

**Summary Findings of Ground Contamination Tests
& Remediation Strategy**

At

land Adjacent 1 Park Avenue, Ramsbottom

Report Prepared by...

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23rd August 2024

For Home Park Avenue Ltd

1. INTRODUCTION

The proposals comprise the erection of 1no 2 storey building with predominantly hardstanding ground externally by way of driveway & rear patio, the remainder shall be artificial grass with raised planter borders.

The property and land is currently designated for residential use. The proposed use will remain for residential use.

The client has undertaken an Groundsure survey of the property which had identified that the property is at no significant risk of contaminated land at or within the vicinity of the property.

Mini Soil Surveys were requested to visit the property and retrieve ground samples from 2 borehole locations.

2. SITE CONTEXT

2.1 Site Description

The site comprises a roughly rectangular shaped plot of land with the property located to the rear of the land.

2.2 Radon Gas

The site is reported to be within an area where less than 1% of properties are above the action level requiring radon gas protection measures to be installed in new buildings.

3. GROUND INVESTIGATION

3.1 Introduction

The ground investigation was requested for contamination tests only. Extracted borehole logs and laboratory test results from the site investigation works are attached.

The exploratory hole locations for the ground investigations are attached.

3.2 Exploratory Holes

3.2.1 Dynamic Sampler Boreholes

A total of 2 trial pits were excavated to depths of 1.0m below ground level.

3.3 Laboratory Testing

Chemical testing of selected samples, scheduled by CTS Environmental Testing, was undertaken by a laboratory with recognised (UKAS) accreditation for quality control.

4. GROUND CONDITIONS

The following section summarises the near surface ground conditions encountered during the investigation.

4.1.1 Surface Covering

Where encountered, the exploratory holes were excavated through a surface cover of topsoil of up to 100mm in thickness.

4.1.2 Made Ground

Made ground was not encountered in either trial pit

4.1.3 Natural Ground

firm brown & grey mottled sandy clay is generally found to be present below the topsoil.
No standing water present

GROUND CONTAMINATION RISK ASSESSMENT

5.1 Introduction

The phase 1 ground contamination risk assessment presented separately (ref 22.161) to this report takes into account the findings of the laboratory testing along with on-site observations in order to quantify risks to the land user.

5.2 Assessment Strategy

Due to the expected minimal presence of made ground soils across the site, the investigation comprised of a spread of sampling locations across the site to obtain the data on the underlying soils.

5.3 Analysis of Contamination Test Results

For the assessment of risk to human health a quantitative assessment of the laboratory test results has been undertaken by comparing soil contaminant concentrations against soil screening values (SSVs)

Site Investigation using the CLEA Model published by the Environment Agency and, where available, Category 4 Screening Levels (C4SL) as published within SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document.

Information on the derivation of the SSVs, along with the chemical parameters used were obtained from various sources including guidance documents published by the Environment Agency as well as other statutory bodies.

The soil screening values used in this assessment have been calculated using the generic “Residential” land use as set out in Science Report SC050021/SR3, January 2009.

The critical receptor for the residential land use is considered to be a young child resident on site from birth to age 6. Exposure routes that are considered include the potential for direct ingestion of the soil, the outdoor and indoor ingestion of dust, the potential inhalation of dust and vapours, ingestion of site grown vegetables and ingestion of soil attached to vegetables.

5.4 Statistical Analysis

Statistical analysis of the concentrations of heavy metals and polycyclic aromatic hydrocarbon (PAH) compounds determined by laboratory testing of samples of the made ground has been undertaken in line with guidance set out in ‘Comparing Soil Contamination Data with a Critical Concentration’ report, published by the CIEH/CL:AIRE (May 2008).

The CIEH/CL:AIRE guidance provides a framework for assessing measured contaminant concentrations on a site against user defined critical concentrations – or indicators of risk.

5.5 Heavy Metal Contaminants

The analysis of the laboratory test results indicates that no elevated levels of were found to either trial pit.

5.6 Organic Contamination

Polycyclic Aromatic Hydrocarbon (PAH) Compounds

The analysis of the laboratory test results indicates within trial pits 1 & 2 none of the PAH compounds tested for were present at concentrations above the screening values for a residential land use and therefore there is not considered to be a significant risk to end users.

6.0 Quantitative Contamination Risk Assessment

Discussion of the ground contamination sources, pathways and receptors in the context of the proposed development and site setting is discussed below.

6.0.1 Residential Development

6.0.1.1 Identified Sources

Sources of contamination that may pose a risk to end users of the residential site have been identified by the assessment of the site:

PH levels to trial pits 1 & 2 are below guideline levels if the area was to be landscaped.

7. REMEDIATION STRATEGY

no remediation strategy is required for the site.

The planned continuous external hardstanding (beneath the building) will act as a source – receptor barrier, preventing any contact with the contaminated ground by the subsequent occupiers of the property and will prevent any intake via the following

pathways:

- Indoor ingestion / inhalation of soil dust.
- Contact / inhalation with indoor dust.
- Soil tracked indoors
- Dermal contact with contaminated soil.
- Outdoor ingestion of soil.
- Outdoor inhalation of dust.
- Surface water runoff with suspended soil.

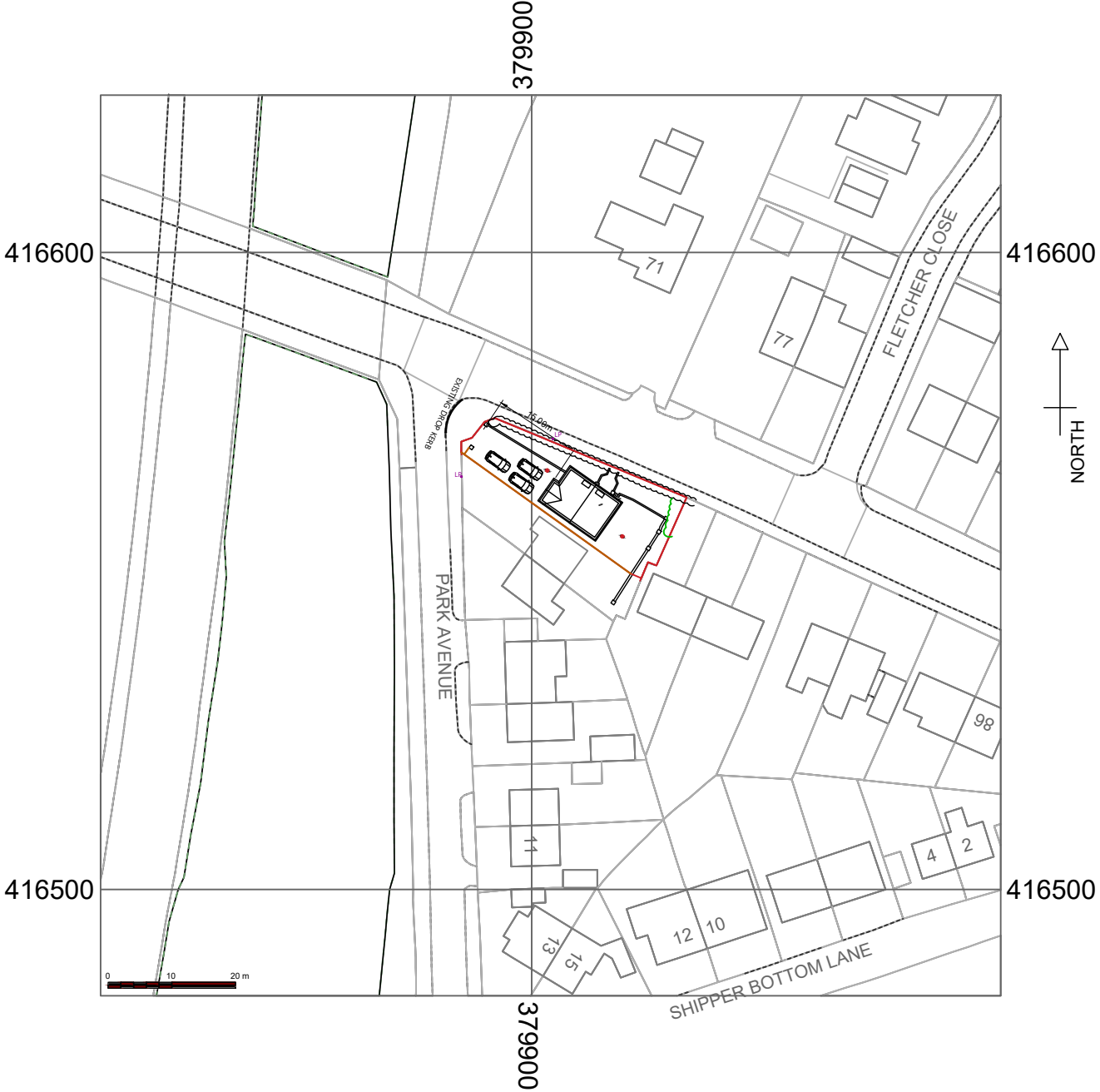
There is to be the presence of a concrete hard standing area to the front of the property along with a 3m patio to the rear which would act to sever any contaminant pathways and thereby further reduce the risk to the site users.

There will be an area of artificial grass that shall require a solid surface. this will involve the removal of circa 200 - 300mm of existing ground and importing of stone prior to the laying of a 50mm concrete capping layer prior to installation of the grass.

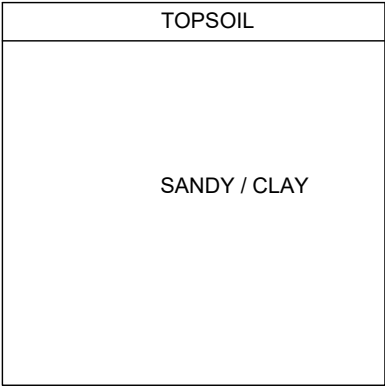
in lieu of ground gas monitoring a full gas barrier is to be installed.



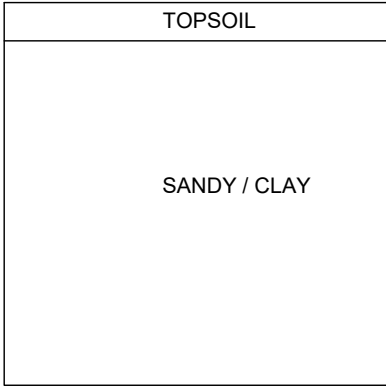
EXISTING BLOCK PLAN



PROPOSED BLOCK PLAN



TP 1



TP 2

Notes

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT HOME DESIGN & BUILD, ARCHITECTS, SERVICE ENGINEERS AND SUBCONTRACTOR DRAWINGS.

REVIEW ALL DRAWINGS AND REPORT ANY DISCREPANCIES TO HOME DESIGN & BUILD PRIOR TO COMMENCEMENT.

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WORK FROM FIGURED DIMENSIONS ONLY. DO NOT SCALE FROM THIS DRAWING.

ALL DIMENSIONS IN MILLIMETRES AND LEVELS IN METRES, TO BE CHECKED ON SITE

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A	22.08.22	ISSUED FOR PLANNING
N°	DATE	DESCRIPTION
REVISION		

CLIENT: HDB				
CONTRACT: LAND ADJACENT 1 PARK AVE				
DRAWING TITLE: BLOCK PLANS & TRIAL PIT INFORMATION				
PROJECT N°:	21.004	Drg N°:		Rev: A
PLANNING:	•	SCALE:	1/500	
BUILDING REGS:		DATE:	13.09.22	
TENDER:		DRAWN:	AG	
CONSTRUCTION:		CHECKED:		



4161



7 - 11 Harding Street
Leicester
LE1 4DH

Professional Soils Laboratory
5/7 Hexthorpe Road
Hexthorpe
Doncaster
DN4 0AR

Analytical Test Report: L24/07328/PSL - 24-48489

Your Project Reference:	PSL24/5730 1 Park Avenue		
Your Order Number:	PSL24/5730	Samples Received / Instructed:	09/08/2024 / 09/08/2024
Report Issue Number:	1	Sample Tested:	09/08 to 20/08/2024
Samples Analysed:	2 samples	Report issued:	20/08/2024

Signed

James Gane
Analytical Services Manager
CTS Group

Notes:

General

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30°C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with CTS method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited, subUKAS - Subcontracted to a laboratory UKAS accredited for this test, subMCERTS - Subcontracted to a laboratory MCERTS accredited for this test

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 08.08.2024

Issued by: J. Gane

Issue No: 4

Rev No: 11

L24/07328/PSL - 24-48489

Project Reference - PSL24/5730 1 Park Avenue

7 - 11 Harding Street
Leicester
LE1 4DH

Analytical Test Results - Solid

Lab Reference			388860	388861
Client Sample ID			-	-
Client Sample Location			TP1	TP2
Client Sample Type			-	-
Client Sample Number			-	-
Depth - Top (m)			-	-
Depth - Bottom (m)			-	-
Date of Sampling			-	-
Time of Sampling			-	-
Sample Matrix			Clay	Clay
Determinant	Units	Accreditation		
Arsenic	(mg/kg)	MCERTS	12	< 10
Boron (w/s)	(mg/kg)	u	< 2.5	< 2.5
Cadmium	(mg/kg)	MCERTS	0.8	0.8
Chromium (Total)	(mg/kg)	UKAS	10	7.2
Copper	(mg/kg)	MCERTS	45	41
Lead	(mg/kg)	MCERTS	75	92
Mercury	(mg/kg)	UKAS	< 2.5	< 2.5
Nickel	(mg/kg)	MCERTS	18	15
Selenium	(mg/kg)	u	< 8.0	< 8.0
Zinc	(mg/kg)	MCERTS	99	99
Total Phenols	(mg/kg)	MCERTS	< 1.0	< 1.0
Cyanide (Total)	(mg/kg)	MCERTS	< 1.0	< 1.0
Cyanide (Free)	(mg/kg)	u	< 1.0	< 1.0
Sulphate (Acid Soluble)	(%)	u	0.09	0.07
pH	pH Units	MCERTS	7.6	7.8
Sulphate (Water soluble as SO ₄)	(mg/l)	u	280	150
Sulphide	(mg/kg)	u	25	< 15
Sulphur (Total)	(%)	UKAS	0.07	0.05
Thiocyanate	(mg/kg)	u	< 5.0	< 5.0
Acenaphthene	(mg/kg)	MCERTS	0.51	0.39
Acenaphthylene	(mg/kg)	UKAS	< 0.20	0.33
Anthracene	(mg/kg)	UKAS	0.99	1.3
Benzo (a) anthracene	(mg/kg)	MCERTS	2.2	2.6
Benzo (a) pyrene	(mg/kg)	MCERTS	0.7	0.9
Benzo (b) fluoranthene	(mg/kg)	MCERTS	3.9	4.0
Benzo (g, h, i) perylene	(mg/kg)	MCERTS	1.9	2.1
Benzo (k) fluoranthene	(mg/kg)	MCERTS	1.5	1.3
Chrysene	(mg/kg)	MCERTS	3.4	3.6
Dibenzo (a,h) anthracene	(mg/kg)	MCERTS	0.43	0.63
Fluoranthene	(mg/kg)	MCERTS	6.9	6.5
Fluorene	(mg/kg)	MCERTS	0.43	0.35
Indeno (1, 2, 3,-cd) pyrene	(mg/kg)	MCERTS	1.8	1.9
Naphthalene	(mg/kg)	MCERTS	< 0.20	< 0.20
Phenanthrene	(mg/kg)	MCERTS	3.8	3.4
Pyrene	(mg/kg)	MCERTS	5.9	5.4
Total PAH (Sum of USEPA 16)	(mg/kg)	UKAS	34.5	35
Gasoline Range Organics (>C ₆ to C ₁₀) [EH_1D_Total]	(mg/kg)	u	< 0.20	< 0.20
Total TPH (>C ₁₀ to C ₂₅) [EH_1D_Total]	(mg/kg)	u	88	97
Mineral Oil (>C ₁₀ to C ₄₀) [EH_1D_Total]	(mg/kg)	MCERTS	90	95
SOM (via TOC)	(%)	UKAS	2.2	2.3



L24/07328/PSL - 24-48489

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Sample Descriptions

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Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
388860	-	TP1	-	-	Brown slightly clayey gravelly silty sand	< 0.1	23	100
388861	-	TP2	-	-	Brown slightly clayey gravelly silty sand	4.6	4.3	100



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Sample Comments

7 - 11 Harding Street
Leicester
LE1 4DH

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
388860	-	TP1	-	-	VPH/BTEX - Sample taken from container with headspace.
388861	-	TP2	-	-	VPH/BTEX - Sample taken from container with headspace.



L24/07328/PSL - 24-48489

Project Reference - PSL24/5730 1 Park Avenue

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preparation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
SKALARCNS	MS - CL - Cyanide by Skalar	As received	Passing 10mm test sieve	Determination of cyanide (total / free / complex) in soil using a Skalar segmented flow analyser
ICPMETS	MS - CL - ICP Metals	Air dried	Passing 10mm test sieve	Determination of metals in soils via ICP
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
PAHASRDS	MS - CL - PAH (As Received)	As received	Passing 10mm test sieve	Determination of Polyaromatic hydrocarbons in soil via GC-MS
SULPHIDES	MS - CL - Sulphide in Soils	As received	Passing 10mm test sieve	Determination of sulphide in soil via titration
SKALARPHS	MS - CL - Phenols by Skalar	As received	Passing 10mm test sieve	Determination of total phenols in soil using Skalar segmented flow analyser
ASSO4S	MS - CL - Acid Soluble Sulphate	Oven Dried	Passing 2mm test sieve	Determination of total sulphate in soils by acid extraction followed by ICP analysis
TOCS	MS - CL - TOC Eltra	Air Dried	Passing 10mm test sieve	Determination of Total Organic Carbon in soils
TPHS	MS - CL - TPH (GC-FID)	As received	Passing 10mm test sieve	Determination of Total Petroleum Hydrocarbons in soil using GC-FID
VPHS	MS - CL - VPH	As received	Passing 10mm test sieve	Determination of VPH in soils via Headspace-GC-MS
WSBORONS	MS - CL - WS Boron	Air dried	Passing 10mm test sieve	Determination of Water soluble Boron in soils via ICP
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis
1377TS-ELT	BS1377 Total Sulphur Content by HTC	Oven dried	BS1377 : Part 1 : 2016	Total Sulphur Content testing of Soil in accordance with BS 1377 : Part 3 : 2018 + A1 : 2021 Clause 7.10 (using Eltra CS-800 Analyser)



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Project Reference - PSL24/5730 1 Park Avenue

Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided

C - Received in inappropriate container

H - Contains headspace

T - Temperature on receipt exceeds storage temperature

R - Sample(s) received with less than 96 hours for testing to commence/complete, any result formally classed as deviating will be marked with an X against the applicable test (i.e. RX)

Observations whilst in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
388860	-	TP1	-	-		A
388861	-	TP2	-	-		A



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HWOL TPH Acronym Index

Acronym	Description
HS	Headspace Analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics and Aromatics
AL	Aliphatics Only
AR	Aromatics Only
2D	GC-GC - Double Coil Gas Chromatography
#1	EH_Total but with humics mathmatically subtracted
#2	EH_Total but with fatty acids mathmatically subtracted
_	Operator - underscore to separate acronyms (except for +)
+	Operator to indicate cumlative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry