | |
| | | | | | | | |
| Asbestos in Soil Screen / Identification Name | Туре | N/A | ISO 17025 | - | | | |
| Asbestos in Soil | Туре | N/A | ISO 17025 | - | | | |
| | | | | | | | |
| General Inorganics | | | | | | | |
| pH - Automated | pH Units | N/A | MCERTS | 8.3 | ļ | | |
| iotai Suiphate as SU ₄ | % | 0.005 | MCERTS | 0.100 | ļ | | |
| Water Soluble Sulphate as SO₄ 16hr extraction (2:1) Water Soluble SO4 16hr extraction (2:1 Leachate | mg/kg | 2.5 | MCERTS | - | | | |
| Equivalent) | g/l | 0.00125 | MCERTS | 0.016 | | | |
| Water Soluble SO4 16hr extraction (2:1 Leachate | ma/l | 1 25 | MCEDTS | 15 7 | | | |
| Total Sulphur | 111g/1 % | 0.005 | MCERTS | 0.040 | | | |
| | 70 | 0.005 | PICERTS | 0.010 | | | |
| Speciated PAHs | | | | | | | |
| Naphthalene | ma/ka | 0.05 | MCERTS | - | | | |
| Acenaphthylene | mg/kg | 0.05 | MCERTS | - | | | |
| Acenaphthene | mg/kg | 0.05 | MCERTS | - | | | |
| Fluorene | mg/kg | 0.05 | MCERTS | - | | | |
| Phenanthrene | mg/kg | 0.05 | MCERTS | - | | | |
| Anthracene | mg/kg | 0.05 | MCERTS | - | | | |
| Fluoranthene | mg/kg | 0.05 | MCERTS | - | | | |
| Pyrene | mg/kg | 0.05 | MCERTS | - | | | |
| Benzo(a)anthracene | mg/kg | 0.05 | MCERTS | - | | | |
| Chrysene | mg/kg | 0.05 | MCERTS | - | | | |
| Benzo(b)fluoranthene | mg/kg | 0.05 | MCERTS | - | | | |
| Benzo(k)fluoranthene | mg/kg | 0.05 | MCERTS | - | | | |
| Benzo(a)pyrene | mg/kg | 0.05 | MCERTS | - | | | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.05 | MCERTS | - | | | |
| Didenz(a,n)anthracene | mg/kg | 0.05 | MCEDITS | - | | | |
| benzo(gni)perylene | шу/ку | 0.05 | PICER15 | - | | | |
| Total PAH | | | | | | | |
| Speciated Total EPA-16 PAHs | ma/ka | 0.8 | MCERTS | - | | | |
| Specialed Total EIX 10 TAILS | iiig/kg | 0.0 | TIGENTS | | | | |
| Heavy Metals / Metalloids | | | | | | | |
| Arsenic (agua regia extractable) | mg/kg | 1 | MCERTS | - | | | |
| Boron (water soluble) | mg/kg | 0.2 | MCERTS | - | | | |
| Cadmium (aqua regia extractable) | mg/kg | 0.2 | MCERTS | - | | | |
| Chromium (hexavalent) | mg/kg | 4 | MCERTS | - | | | |
| Chromium (III) | mg/kg | 1 | NONE | - | | | |
| Chromium (aqua regia extractable) | mg/kg | 1 | MCERTS | - | | | |
| Copper (aqua regia extractable) | mg/kg | 1 | MCERTS | - | | | |
| Lead (aqua regia extractable) | mg/kg | 1 | MCERTS | - | L | | |
| Mercury (aqua regia extractable) | mg/kg | 0.3 | MCERTS | - | | | |
| Nickei (aqua regia extractable) | mg/kg | 1 | MCERTS | - | ļ | | |
| Zinc (aqua rogia ovtractable) | mg/kg | 1 | | - | L | | L |
| ZINC (ayud Teyla exilaciable) | mg/Kg | 1 | PILERIS | - | | | |





| Lab Sample Number | | | | 877664 | | |
|---|-------|-----------------------|-------------------------|---------------|--|--|
| Sample Reference | | | | WS2 | | |
| Sample Number | | | | None Supplied | | |
| Depth (m) | | | | 2.40 | | |
| Date Sampled | | | | 14/12/2017 | | |
| Time Taken | | | | None Supplied | | |
| Analytical Parameter (Soil Analysis) | Units | Limit of detection | Accreditation Status | | | |
| Petroleum Hydrocarbons | | | | | | |
| ТРН С10 - С40 | mg/kg | 10 | MCERTS | - | | |
| TPH5 (C6 - C10) | mg/kg | 0.1 | MCERTS | - | | |
| TPH5 (C10 - C20) | mg/kg | 10 | MCERTS | - | | |
| TPH5 (C20 - C30) | mg/kg | 10 | NONE | - | | |
| TPH5 (C30 - C40) | mg/kg | 10 | NONE | - | | |
| TPH5 (C6 - C40) | mg/kg | 10 | NONE | - | | |
| Pesticide and Herbicide Screen | | | | | | |
| Pesticides/Herbicides Screen in Soil | P/A | N/A | NONE | - | | |





| Lab Sample Number | | | | 877665 | | |
|--------------------------------------|---------------|-----------------------|-------------------------|---|--|--|
| Sample Reference | TP17 | | | | | |
| Sample Number | None Supplied | | | | | |
| Depth (m) | 0.10 | | | | | |
| Date Sampled | | | | 13/12/2017 | | |
| Time Taken | | | | None Supplied | | |
| Analytical Parameter (Bulk Analysis) | Units | Limit of detection | Accreditation Status | | | |
| Asbestos Identification Name | Туре | N/A | ISO 17025 | Chrysotile- Hard/Cement Type Material | | |





Project / Site name: Steeple Aston

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

| Lab Sample Number | Sample Reference | Sample Number | Depth (m) | Sample Description * |
|----------------------|---------------------|------------------|-----------|---|
| 877644 | TP4 | None Supplied | 0.20 | Light brown clay and sand with gravel and vegetation. |
| 877645 | TP5 | None Supplied | 1.00 | Light brown clay and sand. |
| 877646 | TP6 | None Supplied | 1.20 | Light brown clay and sand with gravel. |
| 877647 | TP7 | None Supplied | 0.10 | Brown loam and clay with gravel and vegetation. |
| 877648 | TP8 | None Supplied | 0.10 | Brown loam and clay with vegetation. |
| 877649 | TP8 | None Supplied | 0.50 | Light brown clay and sand with vegetation. |
| 877650 | TP10 | None Supplied | 0.10 | Brown loam and clay with vegetation. |
| 877651 | TP10 | None Supplied | 0.85 | Light brown clay and sand with rubble. |
| 877652 | TP12 | None Supplied | 0.45 | Brown clay. |
| 877653 | TP12 | None Supplied | 0.50 | Brown clay. |
| 877654 | TP13 | None Supplied | 1.30-1.40 | Light brown clay. |
| 877655 | Stockpile 1 | None Supplied | 1.00 | Brown clay and sand with gravel. |
| 877656 | TP15 | None Supplied | 0.20 | Brown clay and sand with rubble and gravel |
| 877657 | TP16 | None Supplied | 0.20 | - |
| 877658 | TP17 | None Supplied | 0.30 | Brown clay with vegetation. |
| 877659 | TP18 | None Supplied | 0.40 | Brown clay and loam with gravel. |
| 877660 | Stockpile 3 | None Supplied | 0.30 | Brown loam and clay with vegetation. |
| 877661 | TP7 | None Supplied | 1.60 | Light brown clay. |
| 877662 | WS2 | None Supplied | 0.10 | Brown loam and clay with vegetation. |
| 877663 | WS2 | None Supplied | 1.00 | Light brown clay with vegetation and gravel. |
| 877664 | WS2 | None Supplied | 2.40 | Grey clay. |





Project / Site name: Steeple Aston

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

| Analytical Test Name | Analytical Method Description | Analytical Method Reference | Method number | Wet / Dry Analysis | Accreditation Status |
|---|---|---|------------------|-----------------------|-------------------------|
| Asbestos identification in Bulks | Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques. | In house method based on HSG 248 | A001-PL | W | ISO 17025 |
| Boron, water soluble, in soil | Determination of water soluble boron in soil by hot water extract followed by ICP-OES. | In-house method based on Second Site Properties version 3 | L038-PL | D | MCERTS |
| Cr (III) in soil | In-house method by calculation from total Cr and Cr VI. | In-house method by calculation | L080-PL | W | NONE |
| Hexavalent chromium in soil | Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry. | In-house method | L080-PL | W | MCERTS |
| Metals in soil by ICP-OES | Determination of metals in soil by aqua-regia digestion followed by ICP-OES. | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil. | L038-PL | D | MCERTS |
| Moisture Content | Moisture content, determined gravimetrically. | In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests | L019-UK/PL | W | NONE |
| Pesticides and Herbicides in soil screening | In-house method | In-house method | | W | NONE |
| pH in soil (automated) | Determination of pH in soil by addition of water followed by automated electrometric measurement. | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L099-PL | D | MCERTS |
| Speciated EPA-16 PAHs in soil | Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. | In-house method based on USEPA 8270 | L064-PL | D | MCERTS |
| Stones content of soil | Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight. | In-house method based on British Standard Methods and MCERTS requirements. | L019-UK/PL | D | NONE |
| Sulphate, water soluble, in soil (16hr extraction) | Determination of water soluble sulphate by ICP- OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent). | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP- OES. | L038-PL | D | MCERTS |
| Total Sulphate in soil as % | Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES. | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests"" | L038 | D | MCERTS |
| Total Sulphur in soil as % | Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES. | In-house method based on BS1377 Part 3, 1990, and MEWAM 2006 Methods for the Determination of Metals in Soil | L038 | W | MCERTS |
| TPH Banding in Soil by FID | Determination of hexane extractable hydrocarbons in soil by GC-FID. | In-house method, TPH with carbon banding. | L076-PL | W | MCERTS |
| TPH5 (Soil) | Determination of TPH bands by HS-GC-MS/GC-FID | In-house method | L076-PL | D | MCERTS |

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland. Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.


Jim Twaddle The Brownfield Consultancy Woodstock Memorial Road Fenny Compton Warwickshire CV47 2XU



i2 Analytical Ltd. 7 Woodshots Meadow, Croxley Green Business Park, Watford, Herts, WD18 8YS

t: 01923 225404 f: 01923 237404 e: reception@i2analytical.com

e: jim.twaddle@brownfieldconsultancy.co.uk

Analytical Report Number : 17-71018

| Project / Site name: | Steeple Aston | Samples received on: | 15/12/2017 |
|----------------------|-------------------|------------------------|------------|
| Your job number: | BC340 | Samples instructed on: | 15/12/2017 |
| Your order number: | | Analysis completed by: | 28/12/2017 |
| Report Issue Number: | 1 | Report issued on: | 28/12/2017 |
| Samples Analysed: | 1 10:1 WAC sample | | |



Jordan Hill Reporting Manager For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

| soils | - 4 weeks from reporting |
|-----------|---------------------------|
| leachates | - 2 weeks from reporting |
| waters | - 2 weeks from reporting |
| asbestos | - 6 months from reporting |

Excel copies of reports are only valid when accompanied by this PDF certificate.





i2 Analytical

7 Woodshots Meadow Croxley Green Business Park Watford, WD18 8YS

Telephone: 01923 225404 Fax: 01923 237404 email:reception@i2analytical.com

| Waste Acceptance Criteria Analytical | Results | | | | | | |
|---|----------------------|-----------------------|------------|----------|-------------------------|----------------------------|-----------------------------|
| Report No: | | 17-: | 71018 | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | Client: | BROWNFIEL | D |
| | | C h | | | | | |
| Location | | Steep | le Aston | Landfill | Nacto Accontan | o Critoria | |
| Lab Reference (Sample Number) | 877668 / 877669 | | | | Lanumi | l imite | |
| Sampling Date | | 14/1 | 2/2017 | | | Stable Non- | |
| Sample ID | WS1 + TP8 combined | | | | | reactive | |
| Denth (m) | 1.00-1.45 | | | | Inert Waste Landfill | HAZARDOUS waste in non- | Hazardous Waste Landfill |
| | | 1.0 | 1.15 | | Landfill | | |
| Solid Waste Analysis | | | | | | | |
| TOC (%)** | 0.6 | | | | 3% | 5% | 6% |
| Loss on Ignition (%) ** | 1.8 | | - | - | | | 10% |
| BIEX (µg/kg) ** | < 10 | | | | 6000 | | |
| Sum of PCBS (mg/kg) ** | < 0.007 | | | | 1 | | |
| Mineral Oil (mg/kg) | < 10 | | | | 500 | | |
| Total PAH (WAC-17) (mg/kg) | < 0.9 | | | | 100 | | |
| pH (units)** | 8.4 | | | | | >6 | |
| Acid Neutralisation Capacity (mol / kg) | 28 | | | | | To be evaluated | To be evaluated |
| Eluate Analysis | 10:1 | | | 10:1 | Limit value | es for compliance le | eaching test |
| (BS EN 12457 - 2 preparation utilising end over end leaching | | | | | using BS EN | 1 12457-2 at L/S 10 |) l/kg (mg/kg) |
| procedure) | mg/l | | | mg/kg | | | |
| Arsenic * | 0.0020 | | | 0.0153 | 0.5 | 2 | 25 |
| Barium * | 0.0066 | | | 0.0514 | 20 | 100 | 300 |
| Cadmium * | < 0.0001 | | | < 0.0008 | 0.04 | 1 | 5 |
| Chromium * | 0.0032 | | | 0.025 | 0.5 | 10 | 70 |
| Copper * | 0.022 | | | 0.17 | 2 | 50 | 100 |
| Mercury * | < 0.0005 | | | < 0.0050 | 0.01 | 0.2 | 2 |
| Molybdenum * | 0.0013 | | | 0.0098 | 0.5 | 10 | 30 |
| Nickel * | 0.0048 | | | 0.037 | 0.4 | 10 | 40 |
| Lead * | 0.0040 | | | 0.031 | 0.5 | 10 | 50 |
| Antimony * | < 0.0017 | | | < 0.017 | 0.06 | 0.7 | 5 |
| Selenium * | < 0.0040 | | | < 0.040 | 0.1 | 0.5 | 7 |
| Zinc * | 0.023 | | | 0.18 | 4 | 50 | 200 |
| Chloride * | 0.83 | | | 6.5 | 800 | 4000 | 25000 |
| Fluoride | 0.24 | | | 1.8 | 10 | 150 | 500 |
| Sulphate * | 1.3 | | | 10 | 1000 | 20000 | 50000 |
| TDS | 50 | | | 390 | 4000 | 60000 | 100000 |
| Phenol Index (Monohydric Phenols) * | < 0.010 | | | < 0.10 | 1 | - | - |
| DOC | 3.56 | | | 27.8 | 500 | 800 | 1000 |
| | | | | | | | |
| Leach Test Information | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Stone Content (%) | < 0.1 | | + | | | | |
| Sample Mass (Kg) | 0.80 | | | | | | |
| Dry Matter (%) | 85 | | + | ł | | | |
| Moisture (%) | 15 | | + | ł | | | |
| | | | + | ł | | | |
| | | l | + | ł | | | |
| Deside an empressed on a description built of after some 11. | alahuna aariterite 1 | ne enelles t-t- | <u> </u> | <u> </u> | * 11// 40 "" | ad (liquid shorts | alugia antro |
| Results are expressed on a dry weight basis, after correction for m | oisture content whe | re applicable. | aislation | | ···= UKAS accredit | eu (liquia eluate an | aiysis oniy) |
| Stated limits are for guidance only and i2 cannot be held responsib | ne for any discrepar | icies with current le | egislation | | ** = MCERTS acc | redited | |

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3. This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Iss No 17-71018-1 Steeple Aston BC340

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Analytical Report Number : 17-71018

Project / Site name: Steeple Aston

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

| Lab Sample Number | Sample Reference | Sample Number | Depth (m) | Sample Description * |
|----------------------|---------------------|------------------|-----------|----------------------------|
| 877668 | WS1 + TP8 | combined | 1.00-1.45 | Light brown clay and sand. |



Т



Analytical Report Number : 17-71018

Project / Site name: Steeple Aston

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

| Analytical Test Name | Analytical Method Description | Analytical Method Reference | Method number | Wet / Dry Analysis | Accreditation Status |
|--|---|---|------------------|-----------------------|-------------------------|
| Acid neutralisation capacity of soil | Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe. | In-house method based on Guidance an Sampling and Testing of Wastes to Meet Landfill Waste Acceptance"" | L046-UK | W | NONE |
| BS EN 12457-2 (10:1) Leachate Prep | 10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis. | In-house method based on BSEN12457-2. | L043-PL | W | NONE |
| BTEX in soil (Monoaromatics) | Determination of BTEX in soil by headspace GC-MS. | In-house method based on USEPA8260 | L073B-PL | W | MCERTS |
| Chloride 10:1 WAC | Determination of Chloride colorimetrically by discrete analyser. | In house based on MEWAM Method ISBN 0117516260. | L082-PL | W | ISO 17025 |
| Dissolved organic carbon 10:1 WAC | Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser. | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton | L037-PL | W | NONE |
| Fluoride 10:1 WAC | Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode. | In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination" | L033B-PL | W | ISO 17025 |
| Loss on ignition of soil @ 450oC | Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace. | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L047-PL | D | MCERTS |
| Metals in leachate by ICP-OES | Determination of metals in leachate by acidification followed by ICP-OES. | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil"" | L039-PL | W | ISO 17025 |
| Mineral Oil (Soil) C10 - C40 | Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID. | in-house method | L076-PL | D | NONE |
| Moisture Content | Moisture content, determined gravimetrically. | In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests | L019-UK/PL | W | NONE |
| Monohydric phenols 10:1 WAC | Determination of phenols in leachate by distillation followed by colorimetry. | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton | L080-PL | W | ISO 17025 |
| PCB's By GC-MS in soil | Determination of PCB by extraction with acetone and hexane followed by GC-MS. | In-house method based on USEPA 8082 | L027-PL | D | MCERTS |
| pH in soil | Determination of pH in soil by addition of water followed by electrometric measurement. | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L005-PL | W | MCERTS |
| Speciated WAC-17 PAHs in soil | Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. | In-house method based on USEPA 8270 | L064-PL | D | NONE |
| Stones content of soil | Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight. | In-house method based on British Standard Methods and MCERTS requirements. | L019-UK/PL | D | NONE |
| Sulphate 10:1 WAC | Determination of sulphate in leachate by ICP-OES | In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil"" | L039-PL | W | ISO 17025 |
| Total dissolved solids 10:1 WAC | Determination of total dissolved solids in water by electrometric measurement. | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton | L004-PL | w | NONE |
| Total organic carbon (Automated) in soil | Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate. | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests" | L009-PL | D | MCERTS |

Iss No 17-71018-1 Steeple Aston BC340

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Analytical Report Number : 17-71018

Project / Site name: Steeple Aston

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

| Analytical Test Name | Analytical Method Description | Analytical Method Reference | Method number | Wet / Dry Analysis | Accreditation Status |
|----------------------|-------------------------------|-----------------------------|------------------|-----------------------|-------------------------|
| | | | | | |

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom. For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



| Sample ID | Other_ID | Sample Type | Job | Sample Number | Sample Deviation Code | test_name | test_ref | Test Deviation code |
|-----------|----------|-------------|----------|---------------|-----------------------|-------------------------------|----------|---------------------|
| WS1 + TP8 | combined | S | 17-71018 | 877668 | b | BTEX in soil (Monoaromatics) | L073B-PL | b |
| WS1 + TP8 | combined | S | 17-71018 | 877668 | b | Mineral Oil (Soil) C10 - C40 | L076-PL | b |
| WS1 + TP8 | combined | S | 17-71018 | 877668 | b | PCB's By GC-MS in soil | L027-PL | b |
| WS1 + TP8 | combined | S | 17-71018 | 877668 | b | Speciated WAC-17 PAHs in soil | L064-PL | b |
| WS1 + TP8 | combined | S | 17-71018 | 877668 | b | Total BTEX in soil (Poland) | L073-PL | b |

APPENDIX D

Geotechnical Laboratory Testing

i2 Analytical Ltd **TEST CERTIFICATE** 7 Woodshots Meadow **Croxley Green Business Park Determination of Liquid and Plastic Limits** Watford Herts WD18 8YS Tested in Accordance with BS1377-2: 1990: Clause 4.4 & 5: One Point Method Client: The Brownfield Consultancy Client Reference: BC340 Woodstock Job Number: 17-70944 **Client Address:** Memorial Road Date Sampled: 13/12/2017 Fenny Compton Warwickshire Date Received: 15/12/2017 CV47 2XU Jim Twaddle Contact: Date Tested: 22/12/2017 Site Name: **Steeple Aston** Sampled By: Not Given Not Given Site Address: 877227 **TEST RESULTS** Laboratory Reference: Sample Reference: Not Given Description: Yellowish brown slightly gravelly slightly sandy CLAY Sample Type: D TP4 Depth Top [m]: 1.70 Location: Sample Preparation: Depth Base [m]: Not Given Tested after >425um removed by hand **Liquid Limit** As Received Moisture **Plasticity Index Plastic Limit** % Passing 425µm Content [%] [%] [%] **BS Test Sieve** [%] 21 55 21 34 95 100 90 A line 80 70 CE 60 PLASTICITY INDEX CV 50 ME 40 • 877227 MV 30 CI 20 MH CL 10 MI ML 0 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 LIQUID LIMIT Legend, based on BS 5930:2015 Code of practice for site investigations Liquid Limit Plasticity С below 35 Clay L Low Silt 35 to 50 М Medium Т н High 50 to 70 Very high 70 to 90 ν Е Extremely high exceeding 90 0 Organic append to classification for organic material (eg CHO)

Remarks

Approved: Signed: Dariusz Piotrowski Mark Beastall PL Laboratory Geotechnical Commercial Manager Geotechnical Section Date Reported: 02/01/2018

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Page 1 of 1

i2 Analytical Ltd **TEST CERTIFICATE** 7 Woodshots Meadow **Croxley Green Business Park Determination of Liquid and Plastic Limits** Watford Herts WD18 8YS Tested in Accordance with BS1377-2: 1990: Clause 4.4 & 5: One Point Method Client: The Brownfield Consultancy Client Reference: BC340 Woodstock Job Number: 17-70944 **Client Address:** Memorial Road Date Sampled: 13/12/2017 Fenny Compton Warwickshire Date Received: 15/12/2017 CV47 2XU Jim Twaddle Contact: Date Tested: 22/12/2017 Site Name: **Steeple Aston** Sampled By: Not Given Not Given Site Address: 877228 **TEST RESULTS** Laboratory Reference: Sample Reference: Not Given Description: Light brown slightly gravelly slightly sandy CLAY Sample Type: D TP6 Depth Top [m]: 2.00 Location: Sample Preparation: Depth Base [m]: Not Given Tested after washing to remove >425um **Liquid Limit** As Received Moisture Plasticity Index **Plastic Limit** % Passing 425µm Content [%] [%] [%] [%] **BS Test Sieve** 13 47 19 28 86 100 A line 90 80 70 CE 60 PLASTICITY INDEX CV 50 ME 40 CH MV 30 877228 ۲ CI 20 MH CL 10 MI ML 0 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 LIQUID LIMIT Legend, based on BS 5930:2015 Code of practice for site investigations Liquid Limit Plasticity С below 35 Clay L Low Silt 35 to 50 М Medium Т н High 50 to 70 Very high 70 to 90 ν Е Extremely high exceeding 90 0 Organic append to classification for organic material (eg CHO)

Remarks

Approved: Signed:
Dariusz Piotrowski
PL Laboratory
Manager Geotechnical
Section
Date Reported: 02/01/2018

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i2 Analytical Ltd **TEST CERTIFICATE** 7 Woodshots Meadow **Croxley Green Business Park Determination of Liquid and Plastic Limits** Watford Herts WD18 8YS Tested in Accordance with BS1377-2: 1990: Clause 4.4 & 5: One Point Method Client: The Brownfield Consultancy Client Reference: BC340 Woodstock Job Number: 17-70944 **Client Address:** Memorial Road Date Sampled: 13/12/2017 Fenny Compton Warwickshire Date Received: 15/12/2017 CV47 2XU Jim Twaddle Contact: Date Tested: 22/12/2017 Site Name: **Steeple Aston** Sampled By: Not Given Not Given Site Address: 877229 **TEST RESULTS** Laboratory Reference: Sample Reference: Not Given Light brown slightly gravelly slightly sandy CLAY with fragments of shell Description: Sample Type: D TP7 Depth Top [m]: 2.30 Location: Sample Preparation: Depth Base [m]: Not Given Tested after >425um removed by hand **Liquid Limit** As Received Moisture **Plasticity Index Plastic Limit** % Passing 425µm Content [%] [%] [%] [%] **BS Test Sieve** 17 44 17 27 97 100 90 A line 80 70 CE 60 PLASTICITY INDEX CV 50 ME 40 CH MV 30 CP 877229 20 MH CL 10 MI ML 0 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 LIQUID LIMIT Legend, based on BS 5930:2015 Code of practice for site investigations Liquid Limit Plasticity С Clay Low below 35 L Silt 35 to 50 М Medium Т н High 50 to 70 Very high 70 to 90 ν Е Extremely high exceeding 90 0

Remarks

Signed: Approved: Dariusz Piotrowski Mark Beastall PL Laboratory **Geotechnical Commercial** Manager Geotechnical Manager Section 02/01/2018 Date Reported:

append to classification for organic material (eg CHO)

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Organic

| | Detern | TEST CERTIFICATE i2 Analytical Ltd 7 Woodshots Meadow 7 Woodshots Meadow Croxley Green Business Park Croxley Green Business Park Watford Herts WD18 8YS Watford Herts WD18 8YS | | | | | | | | | | | | |
|--|---|--|-------------------|-----------------------------|---------------------------|----------------------------------|--|--|--|--|--|--|--|--|
| | Tested in / | | BS1377_2: 100 | | Watford Herts WD1 | 8 8YS Environmental Science | | | | | | | | |
| 4041 Client: Client Address: | The Bro Woods Memori Fenny (Warwic CV47 2 | The Brownfield ConsultancyClient Reference: BC340WoodstockJob Number: 17-70944Memorial RoadDate Sampled: 13/12/2017Fenny ComptonDate Received: 15/12/2017WarwickshireDate Received: 15/12/2017CV47 2XUCV47 2XU | | | | | | | | | | | | |
| Contact: Site Name: Site Address: | Jim Tw Steeple Not Giv | Jim TwaddleDate Tested: 22/12/2017Steeple AstonSampled By: Not GivenNot Given | | | | | | | | | | | | |
| TEST RESULT Description: Location: Sample Prepara | Light br TP8 tion: | Laboratory Reference: 877230 Sample Reference: Not Given Light brown slightly sandy CLAY Sample Type: D TP8 Depth Top [m]: 0.75 n: Tested in natural condition Depth Base [m]: Not Giver | | | | | | | | | | | | |
| As Received Content | Moisture [%] | Liquic [؟ | l Limit 6] | Plastic Limit [%] | Plasticity Index [%] | % Passing 425µm BS Test Sieve | | | | | | | | |
| 15 | | 6 | 0 | 21 | 39 | 100 | | | | | | | | |
| 100 - 90 - 80 - 70 - 60 - 40 - 30 - 10 - 10 - 0 - 0 - 0 | | CL | CI MI 40 50 | CV CH 877230 MV MH | CE ME 0 100 110 120 | A line | | | | | | | | |
| | | Legend, based on BS 5930:2015 Code of practice for site investigations Plasticity Liquid Limit C Clay L Low below 35 M Silt I Medium 35 to 50 H High 50 to 70 V Very high 70 to 90 E Extremely high exceeding 90 Organic O append to classification for organic material (eg CHO) | | | | | | | | | | | | |

Remarks

 Approved:
 Signed:

 Dariusz Piotrowski
 Mark Beastall

 PL Laboratory
 Geotechnical Commercial

 Manager Geotechnical
 Manager

 Section
 02/01/2018

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for and on behalf of i2 Analytical Ltd

Page 1 of 1

i2 Analytical Ltd **TEST CERTIFICATE** 7 Woodshots Meadow **Croxley Green Business Park Determination of Liquid and Plastic Limits** Watford Herts WD18 8YS Tested in Accordance with BS1377-2: 1990: Clause 4.4 & 5: One Point Method The Brownfield Consultancy **Client Reference: BC340** Client: **Client Address:** Woodstock Job Number: 17-70944 Memorial Road Date Sampled: 13/12/2017 Fenny Compton Warwickshire Date Received: 15/12/2017 CV47 2XU Contact: Jim Twaddle Date Tested: 22/12/2017 Steeple Aston Site Name: Sampled By: Not Given Site Address: Not Given 877231 **TEST RESULTS** Laboratory Reference: Not Given Sample Reference: Yellowish brown slightly gravelly slightly sandy CLAY with fragments of **Description:** Sample Type: D shell TP8 Depth Top [m]: 2.30 Location: Sample Preparation: Depth Base [m]: Not Given Tested after washing to remove >425um As Received **Liquid Limit Plastic Limit Plasticity Index** % Passing 425µm Moisture Content [%] **BS Test Sieve** [%] [%] [%] 19 52 19 33 91 100 90 A line 80 70 CE 60 PLASTICITY INDEX CV 50 ME 40 CH MV 877231 30 CI 20 МH CL 10 MI ML 0 10 100 130 150 0 20 30 40 50 60 70 80 90 110 120 140 LIQUID LIMIT Legend, based on BS 5930:2015 Code of practice for site investigations Liquid Limit Plasticity below 35 С Clay L Low M Silt Т Medium 35 to 50 50 to 70 н High v Very high 70 to 90

> Organic 0 append to classification for organic material (eg CHO)

exceeding 90

Extremely high

Е

Remarks

| Approved: | | Signed: |
|----------------------|------------|--|
| | | |
| Dariusz Piotrowski | | Mark Beastall |
| PL Laboratory | | Geotechnical Commercial |
| Manager Geotechnical | | Manager |
| Section | | |
| Date Reported: | 02/01/2018 | |
| - | | for and on behalf of i2 Analytical Ltd |

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The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

| | | TEST CERTIFICATE i2 Analytical Ltd 7 Woodshots Meadow Croyley Green Business Park | | | | | | | | | | | |
|---|--|--|--------------------------------|---------------------------------------|--|--|---|--|--|------------------|-----------------|----------------|---------------------|
| | <u>Detern</u> | nination | of Liqu | uid an | d Pla | stic Lir | <u>nits</u> | Croxle Watfo | y Greer rd Herts | Busin WD18 | ess Parl 8YS | K Env | rironmental Science |
| 4041 | Tested in A | ccordance wit | h BS1377-2 | 2: 1990: C | Clause 4.4 | 4 & 5: One F | oint Met | hod | | | | | |
| Client: Client Address: | The Bro Woodst Memori Fenny C Warwic | ownfield Cons ock al Road Compton kshire | sultancy | | | Clie E D | ent Refe Job Nu Date Sar ate Rec | rence: imber: npled: eived: | BC340 17-7094 13/12/2 15/12/2 | 14 017 017 | | | |
| Contact: Site Name: Site Address: | Jim Twa Steeple Not Giv | UV47 2XUDate Tested: 22/12/2017Jim TwaddleDate Tested: 22/12/2017Steeple AstonSampled By: Not GivenNot GivenSampled By: Not Given | | | | | | | | | | | |
| TEST RESUL | TS | Lat | ooratory R | eference | e: 8 | 77232 | | | | | | | |
| Description: Location: Sample Prepara | Yellowis TP10 tion: | Sample Reference: Not Given Yellowish brown slightly sandy CLAY Sample Type: D TP10 Depth Top [m]: 2.45 ion: Tested in natural condition | | | | | | | | | | 5 Given | |
| As Received | Moisture ſ%1 | Liqui) ۲ | d Limit %1 | | Plast | ic Limit %1 | | Plastic r | ity Ind %1 | ex | % Pa BS | assing Test | j 425µm Sieve |
| 28 | [,0] | L | 52 | | 21 | | | | 31 | | 100 | | |
| 100 - 90 - 80 - 70 - 60 - 50 - 40 - 30 - 10 - 0 - 0 - | | CL CL 20 30 Legend, based of C Clay M Silt | CI MI 40 m BS 5930:20 | 50 C Plas L H V E O | H 2332 H 50 7 LIQ of practice ticity Low Medium High Very hig Extreme append | CV MV MV 0 80 UID LIMIT for site invest | 90 igations | CE ME 100 Liquid Li below 38 35 to 50 50 to 70 70 to 90 exceedin | 110 : mit 5 | 120 | | | 150 |
| Remarks | | | | | | | | | | | | | |



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| | | | TE | ST (| CER | TIFI | CAT | E | | | i2 Analytical Ltd 7 Woodshots Meadow | | | | | | |
|---|---|---|--|--------|--------|---------|---------|-------|---|-------------|---|--------------------|--------------------|-------------------|---------|-----------------|------------|
| | Det | ermi | nation | of | Liqu | id ar | nd P | lasti | <u>c Lin</u> | <u>nits</u> | Crox Watf | ley Gre ord Hei | en Busir ts WD1 | ness Pai 8 8YS | rk ⊧ | Environment | al Science |
| 4041 | Tested in Accordance with BS1377-2: 1990: Clause 4.4 & 5: One Point Method | | | | | | | | | | | | | | | | |
| Client: Client Address: | The Wo Me Fer Wa | e Brown odstoc morial ny Co rwicks | nfield Cor k Road mpton nire | nsulta | ncy | | | | Client Reference: BC340 Job Number: 17-70944 Date Sampled: 14/12/2017 | | | | | | | | |
| Contact: Site Name: Site Address: | CV Jim Ste Not | CV47 2XUDate Tested: 22/12/2017Jim TwaddleDate Tested: 22/12/2017Steeple AstonSampled By: Not GivenNot GivenSampled By: Not Given | | | | | | | | | | | | | | | |
| TEST RESUL | TS | | La | aborat | ory Re | eferenc | e: | 8772 | 34 | | | | | | | | |
| Description: Location: Sample Prepara | Sample Reference: Not Given Light brown slightly gravelly slightly sandy CLAY Sample Type: D WS1 Depth Top [m]: 2.00 eparation: Tested after >425um removed by hand | | | | | | | | | | | 00 15 | | | | | |
| As Received | Moistu 1%1 | oisture Liquid Limit Plastic | | | | | | | imit | | Plasticity Index % Passing 42 | | | | | g 42: t Siev | 5µm |
| 14 | [70] | | | 45 | | | 20 | | | | | 25 | | | 89 | | |
| 100 - | | | | | | | | | | | | | | • | | _ | |
| 90 - 80 - 70 - | | | | | | | | | | | CE | | | | | | |
| 60 - 50 - 40 - 10 - | | | | | | | CH | | cv | | ME | | | | | | |
| LS 30 - 20 - 10 - | | | CL | | CI. 8 | 377234 | ин | | | | | | | | | | |
| | | ••••• | ML | | МІ | | | | | | | | | | | | |
| 0 |) 1(|) 2 | 0 30 | 4 | 0 ! | 50 | , 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | ' 150 | |
| | Legend, based on BS 5930:2015 Code of practice for site investigations Plasticity Liquid Limit C Clay L Low below 35 M Silt I Medium 35 to 50 H High 50 to 70 V Very high 70 to 90 E Extremely high exceeding 90 | | | | | | | | | | | | | | | | |
| Remarks | organic O append to classification for organic material (eg CHO) | | | | | | | | | | | | | | | | |



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TEST CERTIFICATE

Summary of Classification Test Results

| The Brownfield Consultancy |
|----------------------------|
| Woodstock |
| Memorial Road |
| Fenny Compton |
| Warwickshire |
| CV47 2XU |
| Jim Twaddle |
| Steeple Aston |
| Not Given |
| |

Test results



Client Reference: BC340 Job Number: 17-70944 Date Sampled: 13/12 - 14/12/2017

Date Received: 15/12/2017

Date Tested: 22/12/2017 Sampled By: Not Given

| | | | Sa | mple | - | | De | nsity | M/G | | PD | | | |
|-------------------------|----------|-----------|-----------|------------|------|--|-------|-------|-------|-----------------|----|----|----|-------|
| Laboratory Reference | Hole No. | Reference | Top depth | Base depth | Туре | Soli Description | bulk | dry | 141/0 | % Passing 425um | LL | PL | Ы | 15 |
| | | | լող | [in] | | | Mg/m3 | Mg/m3 | % | % | % | % | % | Mg/m3 |
| 877232 | TP10 | Not Given | 2.45 | Not Given | D | Yellowish brown slightly sandy CLAY | | | 28 | 100 | 52 | 21 | 31 | |
| 877227 | TP4 | Not Given | 1.70 | Not Given | D | Yellowish brown slightly gravelly slightly sandy CLAY | | | 21 | 95 | 55 | 21 | 34 | |
| 877228 | TP6 | Not Given | 2.00 | Not Given | D | Light brown slightly gravelly slightly sandy CLAY | | | 13 | 86 | 47 | 19 | 28 | |
| 877229 | TP7 | Not Given | 2.30 | Not Given | D | Light brown slightly gravelly slightly sandy CLAY with fragments of shell | | | 17 | 97 | 44 | 17 | 27 | |
| 877230 | TP8 | Not Given | 0.75 | Not Given | D | Light brown slightly sandy CLAY | | | 15 | 100 | 60 | 21 | 39 | |
| 877231 | TP8 | Not Given | 2.30 | Not Given | D | Yellowish brown slightly gravelly slightly sandy CLAY with fragments of shell | | | 19 | 91 | 52 | 19 | 33 | |
| 877234 | WS1 | Not Given | 2.00 | 2.45 | D | Light brown slightly gravelly slightly sandy CLAY | | | 14 | 89 | 45 | 20 | 25 | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

Comments:

Approved:

Dariusz Piotrowski PL Laboratory Manager Geotechnical Section

Date Reported: 02/01/2018

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Mark Beastall

Geotechnical Commercial Manager

| | | | Dete | rm | ina | TES | OT CE | RTIF | ICA Si | ATE | Dist | trik | out | io | <u>n</u> | i2 7 C W | Ana Woo roxle /atfo | alytica odsho ey Gre ord He | il Lto ots M een l erts V | leado Busin VD18 | w ess 8Y: | Park S | Env | Analytical | 2 tal Science | Ce |
|---|---------------|---------------|----------|------|----------------|-------------|--------|----------------|-----------|----------|--------------|------------------------|------------------------------------|-------------------------------|--------------------------------------|--------------------------------|------------------------------|--------------------------------------|------------------------------------|------------------------|-----------------|-----------|---------|------------|------------------|----|
| Client: The Brownfield Consultancy Client Address: Woodstock Memorial Road Fenny Compton Warwickshire CV47 2XU Contact: Jim Twaddle | | | | | | | | | | | C | lien J Da Dai | t Refe lob Ni te Sa e Rec | erenc umb mple ceive | xe: B(er: 17 ed: 13 ed: 15 | C34(-70) 5/12/ 5/12/ |) 944 2017 2017 | | | | | | | | | |
| Site | Nar Add | ne: Iress: | | Ste | eple t Give | Aston en | | | | | | | | | | | ŝ | Sampl | led E | su. 22 By: No | ot G | iven | | | | |
| TEST RESULTS Laboratory Reference: 877233 Sample Reference: Not Sample description: Yellow slightly gravelly slightly sandy CLAY Sample Type: B Location: TP13 Depth Top [m]: 1.30 Supplier: Not Given Depth Base [m]: 1.40 | | | | | | | | | | | | | ot G 30 40 | iven | | | | | | | | | | | | |
| | _ | CLAY | Fine | Ð | SI Med | LT dium | Coarse | Fi | ie | S/ Me | AND edium | (| Coars | se | | ine | G | RAVEL ledium | c | oarse | c | DBBLES | BO | JLDER | s | |
| | 100 - 90 - | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 80 - | | | | | | | _ | _ | | | | | _ | _ | | | | | | | | | | | |
| | 70 | | | | | | _ | | | | | | - | | | | | | | | | | | | | |
| % 5 | 60 - | | | | | | | | _ | | | | | | | | | | | | | | | | | |
| assir | 50 | | | | | | | | | | | | | | | | | | | | | | | | | |
| age P | 40 | | | | | | | | | | | | | | | | | | | | | | | | | |
| cents | 40 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Per | 30 - | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 20 - | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0.0 | 001 | | | 0.0 | 01 | | 0.1 | | | Ba | tiolo | 1 | - | | | | 10 | | · | | 100 | | | 100 | 0 |
| | | | Sie | ving | | | | Sedi | men | tatio | n | | | | Dry | Mass | of sa | mple [| [g]: | | | | 1052 | | | |
| | P | article mm | Size | | % Pas | ssing | Parti | cle Size mm | • | % I | Passi | ng | | | | | | | | | | | | | | |
| | | 125 | (| | 10 | 0 | | | | | | | | 5 | Sam | ple P | ropo | ortions | 5 | | | | % dry | mass | i | |
| | | 90 75 | | | 10 | 0 | | | | | | | | | Grav | rel | 58 | | | | | | 19. | 90 90 | | |
| | | 63 50 | | | 10 | 0 | | | | | | | | | Sand | ł | | | | | _ | | 20. | 00 | | |
| | | 37.5 | i | | 10 | 0 | | | | | | | | | Fine | s <0.0 |)63m | m | | | | | 60. | 10 | | |
| | | 28 | | | 10 | 0 | | | | | | | - | | Grad | ling (| \nab | /ele | | | — | | | | | _ |
| | | 14 | | | 96 | 5 | | | | | | | | | D10 | , iiig <i>i</i>) | Jiai | /313 | | mr | n | | 28 | 3 | | |
| | | 10 | | | 93 | 3 | | | $- \Box$ | | | | | | D60 | | | | | m | n | | | | | |
| | | <u>0.3</u> | | | 86 | 9 6 | | | - | | | | | | D30 | | | | | mr | n | | | | | _ |
| | | 3.35 | i | | 84 | 1 1 | | | $- \Box$ | | | | | | Unife | ormity | Coe | fficient | t t | | \top | | | | | |
| | | <u></u> | 3 | E | 76 | 5 | | | | | | | | 2 | | aure | 008 | moleni | | | | | | | | |
| | | 0.6 | 5 | | 7 | 1 | | | | | | | 1 | | Rem | arks | | lastic - | in | orde | | h 86407 | 7 | | d hole. | |
| | | 0.42 | . | | 66 | 5 | ┟─── | | | | | | - | | riepa | ai duOfi | 9110 1 | ເວຣແກ່ງ | III BCC | JURDIC | o WIC | 0313/ | / unies | | n nelow | ŗ |
| | | 0.21 | 2 | | 64 | 4 | | | | | | | | | | | | | | | | | | | | |
| | \vdash | 0.15 | 3 | | 60 | ,) | 1 | | | | | | | | | | | | | | | | | | | |
| | | | | L | | | II | | | | | | _ | | | | | | | | | | | | | |

Approved:

Dariusz Piotrowski PL Laboratory Manager Geotechnical Section

Date Reported: 02/0

02/01/2018

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Signed:

Mark Beastall Geotechnical Commercia Manager

APPENDIX E

Gas Monitoring Results

| Site: | Steeple A | ston | | | | Operator | : | НК | | | | |
|------------|-----------------------|--------------------|----------------|--------------------|----------------------|----------|---------------------|---------|-----------------|----------------|----------|--|
| Project: | BC340 | | |] | Date: | 6.1.18 | | | Weather: | | Cold dry | |
| Monitoring | Standpipe diameter | Standpipe Depth | Water Level | Atmos. Pressure | Initial Flow Rate | Temp | Reading Duration | CH_4 | CO ₂ | O ₂ | Notes | |
| Location | (mm) | (m bgl) | (m bgl) | (mb) | (litres/hr) | (°C) | (s) | (% v/v) | (% v/v) | (% v/v) | | |
| WS1 | 50 | 2.70 | Dry | 998 | 0.1 | | 30 | <0.1 | 3.7 | 16.4 | | |
| | | | | | | | 60 | <0.1 | 3.7 | 16.0 | | |
| | | | | | | | 120 | <0.1 | 3.7 | 16.0 | | |
| | | | | | | | 180 | <0.1 | 3.7 | 16.0 | | |
| | | | | | | | 240 | <0.1 | 3.7 | 16.0 | | |
| | | | | | | | 300 | <0.1 | 3.7 | 16.0 | | |
| WS2 | 50 | 3.02 | Dry | 008 | <0.1 | | 30 | -0.1 | 0.7 | 20.7 | | |
| W 32 | 50 | 5.92 | Diy | 990 | <0.1 | | 50 60 | <0.1 | 1.0 | 10.7 | | |
| | | | | | | | 120 | <0.1 | 2.4 | 18.8 | | |
| | | | | | | | 180 | <0.1 | 2.6 | 18.5 | | |
| | | | | | | | 240 | <0.1 | 2.9 | 18.1 | | |
| | | | | | | | 300 | <0.1 | 2.9 | 18.1 | | |
| | | | | | | | | | | | | |
| WS3 | 50 | 1.75 | 1.50 | 998 | <0.1 | | 30 | <0.1 | 1.4 | 20.2 | | |
| | | | | | | | 60 | <0.1 | 1.4 | 20.2 | | |
| | | | | | | | 120 | <0.1 | 1.4 | 20.2 | | |
| | | | | | | | 180 | <0.1 | 1.4 | 20.2 | | |
| | | | | | | | 240 | <0.1 | 1.4 | 20.2 | | |
| | | | | | | | 300 | <0.1 | 1.4 | 20.2 | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| Site: | Steeple A | ston | | | | | | | Operator | | НК |
|------------|-----------------------|--------------------|----------------|--------------------|----------------------|---------|---------------------|---------|-----------------|----------------|------------|
| Project: | BC340 | | |] | Date: | 11.1.18 | |] | Weather: | | Foggy damp |
| Monitoring | Standpipe diameter | Standpipe Depth | Water Level | Atmos. Pressure | Initial Flow Rate | Temp | Reading Duration | CH_4 | CO ₂ | O ₂ | Notes |
| LUCATION | (mm) | (m bgl) | (m bgl) | (mb) | (litres/hr) | (°C) | (s) | (% v/v) | (% v/v) | (% v/v) | |
| | | | | | | | | | | | |
| WS1 | 50 | 2.70 | Dry | 1006 | 0.2 | | 30 | <0.1 | 3.3 | 17.4 | |
| | | | | | | | 60 | <0.1 | 3.3 | 17.0 | |
| | | | | | | | 120 | <0.1 | 3.3 | 16.9 | |
| | | | | | | | 180 | <0.1 | 3.3 | 16.9 | |
| | | | | | | | 240 | <0.1 | 3.3 | 16.9 | |
| | | | | | | | 300 | <0.1 | 3.3 | 16.9 | |
| | | | | | | | | | | | |
| WS2 | 50 | 3.92 | Dry | 1006 | <0.1 | | 30 | <0.1 | 0.3 | 20.8 | |
| | | | | | | | 60 | <0.1 | 0.3 | 20.8 | |
| | | | | | | | 120 | <0.1 | 0.3 | 20.8 | |
| | | | | | | | 180 | <0.1 | 0.3 | 20.8 | |
| | | | | | | | 240 | <0.1 | 0.3 | 20.8 | |
| | | | | | | | 300 | <0.1 | 0.3 | 20.8 | |
| | | | | | | | | | | | |
| WS3 | 50 | 1.75 | 1.62 | 1006 | <0.1 | | 30 | <0.1 | 1.9 | 20.2 | |
| | | | | | | | 60 | <0.1 | 1.9 | 20.0 | |
| | | | | | | | 120 | <0.1 | 1.9 | 20.0 | |
| | | | | | | | 180 | <0.1 | 1.9 | 20.0 | |
| | | | | | | | 240 | <0.1 | 1.9 | 20.0 | |
| | | | | | | | 300 | <0.1 | 1.9 | 20.0 | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

| Site: | Steeple A | ston | | | | | | | Operator | | НК | |
|------------|-----------------------|--------------------|----------------|--------------------|----------------------|---------|---------------------|---------|-----------------|----------------|--------------|--|
| Project: | BC340 | | |] | Date: | 19.1.18 | | | Weather: | | Warm, frosty | |
| Monitoring | Standpipe diameter | Standpipe Depth | Water Level | Atmos. Pressure | Initial Flow Rate | Temp | Reading Duration | CH_4 | CO ₂ | O ₂ | Notes | |
| Location | (mm) | (m bgl) | (m bgl) | (mb) | (litres/hr) | (°C) | (s) | (% v/v) | (% v/v) | (% v/v) | | |
| | | | | | | | | | | | | |
| WS1 | 50 | 2.70 | Dry | 995 | <0.1 | | 30 | <0.1 | 1.8 | 18.8 | | |
| | | | | | | | 60 | <0.1 | 1.8 | 18.7 | | |
| | | | | | | | 120 | <0.1 | 1.8 | 18.7 | | |
| | | | | | | | 180 | <0.1 | 1.8 | 18.7 | | |
| | | | | | | | 240 | <0.1 | 1.8 | 18.7 | | |
| | | | | | | | 300 | <0.1 | 1.8 | 18.7 | | |
| | | | | | | | | | | | | |
| WS2 | 50 | 3.92 | Dry | 995 | <0.1 | | 30 | <0.1 | 0.2 | 20.6 | | |
| | | | | | | | 60 | <0.1 | 0.2 | 20.6 | | |
| | | | | | | | 120 | <0.1 | 0.2 | 20.6 | | |
| | | | | | | | 180 | <0.1 | 0.2 | 20.6 | | |
| | | | | | | | 240 | <0.1 | 0.2 | 20.6 | | |
| | | | | | | | 300 | <0.1 | 0.2 | 20.6 | | |
| | | | | | | | | | | | | |
| WS3 | 50 | 1.75 | Dry | 995 | <0.1 | | 30 | <0.1 | 1.7 | 19.4 | | |
| | | | | | | | 60 | <0.1 | 1.7 | 19.3 | | |
| | | | | | | | 120 | <0.1 | 1.7 | 19.3 | | |
| | | | | | | | 180 | <0.1 | 1.7 | 19.3 | | |
| | | | | | | | 240 | <0.1 | 1.7 | 19.3 | | |
| | | | | | | | 300 | <0.1 | 1.7 | 19.3 | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| Site: | Steeple A | ston | | | | | | | Operator | | НК | |
|------------|-----------------------|--------------------|----------------|--------------------|----------------------|---------|---------------------|---------|-----------------|----------------|------------|--|
| Project: | BC340 | | |] | Date: | 19.1.18 | |] | Weather: | | Heavy rain | |
| Monitoring | Standpipe diameter | Standpipe Depth | Water Level | Atmos. Pressure | Initial Flow Rate | Temp | Reading Duration | CH_4 | CO ₂ | O ₂ | Notes | |
| Location | (mm) | (m bgl) | (m bgl) | (mb) | (litres/hr) | (°C) | (s) | (% v/v) | (% v/v) | (% v/v) | | |
| | | | | | | | | | | | | |
| WS1 | 50 | 2.70 | Dry | 987 | <0.1 | | 30 | <0.1 | 2.2 | 18.6 | | |
| | | | | | | | 60 | <0.1 | 2.2 | 18.3 | | |
| | | | | | | | 120 | <0.1 | 2.2 | 18.3 | | |
| | | | | | | | 180 | <0.1 | 2.2 | 18.3 | | |
| | | | | | | | 240 | <0.1 | 2.2 | 18.3 | | |
| | | | | | | | 300 | <0.1 | 2.2 | 18.3 | | |
| | | | | | | | | | | | | |
| WS2 | 50 | 3.92 | Dry | 987 | 0.4 | | 30 | <0.1 | 2.8 | 17.9 | | |
| | | | | | | | 60 | <0.1 | 2.8 | 17.6 | | |
| | | | | | | | 120 | <0.1 | 2.8 | 17.6 | | |
| | | | | | | | 180 | <0.1 | 2.8 | 17.6 | | |
| | | | | | | | 240 | <0.1 | 2.8 | 17.6 | | |
| | | | | | | | 300 | <0.1 | 2.8 | 17.6 | | |
| | | | | | | | | | | | | |
| WS3 | 50 | 1.75 | Dry | 987 | <0.1 | | 30 | <0.1 | 1.2 | 19.8 | | |
| | | | | | | | 60 | <0.1 | 1.2 | 19.6 | | |
| | | | | | | | 120 | <0.1 | 1.2 | 19.6 | | |
| | | | | | | | 180 | <0.1 | 1.2 | 19.6 | | |
| | | | | | | | 240 | <0.1 | 1.2 | 19.6 | | |
| | | | | | | | 300 | <0.1 | 1.2 | 19.6 | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| Site: | Steeple A | ston | | | | | | | Operator | : | НК |
|------------|-----------------------|--------------------|----------------|--------------------|----------------------|--------|---------------------|---------|-----------------|----------------|----------|
| Project: | BC340 | | |] | Date: | 1.2.18 | | | Weather: | | Dry cold |
| Monitoring | Standpipe diameter | Standpipe Depth | Water Level | Atmos. Pressure | Initial Flow Rate | Temp | Reading Duration | CH_4 | CO ₂ | O ₂ | Notes |
| Location | (mm) | (m bgl) | (m bgl) | (mb) | (litres/hr) | (°C) | (s) | (% v/v) | (% v/v) | (% v/v) | |
| WS1 | 50 | 2.70 | Dry | 990 | <0.1 | | 30 | <0.1 | 1.8 | 18.6 | |
| | | | | | | | 60 | <0.1 | 1.8 | 18.4 | |
| | | | | | | | 120 | <0.1 | 1.8 | 18.4 | |
| | | | | | | | 180 | <0.1 | 1.8 | 18.4 | |
| | | | | | | | 240 | <0.1 | 1.8 | 18.4 | |
| | | | | | | | 300 | <0.1 | 1.8 | 18.4 | |
| WS2 | 50 | 3.92 | Dry | 990 | <0.1 | | 30 | <0.1 | 1.7 | 19.6 | |
| | | | | | | | 60 | <0.1 | 1.7 | 19.5 | |
| | | | | | | | 120 | <0.1 | 1.7 | 19.5 | |
| | | | | | | | 180 | <0.1 | 1.7 | 19.5 | |
| | | | | | | | 240 | <0.1 | 1.7 | 19.5 | |
| | | | | | | | 300 | <0.1 | 1.7 | 19.5 | |
| WS3 | 50 | 1.75 | Dry | 990 | <0.1 | | 30 | <0.1 | 1.8 | 19.8 | |
| | | | - | | | | 60 | <0.1 | 1.8 | 19.6 | |
| | | | | | | | 120 | <0.1 | 1.8 | 19.6 | |
| | | | | | | | 180 | <0.1 | 1.8 | 19.6 | |
| | | | | | | | 240 | <0.1 | 1.8 | 19.6 | |
| | | | | | | | 300 | <0.1 | 1.8 | 19.6 | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

| Site: | Steeple A | ston | | | _ | Operator: | | НК | | | |
|------------|-----------------------|--------------------|----------------|--------------------|----------------------|-----------|---------------------|---------|-----------------|----------------|----------|
| Project: | BC340 | | |] | Date: | 6.2.18 | | | Weather: | | Dry cold |
| Monitoring | Standpipe diameter | Standpipe Depth | Water Level | Atmos. Pressure | Initial Flow Rate | Temp | Reading Duration | CH_4 | CO ₂ | O ₂ | Notes |
| Location | (mm) | (m bgl) | (m bgl) | (mb) | (litres/hr) | (°C) | (s) | (% v/v) | (% v/v) | (% v/v) | |
| WS1 | 50 | 2.70 | Dry | 1005 | <0.1 | | 30 | <0.1 | 2.9 | 16.8 | |
| | | | | | | | 60 | <0.1 | 2.9 | 16.1 | |
| | | | | | | | 120 | <0.1 | 2.9 | 16.1 | |
| | | | | | | | 180 | <0.1 | 2.9 | 16.1 | |
| | | | | | | | 240 | <0.1 | 2.9 | 16.1 | |
| | | | | | | | 300 | <0.1 | 2.9 | 16.1 | |
| WS2 | 50 | 3.92 | Dry | 1005 | <0.1 | | 30 | <0.1 | 2.0 | 18.3 | |
| | | | - | | | | 60 | <0.1 | 2.0 | 18.0 | |
| | | | | | | | 120 | <0.1 | 2.0 | 18.0 | |
| | | | | | | | 180 | <0.1 | 2.0 | 18.0 | |
| | | | | | | | 240 | <0.1 | 2.0 | 18.0 | |
| | | | | | | | 300 | <0.1 | 2.0 | 18.0 | |
| WS3 | 50 | 1.75 | Dry | 1005 | <0.1 | | 30 | <0.1 | 1.9 | 19.3 | |
| | | | , | | | | 60 | <0.1 | 1.9 | 19.0 | |
| | | | | | | | 120 | <0.1 | 1.9 | 18.9 | |
| | | | | | | | 180 | <0.1 | 1.9 | 18.9 | |
| | | | | | | | 240 | <0.1 | 1.9 | 18.9 | |
| | | | | | | | 300 | <0.1 | 1.9 | 18.9 | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

APPENDIX F

Limitations

NOTES ON LIMITATIONS

This report has been prepared by the Brownfield Consultancy with all reasonable skill, care and diligence. This report is confidential and has been prepared solely for the benefit of the client as stated at the front of the report in relation to a specific development or scheme; and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from The Brownfield Consultancy; a charge may be levied against such approval. We accept no responsibility or liability for the consequences of this document being used for any purpose or project other than for which it was commissioned, and: this document to any third party with whom an agreement has not been executed.

Any comments given are based on the understanding that the proposed development will be as detailed. The Brownfield Consultancy warrants the accuracy of this report up to and including the published date. Additional information, improved practice or changes in legislation may necessitate this report having to be reviewed in whole or in part after that date.

This report is only valid when used it its entirety. Any information or advice included in the report should not be relied upon until considered in the context of the whole report. Whilst this report and the opinion made herein are correct to the best of our belief we cannot guarantee the accuracy or completeness of any information provided by third parties.

The opinions and recommendations expressed in this report are based on statute, guidance, and appropriate practice current at the date of its preparation. The Brownfield Consultancy does not accept any liability whatsoever for the consequences of any future legislative changes or the release of subsequent guidance documentation, etc. Such changes may render some of the opinions and advice in this report inappropriate or incorrect and we will be pleased to advise if any report requires revision due to changing circumstances. Following delivery of a report we have no obligation to advise the Client or any other party of such changes or their repercussions.

Phase 1 Reports

The work undertaken to provide the basis of a Phase I report comprised a study of available documented information from a variety of sources, together with (where appropriate) a brief walk over inspection of the site. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. It should be noted that any risks identified in this report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site.

Historical maps and aerial photographs provide a "snap shot" in time about conditions or activities at the site and cannot be relied upon as indicators of any events or activities that may have taken place at other times.

Phase II Intrusive Investigations

The investigation of the site has been carried out to provide sufficient information concerning the type and degree of contamination, and ground and groundwater conditions to allow a reasonable risk assessment to be made. The conclusions and recommendations made in this site appraisal report and the opinions expressed are based on the information reviewed and/or the ground conditions encountered in exploratory holes and the results of any field or laboratory testing undertaken. There may be ground conditions at the site that have not been disclosed by the information reviewed or by the investigative work undertaken. Such undisclosed conditions cannot be taken into account in any analysis and reporting.

Some of the conclusions in this site appraisal report may be based on third party data. No guarantee can be given for the accuracy or completeness of any of the third party data used.

The evaluation and conclusions do not preclude the existence of contamination, which could not reasonably have been revealed by the current work. Given the discrete nature of sampling, no investigation technique is capable of identifying all conditions present in all areas. The number of sampling points and the methods of sampling and testing do not preclude the existence of localised "hotspots" of contamination where concentrations may be significantly higher than those actually encountered. Hence this report should be used for information purposes only and should not be construed as a comprehensive characterisation of all site conditions.

It should be noted that groundwater levels, groundwater chemistry, surface water levels, surface water chemistry, soil gas concentrations and soil gas flow rates can vary due to seasonal, climatic, tidal and man-made effects.

The interpretation carried out in this report is based on scientific and engineering appraisal carried out by suitably experienced and qualified technical consultants based on the scope of our engagement. We have not taken into account the perceptions of, for example, banks, insurers, other funders, lay people, etc., unless the report has been prepared specifically for that purpose. Advice from other specialists may be required such as the legal, planning and architecture professions, whether specifically recommended in our report or not.

The objectives of the investigation have been linked to establishing the risks associated with potential human targets, building materials, the environment (including adjacent land), and to surface and ground water. The amount of exploratory work and chemical testing undertaken has necessarily been restricted by the short timescale available, and the locations of exploratory holes have been restricted to areas unoccupied by the building(s) on the site and by buried services.

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