

Your Ref:

Our Ref: BC652 L.01 / JT

Formation Design and Build
Oakwood House
414-422 Hackney Road
London
E2 7SY

For the attention of Aisling Carron

26th October 2023

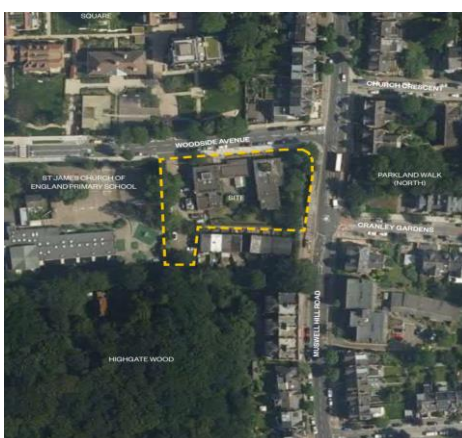
Dear Aisling

CRANWOOD HOUSE, 100 WOODSIDE AVENUE, MUSWELL HILL. N10 3JA
SUPPLEMENTARY CONTAMINATION INVESTIGATION AND REMEDIATION METHIOD STATEMENT.
Planning Application Reference No. HGY/2021/2727

1 INTRODUCTION

The Brownfield Consultancy was instructed by Formation Design and Build Ltd (the client) to undertake a Phase 2 supplementary soil contamination investigation at the above site.

The site is roughly rectangular with a southwest projection, covering a total site area of approximately 0.39 ha. The site, situated in a predominantly residential area of Muswell Hill, comprised a former 2-3 storey, U-shaped Care Home with a Car Park in the southwest corner. Highgate Wood is located to the immediate south of the site. A location plan denoting the curtilage is presented below:-



The levels on site sloped down into a central courtyard, such that a basement level of Cranwood House was accessible from ground level on the southern side. This lower area was accessed via an underpass beneath Muswell Hill Road, to the immediate west.

The central courtyard and surrounding areas to the east and north were predominantly laid to grass with footpaths for access.

Planning permission has been granted to replace the existing care home with 41 new homes for council rent and market sale in a mixture of apartments, maisonettes and houses in three buildings of three, four and six storeys. Building A will comprise a basement level and five stories. Building B comprises four stories and Building C comprises a pair of conventional semidetached two storey residential houses. In a similar configuration to the previous structure, there will be a lower (basement) area of landscaping within the central area and an area of landscaping at a similar level to Woodside Road. The difference in level will be approximately 1.00-1.50m. Landscaping proposals are included in Appendix A.

The layout is presented below:-



A previous contaminated land and geotechnical investigation was undertaken at the site by Soiltechnics on behalf of Haringey Council. A precis of their findings are presented in Section 2. A contaminated land condition has been attached to the planning permission and this is set out below:-

CONDITION 17

Prior to the commencement of the approved development (other than for investigative work):

a. Using the information already submitted on the Ground Investigation Report Rev. 01 (ref. STS5215-G01 by Soiltechnics Ltd dated May 2021), an intrusive site investigation shall be conducted for the site using information obtained from the desktop study and Conceptual Model. The site investigation must be comprehensive enough to enable: a risk assessment to be undertaken, refinement of the Conceptual Model, and the development of a Method Statement detailing the remediation requirements where necessary;

b. The risk assessment and refined Conceptual Model shall be submitted, along with the site investigation report, to the Local Planning Authority which shall be submitted to, and approved in writing by, the Local Planning Authority prior to that remediation being carried out on site;

c. Where remediation of contamination on the site is required, completion of the remediation detailed in the method statement shall be carried out, and;

d. A report that provides verification that the required works have been carried out, shall be submitted to, and approved in writing by the Local Planning Authority before the development is occupied.

Reason: To ensure the development can be implemented and occupied with adequate regard for environmental and public safety.

This supplementary report and Remediation Method Statement seeks to discharge Conditions 17a. and b.

This fieldwork and supplementary report has been undertaken by a suitably qualified and competent professional in accordance with the following methodologies:-

- Environment Agency : Land Contamination Risk Assessment (LCRM).
- Land Quality Management & Chartered Institute of Environmental Health (2015) The LQM/CIEH S4UL for Human Health Risk Assessment - LQM CIEH. Land Quality Press, Nottingham.
- Environment Agency Guidance for the Safe Development of Housing on Land Affected by Contamination (R&D Publication 66-2008).
- BS 10175 : Code of Practice for the Investigation of Potentially Contaminated Sites.

Our report is subject to limitations which are set out in Appendix D.

2 PREVIOUS WORK

Ground Investigation Report Rev. 01 Ref. STS5215-G01 by Soiltechnics Ltd dated May 2021.

Client - Haringey Council

The following elements of work were completed:-

- a) Phase I Preliminary investigation (desk study and site reconnaissance)
- b) Phase II Exploratory and detailed (intrusive) investigations.

The bedrock geology consists of London Clay Formation, which comprises of clay, silt and sand and is classified as 'Unproductive Strata' by the Environment Agency in terms of risks to controlled waters. Risks to controlled waters were ruled out.

Historically, a railway line ran through the northern part of the site from 1894 and further sidings, buildings and coal bunkers were recorded in the southern half of the site from 1912, when the site was recorded as Cranley Gardens Station. The station and associated railway line were dismantled in the late 1960s and the site was redeveloped to its current layout in the 1970s. Surrounding land has been predominantly residential since the early 1900s. A hospital has been recorded to the north since the 1930s and the adjacent school was developed in the 1970s.

There are no recorded or historical landfill sites or infilled land within 250m of the subject site.

Six hand excavated foundation exposure pits and six boreholes were driven across the site to depths of between 10-25m. These boreholes encountered Made Ground generally between 0.20m and 1.10m but locally deeper (up to 3.3m depth) overlying London Clay.

All exploratory holes had either concrete or asphalt surfacing over a brown gravelly sand subbase with gravels of flint, brick, concrete, bituminous coated material and igneous rock. BH02, BH04 and TP01 were surfaced with grass and had a brown clay topsoil at surface with gravels of brick and flint. TP02, TP03 and BH03 had paving slabs at surface with a cream-coloured sand subbase beneath.

The underlying Made Ground generally comprised greyish brown and brown gravelly clay with gravels of concrete, brick, flint, ash, igneous rock and bituminous coated material. Deeper Made Ground was present in BH01 (3.30m) and BH06 (1.80m).

Combined gas and groundwater monitoring standpipes were installed in boreholes BH01, BH02, BH05 and BH06. No groundwater was observed in any of the boreholes or trial pits during the ground investigation however water was present in all four standpipes installed in BH01, BH02, BH05 and BH06 during return monitoring visits. Groundwater was recorded at between 2.6-5.31m depth.

No obvious contamination, obstructions or instability was encountered.

Soil samples for subsequent laboratory determination of concentration of chemical contaminants were taken from the boreholes and the sides of trial pits. Laboratory chemical testing is presented in the following table.

Table summarising chemical testing			
Location	Depth (m)	Soil type	Testing scheduled (Refer to Appendix B for details).
BH01	0.6-0.7	Made Ground	Full two-staged WAC
BH06	1.0		
BH01	2.0-2.5	Made Ground	Asbestos screening
BH02	0.3	Made Ground	Suite 17
TP04	0.5		Asbestos screening
TP01	0.5	Made Ground	Suite 17 Asbestos screening PCBs
BH01	0.8	Made Ground	Suite 1 Asbestos screening PCBs
TP02	0.5-1.0	Made Ground	Suite 1 Asbestos screening
BH06	0.7	Made Ground	Suite 1 Suite 8 Asbestos screening
TP05	0.8	Made Ground	Suite 8 Asbestos screening
BH01	5.0	London Clay	Suite 8
BH02	2.5		
BH05	2.5-3		
BH06	10.5		
Table 5.2.1			

With the exception of general Made Ground, no evidence of contamination was identified. The chemical test data with respect to critical (child) receptors for future site users indicates all measured concentrations of selected contaminants and 95 percentile upper confidence limits (UCL) are below relevant adopted guideline values with the exception of beryllium. Asbestos was not detected in any of the eight samples submitted for screening. Two marginal exceedances of PAH were also identified.

Soiltechnics recommended further testing to determine if these are localised hotspots of contamination or are more widespread. At this stage, they considered that a low/moderate risk to end users was present based on current development proposals.

Using test data obtained to date, and with reference to Table 4 of BS 8485:2015+A1:2019, the site would be classified as Characteristic Gas Situation 2 and traffic light colour 'Amber 1' in accordance with NHBC report No 10627-R01(04). Thus, gas protection measures were considered necessary.

3 SUPPLEMENTARY SCOPE OF WORKS

In accordance with the recommendations made by Soiltechnics, the client will be installing gas membranes in the new structures and also adopting upgraded water supply pipework (Protectaline). The client commissioned the Brownfield Consultancy to undertake a supplementary soil investigation to refine the conceptual site model and to determine whether capping layers are required in public open space and private gardens.

4 FIELDWORK

The intrusive fieldwork was carried out on 3rd October 2023 and comprised 10No. machine excavated trial pits denoted TP101 – TP102. The site had been cleared of all structures and hardstanding with the exception of two strips of tarmac along the northern and western boundaries. The strip along the northern boundary was retained by a wall. Portacabins were present along the western boundary. Using site derived demolition rubble and arisings generated from grubbed out foundations, levels had been raised across the site to lie at similar level with Woodside Avenue. We were informed that 600mm of crushed stone was about to be placed for the piling mat. TP105 and TP106 were driven into the main body of 'fill'. Samples for contamination testing were collected at 1.00m bgl which is the approximate depth of communal landscaping within the lower (basement) area.

A selection of photographs are presented below:-



Looking southerly from the northeast corner.



Eastern boundary.



Northern boundary. Retaining wall on left.

With the exception of the southwest projection, soil investigation was not possible along the southern boundary of the site due to a buried culvert. This feature, together with the locations of the trial pits, are denoted on the Exploratory Hole Location Plan in Appendix A.

The site work was undertaken by The Brownfield Consultancy, with the ground investigation procedures and sample descriptions based on BS 5930 (2020) 'Code of Practice for Site Investigations' and BS 10175 (2011) "Investigation of potentially contaminated sites - code of practice".

5 LABORATORY TESTING

Laboratory testing was scheduled to determine the chemistry of selected soil samples obtained from the investigation. All samples were transported to I2 in Watford which is accredited under UKAS and MCerts. The results are presented in Appendix C. The details of the testing are summarised in the following table:-

Summary of Chemical Laboratory Testing Suites

Determinant	No.
CLEA Metals	11
16 USEPA PAHs	7
TPH Texas banded	1
Asbestos	11
TPHCWG & BTEX	2
TPH Total	5

6 GROUND CONDITIONS

The ground conditions encountered were consistent with the published geological map and the findings of the previous site investigation. Made Ground overlies London Clay. The reader is referred to Section 4 where a discussion on levels 'as found' are described. For full details and descriptions, reference should be made to the exploratory hole records presented in Appendix B.

6.1 Made Ground

In the southwest projection, formerly a Car Park, four trial pits (TP101-TP104) were driven and Made Ground was encountered to depths of 0.40-0.70m. A photograph of the area is presented below:-



Made Ground in TP101, TP102 and TP103 comprised humic gravelly SAND and sandy GRAVEL & COBBLE with variable quantities of clay. Gravel comprised flint, brick, concrete and, in TP102, clinker. Coarse gravel sized pockets of ash were recorded in TP103 and a larger pocket in TP101 (0.45-0.60m) in the west of the pit. In TP104, Topsoil to 0.05m overlies orange brown SAND to 0.30m which in turn overlies flint GRAVEL to 0.40m.

TP105 and TP106 were located in the area that had been raised using demolition arisings. In TP105 materials comprised sandy very gravelly CLAY with a high cobble and boulder content (flint, brick, concrete, breeze block, masonry and paving slabs). In TP106 the materials were granular rather than cohesive. The base of the deposit was not encountered.

TP107 and TP110 were excavated immediately south of Woodside Road along a strip of ground that was being retained. A photograph is presented below:-



Made Ground in TP107 was encountered to 0.80m and comprised brown and grey SAND with gravel and cobble of brick, concrete and flint. Fragments of hard plastic and pockets of topsoil and grass were also recorded. In TP110, brown and grey sandy GRAVEL and COBBLE of brick, concrete and flint was encountered to 0.65m which in turn was underlain by reworked London Clay to 0.80m.

TP108 encountered grey and light brown sandy gravelly CLAY to 0.80m. Gravel was yellow brick, concrete, red brick and flint with one subangular boulder of concrete also noted.

6.2 London Clay

Underlying Made Ground, London Clay was encountered in all exploratory hole locations and comprised brown and grey silty CLAY.

6.3 Groundwater

Groundwater was not encountered in any of the exploratory holes.

6.4 Contamination

Localised pockets of ash were recorded in Made Ground in TP101, TP102, TP103 and TP108. Visual and olfactory evidence of hydrocarbon contamination was recorded at the following locations:-

TP103 – hydrocarbon staining in London Clay (0.60-0.90m). Faint odour.

TP104 - hydrocarbon staining in London Clay (0.40-0.75m). Faint odour.

TP108 - hydrocarbon staining in London Clay (0.80-0.85m). Faint odour.

7 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' (SPOSH). Part 2A 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.

To determine whether land falls under the Part 2A definition of contaminated land the site should be evaluated in the context of a risk based framework. Land is only defined as 'Contaminated Land' if a "significant pollutant linkage" is present.

A pollutant linkage must comprise the following:-

Source - a contaminant at a concentration capable of causing adverse health or environmental effects.

Receptor - there must be a receptor (e.g. human, controlled waters, ecological or property) present, which may be at risk of harm or impact from the source.

Pathway - there must be an exposure pathway through which the receptor comes into contact with the contamination source.

Each of these elements can exist independently but they create risk only when they are linked together, so that a particular contaminant affects a particular receptor through a particular pathway.

7.1 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), the 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.

7.2 C4SL

Revision to the statutory guidance in 2012 presented a four category system for considering contaminated land under the Part 2A regime. The system comprises of four levels which range from category 4 where risk levels are considered acceptable (no risk of harm or possibility of significant harm) up to Category 1, where the risk of harm is unacceptably high. The decision to determine a site as contaminated land under Part 2A resides between Category 2 and Category 3.

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). It is noted that no values have been published for Category 3 to Category 1 and that if recorded, an exceedance of C4SL does not necessarily indicate SPOSH.

7.3 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.

8 SOIL CHEMISTRY

8.1 Results

The results of chemical testing of near surface soils are compared with the S4UL and C4SL for a 'residential with plant uptake' end use. These comparisons are summarised in the following table. Exceedances are highlighted in bold:-

Comparison of Soil Chemical Test Results with Guideline Values

Determinant	Maximum Measured Concentration (mg/kg)	LQM/CIEH S4UL Residential with Plant Uptake (mg/kg)	No. of tests carried out	No. of exceedances
Arsenic	140	37	11	1
Cadmium	3.9	11	11	0
Chromium (total)	39	910	11	0
Mercury	0.7	1.2	11	0
Lead	350	200	11	3
Nickel	28	180	11	0
Selenium	<dl	250	11	0
Copper	200	2400	11	0
Zinc	380	3700	11	0
Naphthalene	1.4	2.3	7	0
Acenaphthylene	1.5	170	7	0
Acenaphthene	1.5	210	7	0
Fluorene	3.3	170	7	0
Phenanthrene	21	95	7	0
Anthracene	5.5	2400	7	0
Fluoranthene	35	280	7	0
Pyrene	30	620	7	0
Benzo(a)anthracene	17	7.2	7	3 exceedances
Chrysene	16	15	7	1 exceedance
Benzo(b)fluoranthene	20	2.6	7	6 exceedances
Benzo(k)fluoranthene	7.8	77	7	0
Benzo(a)pyrene	15	2.2	7	6 exceedances
Indeno(1,2,3-c,d)pyrene	7.8	27	7	0
Dibenzo(a,h)anthracene	2	0.24	7	7 exceedances
Benzo(ghi)perylene	7.9	320	7	0

8.2 Interpretation – Metals

An exceedance of the acceptable guideline values for arsenic (140mg/kg) was recorded in TP104 (0.35m).

Exceedances of the adopted value for lead of 200mg/kg were recorded in TP101 at 0.10m (280mg/kg), TP102 at 0.20m (230mg/kg) and TP108 at 0.40m (350mg/kg).

8.3 Interpretation –Semi-Volatile Hydrocarbons

Exceedances of the guideline values for a number of PAH compounds were recorded in TP101 (0.10m), TP102 (0.20m), TP103 (0.15m), TP105 (1.00m), TP106 (0.80m), TP108 (0.40m) and TP107 (0.10m). The highest concentrations were recorded in TP108.

8.4 Interpretation - Hydrocarbons

Visual and olfactory evidence of hydrocarbon contamination was recorded in TP103 (0.60-0.90m), TP104 (0.40-0.75m) and TP108 (0.80-0.85m). The 'source' is considered to be the former Railway Sidings where fuel / oil spillages or leakage from parked trains and vehicles may have been common.

Samples from TP103 (0.60m) and TP108 (0.80m) were scheduled for TPHCWG and BTEX and a sample from TP104 (0.75m) was scheduled for TPH Texas banding and all determinants were recorded at less than the laboratory detection limit with the exception of TP108 which recorded 48mg/kg C₁₂-C₃₅ aromatic. This is not considered to present a risk to human health.

8.5 Interpretation - Asbestos

Eleven samples of Made Ground were submitted to an asbestos screen and asbestos was not recorded.

9 REMEDIATION METHOD STATEMENT

The supplementary contamination investigation has determined that soils at the site present a 'low-medium' risk to residential end users due to unacceptable concentrations of metals and semi-volatile hydrocarbons recorded in Made Ground soil at the site. Asbestos was not recorded by ourselves, nor Soiltechnics, in their preliminary investigation.

Remediation

We recommend that the following remedial measures are undertaken by the developer.

1. Within proposed landscaped and planted areas, a capping layer of certified clean material will be placed to break the exposure pathways. A minimum capping thickness of 600mm in private gardens and 450mm in communal landscaped areas is proposed. A geotextile membrane is to be placed at the base of the capping layer and at least the top 150mm should comprise good quality topsoil suitable for plant growth. Soils that are imported to site should be chemically validated as clean and conform to the acceptable guideline values in the table on Page 10. The soil should also be tested for hydrocarbons and asbestos.
2. Within areas capped by permanent hard standing or buildings, no exposure pathway will exist between the contamination identified within the shallow soils and end users of the site on completion of the development and therefore, no further remediation is proposed in these areas.
3. In-situ validation of the placed topsoil is to be undertaken by an independent Geoenvironmental Consultancy, comprising a series of hand dug pits to confirm the thickness

of soils, with a photographic record with a measuring staff. Validation sampling of the placed soils shall also be undertaken.

4. A 'Watching Brief' will be undertaken by the developer, comprising the visual and olfactory assessment of all exposed soils during site clearance and excavations. Should any previously unidentified contamination or deleterious materials be encountered during ground works, work will stop and further ground investigation, risk assessment and updated remediation strategy will be undertaken as appropriate. Where contamination is identified or suspected, consultation will be undertaken with a suitably experienced engineer to decide the most appropriate action.
5. In accordance with the recommendations made by Soiltechnics, gas protection measures and upgraded water supply pipework should be adopted for this development. Gas protection measures are to be installed in accordance with CS 2. A detailed design will be required to be submitted to the Local Planning Authority for approval. Evidence that the measures have been constructed will also be required for the Validation Report.
6. All waste material will be disposed of to an appropriately licensed site. The chemical testing and assessments previously carried out may be used to aid classification of any soil that is to be disposed of. Any further testing required by the tip prior to disposal will be carried out using a UKAS accredited laboratory. Copies of the waste consignment documentation will be retained by the developer for inclusion in the Final Validation Report.

General Working Requirements

All site works should be undertaken in accordance with the guidelines prepared by the Health and Safety Executive and CIRIA Reports 132 and C650. All work should also be carried out in accordance with the Contractor's Construction Health and Safety Plan.

The site is located in a heavily built-up residential area and the generation of airborne dust needs to be minimised. We understand that dust monitoring and suppression measures have been ongoing during the demolition phase and these should continue during the construction phase.

Other precautions should include, but not be limited to:

- Personal hygiene, washing and changing procedures;
- Adequate PPE including disposable overalls, gloves and particulate filter masks/vapour respirators, where required;
- Regular cleaning of all site roads, access roads and the public highway;
- Safe storage of fuel and other potentially polluting liquids and the provision of spill control and clean up facilities;

Validation

A Final Validation Report will be produced, which will include, but not be limited to, the following:-

- Confirmation that the development was undertaken in accordance with the approved plans and Remediation Method Statement.

- Certification for all materials imported to the site.
- Details of independent sampling and testing of imported soils.
- Details of any further sampling and testing of soils, either in situ, imported, or prior to exportation from the site. Waste documentation for any materials removed from the site.
- Details of any observations made during the watching brief and further action taken, if required.
- Confirmation that gas protection measures have been installed to the satisfaction of the Local Authority Building Control.
- Evidence to confirm the installation of barrier pipe.

We would recommend that this report is submitted to the Local Planning Authority for their approval.

Prepared and approved by



JIM TWADDLE BSc (Hons) CGeol FGS
Director

<i>Enc:</i>	<i>Appendix A</i>	<i>Exploratory Hole Location Plan</i>
	<i>Appendix B</i>	<i>Exploratory Hole Logs</i>
	<i>Appendix C</i>	<i>Chemical Laboratory Results</i>
	<i>Appendix D</i>	<i>Limitations</i>

APPENDIX A

Exploratory Hole Location Plan

Site Location Plan

CRANWOOD, 100 WOODSIDE AVENUE, MUSWELL HILL.

EXPLORATORY HOLE LOCATION PLAN





Key:

- Planning Boundary
- Proposed trees. Refer planting plan for species.
- Proposed planting, see planting plan for species and density.
- Proposed Turf Mix, See planting plan.

Surfacing: Bedding and subbase to Engineer's detail.

- P2 400x400x50mm PC concrete flag paving for Private Patios. Conservation textured by Marshall's or similar approved. Colour: Silver Grey. Bond: Stack.
- P3 200x50x65mm clay paving. By Hardscape or similar approved. Colour: Red/Grey mix. Bond: Herringbone.
- P6 Part M compliant hazard warning paving to top and bottom of steps.
- P7 Tarmac with exposed buff aggregate to Engineer's detail. P7a: Permeable tarmac in root protection area of existing trees to be retained.
- P9 Composite decking.

Kerbs, Edging and Steps: Footing/haunching to Engineer's detail.

- K3 50x150mm British standard channel edging by Marshalls or similar approved. Colour: Natural. Laid flush.
- K4 Clay paving soldier course as edging. Edging to match P3 surfacing.
- S1 Proposed Part M compliant steps with paving as thread and riser. Paving to have inlay contrast nosing.
- S2 Proposed Part M compliant steps with paving as thread and riser. Paving to have inlay contrast nosing.
- H1 Part M compliant warm to touch timber top metal handrail to steps.
- BL1 Part K compliant metal balustrade to the side of steps.

Boundary Treatment: Wall and footing to Engineer's detail.

- B7 Existing retaining wall to be retained if possible and make good where necessary. Engineer's to assess structural stability of the wall for its intended use.
- B8 Existing railing to be retained if possible and make good where necessary. Engineer's to assess structural stability of the railing for its intended use.
- B9 Proposed retaining wall to Engineer's detail. Brick to match building facade. Brick on edge coping.
- B10 Proposed retaining wall to the side of steps to Engineer's detail. Wall to slope with the pitch line of steps with minimum 100mm upstand. Brick to match building facade. Brick on edge on coping.
- B11 1.1m high Part K compliant mild steel vertical bar railing. RAL 9005.
- B12 Proposed 1.2 m high brick wall to front garden/patio. Brick to match building facade. Brick on edge on coping.
- G1 Mild steel vertical bar lockable gate (RAL 9005). Height to match adjacent wall/fence height. Finish to match B11 railing.

Street Furniture

- TG Metal tree grill to allow people to walk over it.
- TA Kyoto concrete communal table by Vestre or similar approved. Colour: steel- and fibre-reinforced concrete in pale grey 2278mm (L)x650mm(W)x800mm(H)
- Se1 Kyoto concrete communal seating by Vestre or similar approved. Colour: steel- and fibre-reinforced concrete in pale grey 2064mm (L)x446mm(W)x450mm(H)
- E02 In-situ concrete seating/retaining to Engineer's detail. Finish: Fair face concrete.

General Notes

- For proposed planting scheme refer Planting Plan.
- For Topsoil depth refer Soils plan
- For drainage refer Drainage Engineer's drawing.
- All lighting and Services and Watering points (Bib tap) for plants to M&E Engineer's detail.
- For Bin/Cycle store enclosure refer Architect's drawing.
- All the manhole covers in the hard landscape to be recessed to allow for surfacing/paving to be laid inside it.
- Hatching represent only extent of paving.
- All the play equipment to meet European Safety Standards BS EN 1176. Boulders should be smooth and rounded with no sharp edges. Tree trunks: trimmed and prepared for use in a play area setting with branches cut back to leave a rustic and relatively smooth finish.

NOTES:

- This drawing is to be read in conjunction with all relevant contract documentation from the design team, with any conflicting information to be brought to the attention of Davis Landscape Ltd in writing before commencing on site.
- The contractor is to check and verify all levels and dimensions before construction. Any discrepancies are to be brought to the attention of Davis Landscape Ltd in writing before commencing on site.
- All dimensions in mm, unless otherwise stated.
- Do not scale from this drawing.
- All sub base and concrete specification, fixings, brackets & the like to Engineers' details & specification.
- We are not liable for the detailed design of above ground drainage, ground drainage, sub-bases, foundations, retaining structures, fall from height barriers and building waterproofing details.
- All proprietary products shall be installed in accordance with manufacturers written instructions.
- Submit Shop drawings for Davis Landscape Ltd approval before constructing any bespoke landscape item.

Rev	Description	Date	By
B	Stage 4 issue	14/07/23	SJ
A	Updated to design team comments	18/04/23	SJ
/	For Comments	02/03/23	SJ

Davis Landscape Architecture
15 Iliffe Yard, London, SE17 3QA
020 7277 1035
mail@davisla.com | www.davisla.com

Client
Formation Design & Build

Job Title
Cranwood, Muswell Hill

Drawing Title
**Landscape General Arrangement Plan
Lower Ground Level**

Scale : 1:100@A0 Drawn : SJ
Date : 02/03/2023 Checked : SJ
Drawing No. : L0876L02 Rev. : B



Key:

- Planning Boundary
- Existing trees to be retained. Refer Arboriculturist report.
- Root protection area of existing trees to be retained. Works in Root protection Area to comply with BS5837 Trees in relation to construction. Refer Arboriculturist report.
- Proposed trees. Refer planting plan for species.
- Proposed planting, see planting plan for species and density.
- Proposed Turf Mix. See planting plan. For T2 turf to survive/thrive rubber mats required for the entire extent of T2 turf in play area.

Surfacing: Bedding and subbase to Engineers' detail.

P1	200x50x65mm clay paving. By Hardscape or similar approved. Colour: Red/Grey mix. Bond: Herringbone. P1a: Permeable clay paving.
P2	400x400x50mm PC concrete flag paving for Private Patios. Conservation textured by Marshall's or similar approved. Colour: Silver Grey. Bond: Stack.
P3	200x50x65mm clay paving. By Hardscape or similar approved. Colour: Red/Grey mix. Bond: Herringbone. P3a: Permeable clay paving.
P4	200x50x65mm clay paving. By Hardscape or similar approved. Colour: Red/Grey mix. Bond: Stretcher Bond. P4a: Permeable clay paving.
P5	300x100x100mm grasscrete concrete block with 40% growable grass surface. By Hydro Lineo by Hardscape or similar Approved
P6	Part M compliant hazard warning paving to top and bottom of steps.
P7	Tarmac with exposed buff aggregate to Engineer's detail. P7a: Permeable tarmac in root protection area of existing trees to be retained.
P8	600x600x50mm PC concrete flag paving. Colour: Mid-grey to match public footpath paving. Bond: Staggered.
P9	Composite decking.

Kerbs, Edging and Steps: Footing/haunching to Engineers' detail.

K1	125x255mm British Standard concrete channel laid flush. By Marshalls or similar approved.
K2	Clay paving soldier course as edging. Edging to match adjacent surfacing.
K3	50x150mm British standard channel edging by Marshalls or similar approved. Colour: Natural. Laid flush.
K4	Clay paving soldier course as edging. Edging to match P3 surfacing.
K5	Grasscrete soldier course to match P5 grasscrete surfacing.
K6	Metal edging by Kinley or similar approved. Laid flush, Mill finish.
K7	125x255mm British standard bullnose upstand concrete kerb by Marshalls or similar approved. Colour: Natural. K7-50 - 50mm gap in kerb to allow rainwater to go from adjacent surfacing to rain garden.

S1	Proposed Part M compliant steps with paving as thread and riser. Paving to have inlay contrast nosing.
S2	Proposed Part M compliant steps with paving as thread and riser. Paving to have inlay contrast nosing.
S3	Proposed Part M compliant steps with paving as thread and riser. Paving to have inlay contrast nosing.
H1	Part M compliant warm to touch timber top metal handrail to steps.
BL1	Part K compliant metal balustrade to the side of steps.

Boundary Treatment: Wall and footing to Engineers' detail.

B1	Proposed 1.8m high brick wall to rear garden/site boundary. Brick to match building facade. Brick on edge on coping.
B2	Dwarf retaining wall due to level difference. Brick to match building facade. Brick on edge on coping.
B3	1.8 m timber close board fence. By Jacksons or similar approved.
B4	Existing fence of the neighbouring property to be retained. Engineer's to assess structural stability of the fence for its intended use.
B5	Existing gate of the neighbouring property to be retained. Engineer's to assess structural stability of the gate for its intended use.
B6	Existing wall of the neighbouring property to be retained. Engineer's to assess structural stability of the wall for its intended use.
B7	Existing retaining wall to be retained if possible and make good where necessary. Engineer's to assess structural stability of the wall for its intended use.
B8	Existing railing to be retained if possible and make good where necessary. Engineer's to assess structural stability of the railing for its intended use.
B9	Proposed retaining wall to Engineer's detail. Brick to match building facade. Brick on edge on coping.
B10	Proposed retaining wall to the side of steps to Engineer's detail. Wall to slope with the pitch line of steps with minimum 100mm upstand. Brick to match building facade. Brick on edge on coping.
B11	1.1m high Part K compliant mild steel vertical bar railing. RAL 9005.
B12	Proposed 1.2 m high brick wall to front garden/patio. Brick to match building facade. Brick on edge on coping.
B13	Dwarf brick wall to support adjacent steps and planter. 500mm max height to prevent fall from height. Brick to match building facade. Brick on edge on coping.
G1	Mild steel vertical bar lockable gate (RAL 9005). Height to match adjacent wall/fence height. Finish to match B11 railing.

Street Furniture

EB	Existing bin to be retained.
ES	Existing ventilation shaft to be retained and cladding to be made good to Engineer's detail. Engineer's to assess structural stability of the shaft for its intended use.
TG	Metal tree grill to allow people to walk over it.
CS	800x715mm galvanised steel cycle stand. Sheffield Cycle Stand by Broxap or similar approved. Roof fixed footing to Manufacturer's detail.
B	Warm to touch timber top bench.

Play: To comply with BS EN 1176 and BS EN 1177. Impact absorbing rubber mats where necessary near play equipments in the turf.

PL1	Rocking Log by Playdale or similar approved.
PL2	Timber stepping logs by Playdale or similar approved. Maximum height to be 600mm max.
PL3	Stone Boulders by Playdale or similar approved. Maximum height to be 600mm max.
PL4	Timber Sheep Springer play equipment from Playdale - SPR53H or similar approved.
PL5	Horizontal timber logs/tree trunks.

Falling spaces for play equipments. Minimum 1.5m around the play equipments which are less than 600mm height from ground. No obstructions/ protrusions including upstand kerbs, tree trunks, tree stakes, lighting etc not allowed in this zone. No planting other than turf mix and woodland mix shown on planting plan allowed in this zone.

General Notes

- For proposed planting scheme refer Planting Plan.
- For Topsoil depth refer Soils plan
- For drainage refer Drainage Engineer's drawing.
- All lighting and Services and Warning points (Bib tap) for plants to M&E Engineer's detail.
- For Bin/Cycle store enclosure refer Architect's drawing.
- All the manhole covers in the hard landscape to be recessed to allow for surfacing/paving to be laid inside it.
- Hatching represent only extent of paving.
- All the play equipment to meet European Safety Standards BS EN 1176. Boulders should be smooth and rounded with no sharp edges. Tree trunks trimmed and prepared for use in a play area setting with branches cut back to leave a rustic and relatively smooth finish.

NOTES:

- This drawing is to be read in conjunction with all relevant contract documentation from the design team, with any conflicting information to be brought to the attention of Davis Landscape Ltd in writing before commencing on site.
- The contractor is to check and verify all levels and dimensions before construction. Any discrepancies are to be brought to the attention of Davis Landscape Ltd in writing before commencing on site.
- All dimensions in mm, unless otherwise stated.
- Do not scale from this drawing.
- All sub base and concrete specification, fixings, brackets & the like to Engineers' details & specification.
- We are not liable for the detailed design of above ground drainage, ground drainage, sub-bases, foundations, retaining structures, fall from height barriers and building waterproofing details.
- All proprietary products shall be installed in accordance with manufacturers written instructions.
- Submit Shop drawings for Davis Landscape Ltd approval before constructing any bespoke landscape item.

Stage 4			
Rev	Description	Date	By
B	Stage 4 issue	14/07/23	SJ
A	Updated to design team comments	18/04/23	SJ
/	For Comments	02/03/23	SJ

Davis Landscape Architecture
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020 7277 1035
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Client
Formation Design & Build

Job Title
Cranwood, Muswell Hill

Drawing Title
Landscape General Arrangement Plan Ground Level

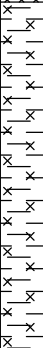
Scale : 1:100@A0 Drawn : SJ
Date : 02/03/2023 Checked : SJ
Drawing No. : L0876L01 Rev. : B

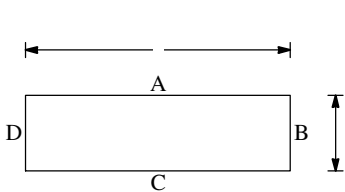
APPENDIX B

Exploratory Hole Logs

TRIAL PIT LOG

Project Cranwood, 100 Woodside Avenue, Muswell Hill, London.				TRIAL PIT No TP101
Job No BC652	Date 03-10-23	Ground Level (m)	Co-Ordinates ()	
Contractor The Brownfield Consultancy Ltd				Sheet 1 of 1

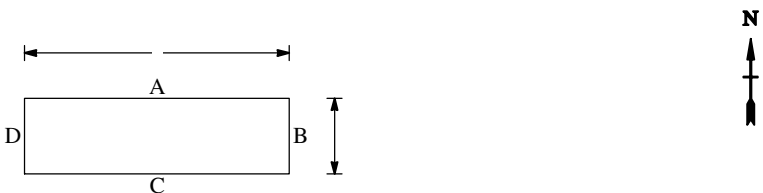
STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.65		Black humic slightly clayey gravelly SAND. Gravel is angular to rounded fine to coarse flint, brick and concrete. Pockets of soft brown and grey clay. Rare cobble of flint. Roots and rootlets. (MADE GROUND)	0.10	ES	
		0.45 - 0.60 Pocket of ash and flint gravel in west of pit.	0.50	ES	
0.65-1.80		Desiccated brown and grey silty CLAY. Hair roots of a live appearance. (LONDON CLAY)			
1.80		Pit terminated at target depth. No obvious groundwater.			

Shoring/Support: Stability: Poor				GENERAL REMARKS	
				Backfilled with arisings.	
All dimensions in metres Scale 1:25	Client	Formation Design & Build	Method/ Plant Used	13t tracked excavator	Logged By JT

TRIAL PIT LOG

Project Cranwood, 100 Woodside Avenue, Muswell Hill, London.				TRIAL PIT No TP102
Job No BC652	Date 03-10-23	Ground Level (m)	Co-Ordinates ()	
Contractor The Brownfield Consultancy Ltd				Sheet 1 of 1

STRATA				SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests	
0.00-0.70		Black humic very sandy GRAVEL and COBBLE of angular to rounded fine to coarse flint, brick and concrete. Rare coarse gravel of clinker. Three whole bricks. One boulder of concrete. Roots and rootlets. (MADE GROUND)	0.20	ES		
0.70-1.70		Stiff brown and grey silty CLAY. Hair roots of a live appearance. (LONDON CLAY)	0.60	ES		
1.70		Pit terminated at target depth. No obvious groundwater.				

Shoring/Support: Stability: Poor			GENERAL REMARKS	
			Backfilled with arisings.	

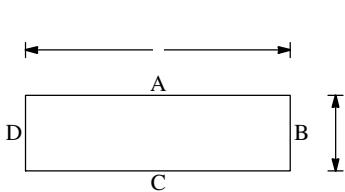
All dimensions in metres Scale 1:25	Client Formation Design & Build	Method/ Plant Used 13t tracked excavator	Logged By JT
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BROWNFIELD TP CRANWOOD LOGS.GPJ GINT STD AGS 3_1.GDT 23/10/23

TRIAL PIT LOG

Project Cranwood, 100 Woodside Avenue, Muswell Hill, London.				TRIAL PIT No TP103
Job No BC652	Date 03-10-23	Ground Level (m)	Co-Ordinates ()	
Contractor The Brownfield Consultancy Ltd				Sheet 1 of 1

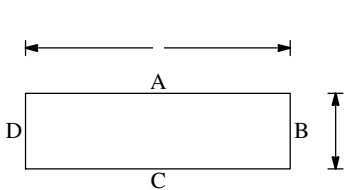
STRATA				SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests	
0.00-0.60		Light brown and grey sandy locally clayey GRAVEL and COBBLE of angular to rounded fine to coarse flint, brick and concrete. Coarse gravel sized pockets of ash. (MADE GROUND)	0.15	ES		
0.60-0.90		Dark grey and black mottled silty CLAY becoming grey and black mottled towards the base. Faint odour of weathered hydrocarbons. (LONDON CLAY)	0.50	ES		
0.90-1.80		Firm brown and grey silty CLAY. (LONDON CLAY)	0.60	ES		
1.80		Pit terminated at target depth. No obvious groundwater.				

Shoring/Support: Stability: Poor 				GENERAL REMARKS Backfilled with arisings.	
All dimensions in metres Scale 1:25	Client Formation Design & Build	Method/ Plant Used 13t tracked excavator	Logged By JT		

TRIAL PIT LOG

Project Cranwood, 100 Woodside Avenue, Muswell Hill, London.				TRIAL PIT No TP104
Job No BC652	Date 03-10-23	Ground Level (m)	Co-Ordinates ()	
Contractor The Brownfield Consultancy Ltd				Sheet 1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.05			Topsoil with flecks of red brick. (MADE GROUND)			
0.05-0.30			Orange brown medium to coarse SAND with rare flint gravel. (MADE GROUND)			
0.30-0.40			Black very sandy GRAVEL of angular to subrounded medium and coarse flint and rare brick. (MADE GROUND)	0.35	ES	
0.40-0.75			Dark grey and black mottled silty CLAY becoming grey and black mottled towards the base. Faint odour of weathered hydrocarbons. (LONDON CLAY)			
0.75-1.40			Firm brown and grey silty CLAY. (LONDON CLAY)	0.75	ES	
1.40			Pit terminated at target depth. No obvious groundwater.			

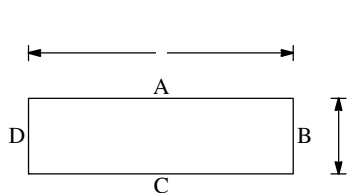
Shoring/Support: Stability: Poor				GENERAL REMARKS	
				Backfilled with arisings.	
All dimensions in metres Scale 1:25	Client	Formation Design & Build	Method/ Plant Used	13t tracked excavator	Logged By JT

BROWNFIELD TP CRANWOOD LOGS.GPJ GINT STD AGS 3_1.GDT 23/10/23

TRIAL PIT LOG

Project Cranwood, 100 Woodside Avenue, Muswell Hill, London.				TRIAL PIT No TP105
Job No BC652	Date 03-10-23	Ground Level (m)	Co-Ordinates ()	
Contractor The Brownfield Consultancy Ltd				Sheet 1 of 1

STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-2.00		Grey brown sandy very gravelly CLAY with a high cobble and boulder content.Gravel is angular to rounded fine to coarse flint, brick and concrete. Cobbles and boulders are concrete, breeze block, masonry and paving slabs. Pieces of timber, yellow plastic, steel reinforcement, ceramics and rare glass. (MADE GROUND)	1.00	ES	
2.00		Pit terminated at target depth. No obvious groundwater.			

Shoring/Support: Stability: Poor			GENERAL REMARKS
			Backfilled with arisings.

All dimensions in metres Scale 1:25	Client Formation Design & Build	Method/ Plant Used 13t tracked excavator	Logged By JT
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TRIAL PIT LOG

Project Cranwood, 100 Woodside Avenue, Muswell Hill, London.				TRIAL PIT No TP106
Job No BC652	Date 03-10-23	Ground Level (m)	Co-Ordinates ()	
Contractor The Brownfield Consultancy Ltd				Sheet 1 of 1

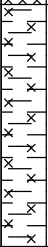
STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-1.90		Grey brown sandy very clayey GRAVEL with a high cobble and boulder content. Gravel is angular to rounded fine to coarse brick, concrete and flint. Cobbles and boulders are concrete, breeze block and masonry. Pieces of timber, steel reinforcement, ceramics and rare glass. (MADE GROUND)	0.80	ES	
1.90		Pit terminated at target depth. No obvious groundwater.			

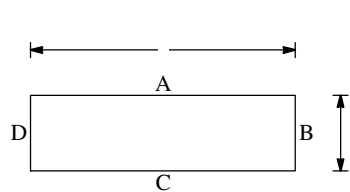
Shoring/Support: Stability: Poor		</
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All dimensions in metres Scale 1:25	Client Formation Design & Build	Method/ Plant Used 13t tracked excavator	Logged By JT
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TRIAL PIT LOG

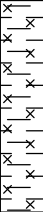
Project Cranwood, 100 Woodside Avenue, Muswell Hill, London.				TRIAL PIT No TP107
Job No BC652	Date 03-10-23	Ground Level (m)	Co-Ordinates ()	
Contractor The Brownfield Consultancy Ltd				Sheet 1 of 1

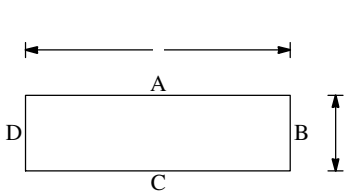
STRATA				SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests	
0.00-0.80		Brown and grey gravelly SAND with a high cobble content. Gravel is angular to subrounded brick, concrete and flint. Cobbles are brick and concrete. Fragments of hard plastic. Pockets of topsoil and grass. (MADE GROUND)				
0.80-1.60		Firm brown and grey silty CLAY. (LONDON CLAY)				
1.60		Pit terminated at target depth. No obvious groundwater.				

Shoring/Support: Stability: Poor 				GENERAL REMARKS Backfilled with arisings.	
All dimensions in metres Scale 1:25	Client Formation Design & Build	Method/ Plant Used 13t tracked excavator	Logged By JT		

TRIAL PIT LOG

Project Cranwood, 100 Woodside Avenue, Muswell Hill, London.				TRIAL PIT No TP108
Job No BC652	Date 03-10-23	Ground Level (m)	Co-Ordinates ()	
Contractor The Brownfield Consultancy Ltd				Sheet 1 of 1

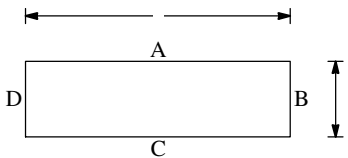
STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.80		Grey and light brown sandy gravelly CLAY. Gravel is angular to rounded fine to coarse yellow brick, concrete, red brick and flint. One subangular boulder of concrete. (MADE GROUND).	0.40	ES	
		0.60 - 0.80 Pocket of ash and red brick in south of pit.			
0.80-1.50		Firm brown and grey silty CLAY. (LONDON CLAY) 0.80 - 0.85 Stained black in south of pit. Faint hydrocarbon odour.	0.80	ES	
1.50		Pit terminated at target depth. No obvious groundwater.			

Shoring/Support: Stability: Poor 				GENERAL REMARKS Backfilled with arisings.	
All dimensions in metres Scale 1:25	Client Formation Design & Build	Method/ Plant Used 13t tracked excavator	Logged By JT		

TRIAL PIT LOG

Project Cranwood, 100 Woodside Avenue, Muswell Hill, London.				TRIAL PIT No TP109
Job No BC652	Date 03-10-23	Ground Level (m)	Co-Ordinates ()	
Contractor The Brownfield Consultancy Ltd				Sheet 1 of 1

STRATA				SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests	
0.00-0.30		Brown slightly gravelly slightly sandy CLAY. Gravel is subangular brick and concrete. (MADE GROUND)	0.10	ES		
0.30-1.75		Brick foundation at 0.30m. Moved pit easterly. Firm brown and grey silty CLAY. (LONDON CLAY)				
1.75		Pit terminated at target depth. No obvious groundwater.				

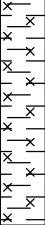
Shoring/Support: Stability: Poor			GENERAL REMARKS

All dimensions in metres Scale 1:25	Client Formation Design & Build	Method/ Plant Used 13t tracked excavator	Logged By JT
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BROWNFIELD TP CRANWOOD LOGS.GPJ GINT STD AGS 3_1.GDT 23/10/23

TRIAL PIT LOG

Project Cranwood, 100 Woodside Avenue, Muswell Hill, London.				TRIAL PIT No TP110
Job No BC652	Date 03-10-23	Ground Level (m)	Co-Ordinates ()	
Contractor The Brownfield Consultancy Ltd				Sheet 1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.65			Brown and grey sandy GRAVEL with a high cobble content. Gravel is angular to subrounded brick, concrete and flint. Cobbles are brick and concrete. (MADE GROUND)			
0.65-0.80			Soft brown silty CLAY with flecks of red brick. (MADE GROUND)			
0.80-1.55			Firm brown and grey silty CLAY. (LONDON CLAY)			
1.55			Pit terminated at target depth. No obvious groundwater.			

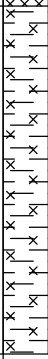
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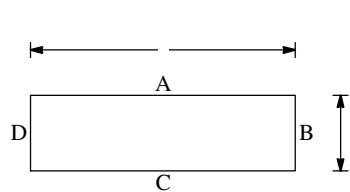
All dimensions in metres Scale 1:25	Client Formation Design & Build	Method/ Plant Used 13t tracked excavator	Logged By JT
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BROWNFIELD TP CRANWOOD LOGS.GPJ GINT STD AGS 3_1.GDT 23/10/23

TRIAL PIT LOG

Project Cranwood, 100 Woodside Avenue, Muswell Hill, London.				TRIAL PIT No TP101
Job No BC652	Date 03-10-23	Ground Level (m)	Co-Ordinates ()	
Contractor The Brownfield Consultancy Ltd				Sheet 1 of 1

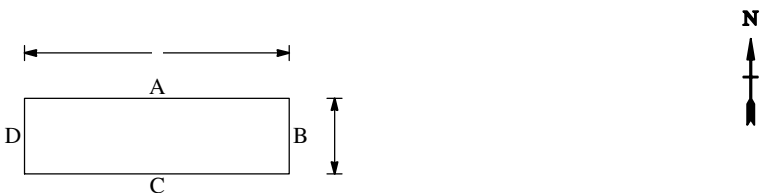
STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.65		Black humic slightly clayey gravelly SAND. Gravel is angular to rounded fine to coarse flint, brick and concrete. Pockets of soft brown and grey clay. Rare cobble of flint. Roots and rootlets. (MADE GROUND)	0.10	ES	
		0.45 - 0.60 Pocket of ash and flint gravel in west of pit.	0.50	ES	
0.65-1.80		Desiccated brown and grey silty CLAY. Hair roots of a live appearance. (LONDON CLAY)			
1.80		Pit terminated at target depth. No obvious groundwater.			

Shoring/Support: Stability: Poor 				GENERAL REMARKS	
				Backfilled with arisings.	
All dimensions in metres Scale 1:25	Client	Formation Design & Build	Method/ Plant Used	13t tracked excavator	Logged By JT

TRIAL PIT LOG

Project Cranwood, 100 Woodside Avenue, Muswell Hill, London.				TRIAL PIT No TP102
Job No BC652	Date 03-10-23	Ground Level (m)	Co-Ordinates ()	
Contractor The Brownfield Consultancy Ltd				Sheet 1 of 1

STRATA				SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests	
0.00-0.70		Black humic very sandy GRAVEL and COBBLE of angular to rounded fine to coarse flint, brick and concrete. Rare coarse gravel of clinker. Three whole bricks. One boulder of concrete. Roots and rootlets. (MADE GROUND)	0.20	ES		
0.70-1.70		Stiff brown and grey silty CLAY. Hair roots of a live appearance. (LONDON CLAY)	0.60	ES		
1.70		Pit terminated at target depth. No obvious groundwater.				

Shoring/Support: Stability: Poor			GENERAL REMARKS
			Backfilled with arisings.

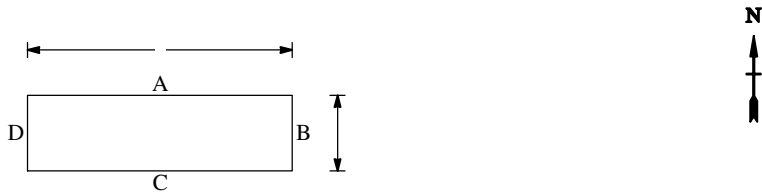
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BROWNFIELD TP CRANWOOD LOGS.GPJ GINT STD AGS 3_1.GDT 23/10/23

TRIAL PIT LOG

Project Cranwood, 100 Woodside Avenue, Muswell Hill, London.				TRIAL PIT No TP103
Job No BC652	Date 03-10-23	Ground Level (m)	Co-Ordinates ()	
Contractor The Brownfield Consultancy Ltd				Sheet 1 of 1

STRATA				SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests	
0.00-0.60		Light brown and grey sandy locally clayey GRAVEL and COBBLE of angular to rounded fine to coarse flint, brick and concrete. Coarse gravel sized pockets of ash. (MADE GROUND)	0.15	ES		
0.60-0.90		Dark grey and black mottled silty CLAY becoming grey and black mottled towards the base. Faint odour of weathered hydrocarbons. (LONDON CLAY)	0.50	ES		
0.90-1.80		Firm brown and grey silty CLAY. (LONDON CLAY)	0.60	ES		
1.80		Pit terminated at target depth. No obvious groundwater.				

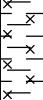
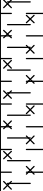
Shoring/Support: Stability: Poor			GENERAL REMARKS
			Backfilled with arisings.

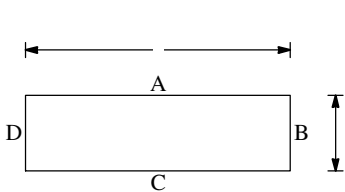
All dimensions in metres Scale 1:25	Client Formation Design & Build	Method/ Plant Used 13t tracked excavator	Logged By JT
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BROWNFIELD TP CRANWOOD LOGS.GPJ GINT STD AGS 3_1.GDT 23/10/23

TRIAL PIT LOG

Project Cranwood, 100 Woodside Avenue, Muswell Hill, London.				TRIAL PIT No TP104
Job No BC652	Date 03-10-23	Ground Level (m)	Co-Ordinates ()	
Contractor The Brownfield Consultancy Ltd				Sheet 1 of 1

STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.05		Topsoil with flecks of red brick. (MADE GROUND)	0.35	ES	
0.05-0.30		Orange brown medium to coarse SAND with rare flint gravel. (MADE GROUND)			
0.30-0.40		Black very sandy GRAVEL of angular to subrounded medium and coarse flint and rare brick. (MADE GROUND)			
0.40-0.75		Dark grey and black mottled silty CLAY becoming grey and black mottled towards the base. Faint odour of weathered hydrocarbons. (LONDON CLAY)			
0.75-1.40		Firm brown and grey silty CLAY. (LONDON CLAY)	0.75	ES	
1.40		Pit terminated at target depth. No obvious groundwater.			

Shoring/Support: Stability: Poor				GENERAL REMARKS	
				Backfilled with arisings.	
All dimensions in metres Scale 1:25	Client	Formation Design & Build	Method/ Plant Used	13t tracked excavator	Logged By JT

TRIAL PIT LOG

Project Cranwood, 100 Woodside Avenue, Muswell Hill, London.				TRIAL PIT No TP105
Job No BC652	Date 03-10-23	Ground Level (m)	Co-Ordinates ()	
Contractor The Brownfield Consultancy Ltd				Sheet 1 of 1

STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-2.00		Grey brown sandy very gravelly CLAY with a high cobble and boulder content.Gravel is angular to rounded fine to coarse flint, brick and concrete. Cobbles and boulders are concrete, breeze block, masonry and paving slabs. Pieces of timber, yellow plastic, steel reinforcement, ceramics and rare glass. (MADE GROUND)	1.00	ES	
2.00		Pit terminated at target depth. No obvious groundwater.			

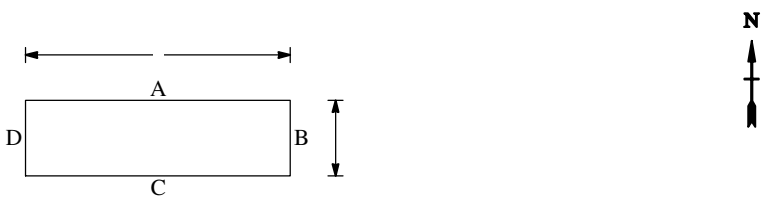
Shoring/Support: Stability: Poor		</
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All dimensions in metres Scale 1:25	Client Formation Design & Build	Method/ Plant Used 13t tracked excavator	Logged By JT
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TRIAL PIT LOG

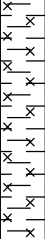
Project Cranwood, 100 Woodside Avenue, Muswell Hill, London.				TRIAL PIT No TP106
Job No BC652	Date 03-10-23	Ground Level (m)	Co-Ordinates ()	
Contractor The Brownfield Consultancy Ltd				Sheet 1 of 1

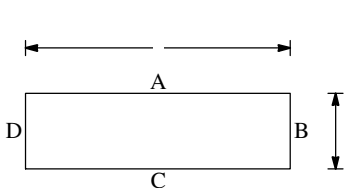
STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-1.90		Grey brown sandy very clayey GRAVEL with a high cobble and boulder content. Gravel is angular to rounded fine to coarse brick, concrete and flint. Cobbles and boulders are concrete, breeze block and masonry. Pieces of timber, steel reinforcement, ceramics and rare glass. (MADE GROUND)	0.80	ES	
1.90		Pit terminated at target depth. No obvious groundwater.			

Shoring/Support: Stability: Poor 				GENERAL REMARKS Backfilled with arisings.	
All dimensions in metres Scale 1:25	Client Formation Design & Build	Method/ Plant Used 13t tracked excavator	Logged By JT		

TRIAL PIT LOG

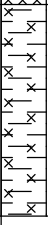
Project Cranwood, 100 Woodside Avenue, Muswell Hill, London.				TRIAL PIT No TP107
Job No BC652	Date 03-10-23	Ground Level (m)	Co-Ordinates ()	
Contractor The Brownfield Consultancy Ltd				Sheet 1 of 1

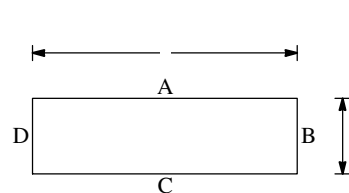
STRATA				SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests	
0.00-0.80		Brown and grey gravelly SAND with a high cobble content. Gravel is angular to subrounded brick, concrete and flint. Cobbles are brick and concrete. Fragments of hard plastic. Pockets of topsoil and grass. (MADE GROUND)				
0.80-1.60		Firm brown and grey silty CLAY. (LONDON CLAY)				
1.60		Pit terminated at target depth. No obvious groundwater.				

Shoring/Support: Stability: Poor 				GENERAL REMARKS Backfilled with arisings.	
All dimensions in metres Scale 1:25	Client Formation Design & Build	Method/ Plant Used 13t tracked excavator	Logged By JT		

TRIAL PIT LOG

Project Cranwood, 100 Woodside Avenue, Muswell Hill, London.				TRIAL PIT No TP108
Job No BC652	Date 03-10-23	Ground Level (m)	Co-Ordinates ()	
Contractor The Brownfield Consultancy Ltd				Sheet 1 of 1

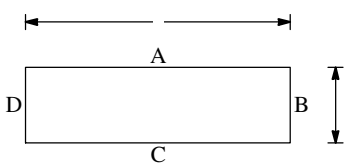
STRATA				SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests	
0.00-0.80		Grey and light brown sandy gravelly CLAY. Gravel is angular to rounded fine to coarse yellow brick, concrete, red brick and flint. One subangular boulder of concrete. (MADE GROUND).	0.40	ES		
		0.60 - 0.80 Pocket of ash and red brick in south of pit.				
0.80-1.50		Firm brown and grey silty CLAY. (LONDON CLAY)	0.80	ES		
		0.80 - 0.85 Stained black in south of pit. Faint hydrocarbon odour.				
1.50		Pit terminated at target depth. No obvious groundwater.				

Shoring/Support: Stability: Poor 				GENERAL REMARKS Backfilled with arisings.	
All dimensions in metres Scale 1:25	Client Formation Design & Build	Method/ Plant Used 13t tracked excavator	Logged By JT		

TRIAL PIT LOG

Project Cranwood, 100 Woodside Avenue, Muswell Hill, London.				TRIAL PIT No TP109
Job No BC652	Date 03-10-23	Ground Level (m)	Co-Ordinates ()	
Contractor The Brownfield Consultancy Ltd				Sheet 1 of 1

STRATA				SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests	
0.00-0.30		Brown slightly gravelly slightly sandy CLAY. Gravel is subangular brick and concrete. (MADE GROUND)	0.10	ES		
0.30-1.75		Brick foundation at 0.30m. Moved pit easterly. Firm brown and grey silty CLAY. (LONDON CLAY)				
1.75		Pit terminated at target depth. No obvious groundwater.				

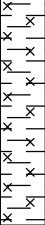
Shoring/Support: Stability: Poor			GENERAL REMARKS Backfilled with arisings.

All dimensions in metres Scale 1:25	Client Formation Design & Build	Method/ Plant Used 13t tracked excavator	Logged By JT
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BROWNFIELD TP CRANWOOD LOGS.GPJ GINT STD AGS 3_1.GDT 23/10/23

TRIAL PIT LOG

Project Cranwood, 100 Woodside Avenue, Muswell Hill, London.				TRIAL PIT No TP110
Job No BC652	Date 03-10-23	Ground Level (m)	Co-Ordinates ()	
Contractor The Brownfield Consultancy Ltd				Sheet 1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.65			Brown and grey sandy GRAVEL with a high cobble content. Gravel is angular to subrounded brick, concrete and flint. Cobbles are brick and concrete. (MADE GROUND)			
0.65-0.80			Soft brown silty CLAY with flecks of red brick. (MADE GROUND)			
0.80-1.55			Firm brown and grey silty CLAY. (LONDON CLAY)			
1.55			Pit terminated at target depth. No obvious groundwater.			

Shoring/Support: Stability: Poor		<
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All dimensions in metres Scale 1:25	Client Formation Design & Build	Method/ Plant Used 13t tracked excavator	Logged By JT
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BROWNFIELD TP CRANWOOD LOGS.GPJ GINT STD AGS 3_1.GDT 23/10/23

APPENDIX C

Chemical Laboratory Results

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Analytical Report Number : 23-60528

Project / Site name:	Cranwood, Muswell Hill	Samples received on:	04/10/2023
Your job number:	BC652	Samples instructed on/ Analysis started on:	05/10/2023
Your order number:		Analysis completed by:	17/10/2023
Report Issue Number:	1	Report issued on:	17/10/2023
Samples Analysed:	14 soil samples		



Signed:

Anna Goc
PL Head of Reporting Team
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

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 23-60528
Project / Site name: Cranwood, Muswell Hill

Lab Sample Number				2834554	2834555	2834556	2834557	2834558
Sample Reference				TP101	TP101	TP102	TP102	TP103
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.50	0.20	0.60	0.15
Date Sampled				03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Time Taken				None Supplied	None Supplied	None Supplied	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	< 0.1
Moisture Content	%	0.01	NONE	18	21	19	20	12
Total mass of sample received	kg	0.001	NONE	0.5	0.6	0.5	0.5	0.6

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	JBH	DSA	JBH	N/A	JBH

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8	-	8.4	-	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	140	-	280	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0703	-	0.138	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	70.3	-	138	-	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	1.4	-	1.2	-	0.37
Acenaphthylene	mg/kg	0.05	MCERTS	0.37	-	0.28	-	0.13
Acenaphthene	mg/kg	0.05	MCERTS	1.4	-	0.45	-	0.13
Fluorene	mg/kg	0.05	MCERTS	1.3	-	0.4	-	0.12
Phenanthrene	mg/kg	0.05	MCERTS	15	-	5.5	-	2.1
Anthracene	mg/kg	0.05	MCERTS	4.2	-	1.3	-	0.7
Fluoranthene	mg/kg	0.05	MCERTS	25	-	11	-	6.8
Pyrene	mg/kg	0.05	MCERTS	22	-	11	-	6.6
Benzo(a)anthracene	mg/kg	0.05	MCERTS	13	-	6	-	4
Chrysene	mg/kg	0.05	MCERTS	12	-	5.7	-	3.8
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	15	-	7.9	-	5.1
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	5.7	-	2.9	-	1.9
Benzo(a)pyrene	mg/kg	0.05	MCERTS	13	-	6.4	-	4.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	6.2	-	3.7	-	2.4
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.36	-	0.74	-	0.45
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	7	-	4.1	-	2.5

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	142	-	68.5	-	41.4
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	22	20	29	19	22
Boron (water soluble)	mg/kg	0.2	MCERTS	-	1.1	-	1.2	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	2.8	< 0.2	3.9	1.4	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	-	< 1.8	-	-
Chromium (III)	mg/kg	1	NONE	31	-	31	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	32	20	32	30	26
Copper (aqua regia extractable)	mg/kg	1	MCERTS	85	200	110	64	46
Lead (aqua regia extractable)	mg/kg	1	MCERTS	280	200	230	180	73
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.5	< 0.3	0.6	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	28	21	25	23	14
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	300	130	380	200	160

Analytical Report Number: 23-60528
Project / Site name: Cranwood, Muswell Hill

Lab Sample Number	2834554	2834555	2834556	2834557	2834558
Sample Reference	TP101	TP101	TP102	TP102	TP103
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.10	0.50	0.20	0.60	0.15
Date Sampled	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	-	-	-	-	-
Toluene	µg/kg	5	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	-	-	-	-	-
p & m-xylene	µg/kg	5	MCERTS	-	-	-	-	-
o-xylene	µg/kg	5	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	-	-	-

Petroleum Hydrocarbons

TPH C10 - C40 EH_CU_ID_TOTAL	mg/kg	10	MCERTS	150	-	330	-	-
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TPH5 (C6 - C10) HS_ID_TOTAL	mg/kg	0.1	NONE	-	-	-	-	-
TPH5 (C10 - C20) EH_CU_ID_TOTAL	mg/kg	10	MCERTS	-	-	-	-	-
TPH5 (C20 - C30) EH_CU_ID_TOTAL	mg/kg	10	NONE	-	-	-	-	-
TPH5 (C30 - C40) EH_CU_ID_TOTAL	mg/kg	10	NONE	-	-	-	-	-
TPH5 (C6 - C40) EH_CU+HS_ID_TOTAL	mg/kg	10	NONE	-	-	-	-	-

TPH-CWG - Aliphatic >EC5 - EC6 HS_ID_AL	mg/kg	0.1	NONE	-	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8 HS_ID_AL	mg/kg	0.1	NONE	-	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10 HS_ID_AL	mg/kg	0.1	NONE	-	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_ID_AL	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_ID_AL	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_ID_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_ID_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_ID_AL	mg/kg	10	NONE	-	-	-	-	-

TPH-CWG - Aromatic >EC5 - EC7 HS_ID_AR	mg/kg	0.1	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8 HS_ID_AR	mg/kg	0.1	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10 HS_ID_AR	mg/kg	0.1	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12 EH_CU_ID_AR	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_ID_AR	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21 EH_CU_ID_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_ID_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35) EH_CU+HS_ID_AR	mg/kg	10	NONE	-	-	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 23-60528
Project / Site name: Cranwood, Muswell Hill

Lab Sample Number				2834559	2834560	2834561	2834562	2834563
Sample Reference				TP103	TP103	TP104	TP104	TP105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.60	0.35	0.75	1.00
Date Sampled				03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	-	< 0.1	47	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	-	27	12	26	17
Total mass of sample received	kg	0.001	NONE	-	0.3	0.5	0.3	1

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSA	N/A	DSA	N/A	DSA

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	-	-	-	10.3
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-	-	-	-	3900
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	-	-	-	1.94
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	-	-	-	1940

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	0.19
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	-	0.14
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	-	0.82
Fluorene	mg/kg	0.05	MCERTS	-	-	-	-	0.69
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	-	4.2
Anthracene	mg/kg	0.05	MCERTS	-	-	-	-	0.65
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	4.7
Pyrene	mg/kg	0.05	MCERTS	-	-	-	-	3.6
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	2
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	2.1
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	-	-	-	2.4
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	-	-	-	1.2
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	1.9
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	1.1
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	0.28
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	1.2

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	-	-	-	-	27.1
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	140	-	17
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	0.8	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	< 0.2	-	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	-	-	-	-	< 1.8
Chromium (III)	mg/kg	1	NONE	-	-	-	-	31
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	39	-	32
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	120	-	26
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	99	-	86
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	< 0.3	-	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	16	-	21
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	120	-	120

Analytical Report Number: 23-60528
Project / Site name: Cranwood, Muswell Hill

Lab Sample Number				2834559	2834560	2834561	2834562	2834563
Sample Reference				TP103	TP103	TP104	TP104	TP105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.60	0.35	0.75	1.00
Date Sampled				03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Monoaromatics & Oxygenates								
Benzene	µg/kg	5	MCERTS	-	< 5.0	-	-	-
Toluene	µg/kg	5	MCERTS	-	< 5.0	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	-	< 5.0	-	-	-
p & m-xylene	µg/kg	5	MCERTS	-	< 5.0	-	-	-
o-xylene	µg/kg	5	MCERTS	-	< 5.0	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	< 5.0	-	-	-
Petroleum Hydrocarbons								
TPH C10 - C40 _{EH, CU, ID, TOTAL}	mg/kg	10	MCERTS	-	-	-	-	100
TPH5 (C6 - C10) _{HS, ID, TOTAL}	mg/kg	0.1	NONE	-	-	-	< 0.1	-
TPH5 (C10 - C20) _{EH, CU, ID, TOTAL}	mg/kg	10	MCERTS	-	-	-	< 10	-
TPH5 (C20 - C30) _{EH, CU, ID, TOTAL}	mg/kg	10	NONE	-	-	-	< 10	-
TPH5 (C30 - C40) _{EH, CU, ID, TOTAL}	mg/kg	10	NONE	-	-	-	< 10	-
TPH5 (C6 - C40) _{EH, CU+HS, ID, TOTAL}	mg/kg	10	NONE	-	-	-	< 10	-
TPH-CWG - Aliphatic >EC5 - EC6 _{HS, ID, AL}	mg/kg	0.1	NONE	-	< 0.10	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8 _{HS, ID, AL}	mg/kg	0.1	NONE	-	< 0.10	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10 _{HS, ID, AL}	mg/kg	0.1	NONE	-	< 0.10	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12 _{EH, CU, ID, AL}	mg/kg	1	MCERTS	-	< 1.0	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16 _{EH, CU, ID, AL}	mg/kg	2	MCERTS	-	< 2.0	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21 _{EH, CU, ID, AL}	mg/kg	8	MCERTS	-	< 8.0	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35 _{EH, CU, ID, AL}	mg/kg	8	MCERTS	-	< 8.0	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35) _{EH, CU+HS, ID, AL}	mg/kg	10	NONE	-	< 10	-	-	-
TPH-CWG - Aromatic >EC5 - EC7 _{HS, ID, AR}	mg/kg	0.1	NONE	-	< 0.10	-	-	-
TPH-CWG - Aromatic >EC7 - EC8 _{HS, ID, AR}	mg/kg	0.1	NONE	-	< 0.10	-	-	-
TPH-CWG - Aromatic >EC8 - EC10 _{HS, ID, AR}	mg/kg	0.1	NONE	-	< 0.10	-	-	-
TPH-CWG - Aromatic >EC10 - EC12 _{EH, CU, ID, AR}	mg/kg	1	MCERTS	-	< 1.0	-	-	-
TPH-CWG - Aromatic >EC12 - EC16 _{EH, CU, ID, AR}	mg/kg	2	MCERTS	-	< 2.0	-	-	-
TPH-CWG - Aromatic >EC16 - EC21 _{EH, CU, ID, AR}	mg/kg	10	MCERTS	-	< 10	-	-	-
TPH-CWG - Aromatic >EC21 - EC35 _{EH, CU, ID, AR}	mg/kg	10	MCERTS	-	< 10	-	-	-
TPH-CWG - Aromatic (EC5 - EC35) _{EH, CU+HS, ID, AR}	mg/kg	10	NONE	-	< 10	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 23-60528
Project / Site name: Cranwood, Muswell Hill

Lab Sample Number				2834564	2834565	2834566	2834567
Sample Reference				TP106	TP108	TP108	TP109
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	0.40	0.80	0.10
Date Sampled				03/10/2023	03/10/2023	03/10/2023	03/10/2023
Time Taken				None Supplied	None Supplied	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	%	0.01	NONE	15	23	22	18
Total mass of sample received	kg	0.001	NONE	1	0.5	0.3	0.5

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSA	JBH	N/A	DSA

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.3	8.6	-	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	4300	720	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	2.15	0.361	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	2150	361	-	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.61	0.46	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	0.77	1.5	-	-
Acenaphthene	mg/kg	0.05	MCERTS	1.5	1.2	-	-
Fluorene	mg/kg	0.05	MCERTS	3.3	1.9	-	-
Phenanthrene	mg/kg	0.05	MCERTS	12	21	-	-
Anthracene	mg/kg	0.05	MCERTS	3.8	5.5	-	-
Fluoranthene	mg/kg	0.05	MCERTS	20	35	-	-
Pyrene	mg/kg	0.05	MCERTS	17	30	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	9.8	17	-	-
Chrysene	mg/kg	0.05	MCERTS	8.5	16	-	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	10	20	-	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	7.8	6	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	7.8	15	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3.4	7.8	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.1	2	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.6	7.9	-	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	111	189	-	-
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	16	18	-	13
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	-	1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	-	-
Chromium (III)	mg/kg	1	NONE	31	34	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	32	35	-	25
Copper (aqua regia extractable)	mg/kg	1	MCERTS	34	42	-	29
Lead (aqua regia extractable)	mg/kg	1	MCERTS	110	350	-	110
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.7	0.5	-	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	22	23	-	18
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	210	-	150

Analytical Report Number: 23-60528
Project / Site name: Cranwood, Muswell Hill

Lab Sample Number				2834564	2834565	2834566	2834567
Sample Reference				TP106	TP108	TP108	TP109
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	0.40	0.80	0.10
Date Sampled				03/10/2023	03/10/2023	03/10/2023	03/10/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Monoaromatics & Oxygenates							
Benzene	µg/kg	5	MCERTS	-	-	< 5.0	-
Toluene	µg/kg	5	MCERTS	-	-	< 5.0	-
Ethylbenzene	µg/kg	5	MCERTS	-	-	< 5.0	-
p & m-xylene	µg/kg	5	MCERTS	-	-	< 5.0	-
o-xylene	µg/kg	5	MCERTS	-	-	< 5.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	< 5.0	-
Petroleum Hydrocarbons							
TPH C10 - C40 EH_CU_ID_TOTAL	mg/kg	10	MCERTS	110	150	-	-
TPH5 (C6 - C10) HS_ID_TOTAL	mg/kg	0.1	NONE	-	-	-	-
TPH5 (C10 - C20) EH_CU_ID_TOTAL	mg/kg	10	MCERTS	-	-	-	-
TPH5 (C20 - C30) EH_CU_ID_TOTAL	mg/kg	10	NONE	-	-	-	-
TPH5 (C30 - C40) EH_CU_ID_TOTAL	mg/kg	10	NONE	-	-	-	-
TPH5 (C6 - C40) EH_CU+HS_ID_TOTAL	mg/kg	10	NONE	-	-	-	-
TPH-CWG - Aliphatic >EC5 - EC6 HS_ID_AL	mg/kg	0.1	NONE	-	-	< 0.10	-
TPH-CWG - Aliphatic >EC6 - EC8 HS_ID_AL	mg/kg	0.1	NONE	-	-	< 0.10	-
TPH-CWG - Aliphatic >EC8 - EC10 HS_ID_AL	mg/kg	0.1	NONE	-	-	< 0.10	-
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_ID_AL	mg/kg	1	MCERTS	-	-	< 1.0	-
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_ID_AL	mg/kg	2	MCERTS	-	-	< 2.0	-
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_ID_AL	mg/kg	8	MCERTS	-	-	< 8.0	-
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_ID_AL	mg/kg	8	MCERTS	-	-	< 8.0	-
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_ID_AL	mg/kg	10	NONE	-	-	< 10	-
TPH-CWG - Aromatic >EC5 - EC7 HS_ID_AR	mg/kg	0.1	NONE	-	-	< 0.10	-
TPH-CWG - Aromatic >EC7 - EC8 HS_ID_AR	mg/kg	0.1	NONE	-	-	< 0.10	-
TPH-CWG - Aromatic >EC8 - EC10 HS_ID_AR	mg/kg	0.1	NONE	-	-	< 0.10	-
TPH-CWG - Aromatic >EC10 - EC12 EH_CU_ID_AR	mg/kg	1	MCERTS	-	-	< 1.0	-
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_ID_AR	mg/kg	2	MCERTS	-	-	3.3	-
TPH-CWG - Aromatic >EC16 - EC21 EH_CU_ID_AR	mg/kg	10	MCERTS	-	-	20	-
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_ID_AR	mg/kg	10	MCERTS	-	-	25	-
TPH-CWG - Aromatic (EC5 - EC35) EH_CU+HS_ID_AR	mg/kg	10	NONE	-	-	48	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 23-60528

Project / Site name: Cranwood, Muswell Hill

* 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 *
2834554	TP101	None Supplied	0.1	Brown loam and sand with gravel and vegetation.
2834555	TP101	None Supplied	0.5	Black sandy clay with gravel and vegetation.
2834556	TP102	None Supplied	0.2	Brown loam and sand with gravel and vegetation.
2834557	TP102	None Supplied	0.6	Brown clay and loam with gravel and vegetation.
2834558	TP103	None Supplied	0.15	Brown sandy clay with gravel.
2834560	TP103	None Supplied	0.6	Brown clay and sand.
2834561	TP104	None Supplied	0.35	Brown clay and sand with gravel and stones.
2834562	TP104	None Supplied	0.75	Brown clay and sand.
2834563	TP105	None Supplied	1	Brown clay and sand with gravel and brick.
2834564	TP106	None Supplied	0.8	Brown clay and sand with gravel.
2834565	TP108	None Supplied	0.4	Brown clay and sand with gravel.
2834566	TP108	None Supplied	0.8	Brown clay and sand with gravel and vegetation.
2834567	TP109	None Supplied	0.1	Brown clay and sand with gravel.

Analytical Report Number : 23-60528

Project / Site name: Cranwood, Muswell Hill

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	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
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
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. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-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
TPH5 (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method with silica gel split/clean up.	L076-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	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
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

Analytical Report Number : 23-60528
Project / Site name: Cranwood, Muswell Hill

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' 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 30°C.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Sample Deviation Report



Analytical Report Number : 23-60528

Project / Site name: Cranwood, Muswell Hill

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP108	None Supplied	S	2834566	b	BTEX and MTBE in soil (Monoaromatics)	L0738-PL	b
TP108	None Supplied	S	2834566	b	TPHCWG (Soil)	L088/76-PL	b

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Analytical Report Number : 23-60598

Project / Site name:	Cranwood, Muswell Hill	Samples received on:	05/10/2023
Your job number:	BC652	Samples instructed on/ Analysis started on:	05/10/2023
Your order number:		Analysis completed by:	17/10/2023
Report Issue Number:	1	Report issued on:	17/10/2023
Samples Analysed:	1 soil sample		

Izabela Wójcik
Signed:

Izabela Wójcik
Reporting Specialist
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

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 23-60598
Project / Site name: Cranwood, Muswell Hill

Lab Sample Number				2834903
Sample Reference				TP107
Sample Number				None Supplied
Depth (m)				0.10
Date Sampled				03/10/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Stone Content	%	0.1	NONE	69
Moisture Content	%	0.01	NONE	14
Total mass of sample received	kg	0.001	NONE	0.5

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSO

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.35
Acenaphthylene	mg/kg	0.05	MCERTS	0.26
Acenaphthene	mg/kg	0.05	MCERTS	0.16
Fluorene	mg/kg	0.05	MCERTS	0.15
Phenanthrene	mg/kg	0.05	MCERTS	3.8
Anthracene	mg/kg	0.05	MCERTS	1
Fluoranthene	mg/kg	0.05	MCERTS	12
Pyrene	mg/kg	0.05	MCERTS	11
Benzo(a)anthracene	mg/kg	0.05	MCERTS	6.6
Chrysene	mg/kg	0.05	MCERTS	6.5
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	7.4
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	3.6
Benzo(a)pyrene	mg/kg	0.05	MCERTS	6.5
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3.9
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.1
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.9

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	68.8
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	26
Copper (aqua regia extractable)	mg/kg	1	MCERTS	36
Lead (aqua regia extractable)	mg/kg	1	MCERTS	100
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	180

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 23-60598

Project / Site name: Cranwood, Muswell Hill

* 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 *
2834903	TP107	None Supplied	0.1	Brown clay and sand with gravel and stones.

Analytical Report Number : 23-60598

Project / Site name: Cranwood, Muswell Hill

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	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
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
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. Refer to CoA for analyte specific accreditation.	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

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' 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.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Sample Deviation Report



Analytical Report Number : 23-60598

Project / Site name: Cranwood, Muswell Hill

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP107	None Supplied	S	2834903	b	Speciated EPA-16 PAHs in soil	L064-PL	b

APPENDIX D

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 in 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. Any borehole data from the British Geological Survey sources are included on the following basis: “The British Geological Survey accept no responsibility for omissions or misinterpretation of the data from their Data Bank as this may be old or obtained from non-BGS sources and may not represent current interpretation”.

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 or different ground conditions 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.

Exploratory hole locations provided in the report are generally established by tape measurement from existing features or boundaries. Hole locations are not accurately surveyed and ground levels at these locations are not obtained unless specifically requested.

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.

New information, improved practices and legislation may necessitate an alteration to the report in whole, or in part, after its submission. Therefore with any change in circumstances or after the expiry of one year from the date of the report, the report should be referred to the Brownfield Consultancy Limited for re-assessment and, if necessary, re-appraisal.

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