Document: Remediation Verification Report

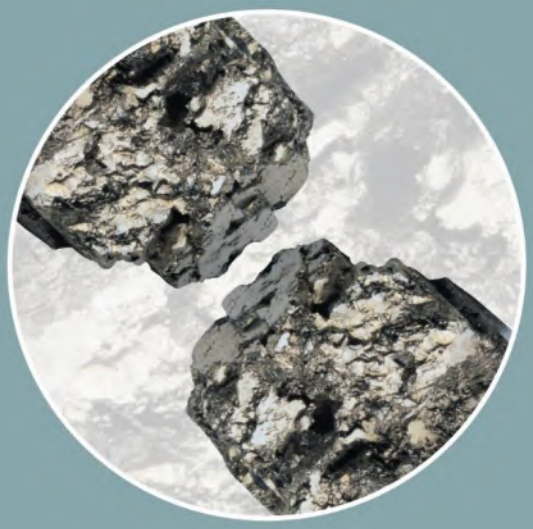
Project: Needham Market Quarry

Reference No.: GN17820_RV38

Date: June 2023

Prepared for: Hopkins Homes Limited

harrisongeotechnical
ENGINEERING



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HARRISON GROUP ENVIRONMENTAL LIMITED

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REPORT STATUS:

Revision	Comments	Prepared By	Approved By	Issued By	Audited By
0	First issue	INIT CD SIGN COMMENTS DATE 02/06/23	INIT SW SIGN COMMENTS DATE 06/06/23	INIT CD SIGN COMMENTS DATE 06/06/23	INIT SW SIGN COMMENTS DATE 06/06/23
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CONTENTS

FOREWORD

General Conditions Relating to a Verification Report

This investigation has been devised to generally comply with the relevant principles and requirements of B.S.10175:2011+A2:2017 'Investigation of potentially contaminated sites - Code of practice', science report SC050021/SR3 'Updated Technical Background to the CLEA Model' (Environment Agency, 2008), and DEFRA/Environment Agency (EA), 2021 'land contamination: risk management'. The recommendations made and opinions expressed in this report are based on the information obtained from the sources described using a methodology intended to provide reasonable consistency and robustness.

The opinions expressed in this report are based on the ground conditions revealed by the site works, together with an assessment of the site and of laboratory test results. Whilst opinions may be expressed relating to sub-soil conditions in parts of the site not investigated, for example between exploratory positions, these are only for guidance and no liability can be accepted for their accuracy.

Boring and sampling procedures are undertaken in accordance with B.S.5930:2015+A1:2020 'Code of Practice for Ground Investigations'. Likewise, in-situ and laboratory testing complies with B.S.1377:1990 'Methods of Tests for Soils for Civil Engineering Purposes' and B.S.22475:2011, unless stated otherwise in the text. Chemical testing has been undertaken by a UKAS accredited laboratory.

Some items of the investigation have been provided by third parties and whilst Harrison Group have no reason to doubt the accuracy, the items relied on have not been verified. No responsibility can be accepted for errors within third party items presented in this report.

This report is produced in accordance with the scope of Harrison Group's appointment and is subject to the terms of appointment. Harrison Group accepts no liability for any use of this document other than by its client and only for the purposes, for which it was designed and produced. No responsibility can be accepted for any consequences of this information being passed to a third party who may act upon its contents/recommendations.

Any advice, opinions, or recommendations within this document should be read and relied upon only in the context of the document as a whole. The contents of this document are not to be construed as providing legal, business or tax advice or opinion.

REMEDIATION VERIFICATION REPORT

FOR REMEDIAL ACTIVITY

AT

NEEDHAM MARKET QUARRY (Plots 76-83)

1 TERMS OF REFERENCE & INTRODUCTION

The work covered by this document was undertaken on behalf of Hopkins Homes Ltd, in accordance with an emailed instruction to proceed from Hopkins Homes Ltd dated 3rd October 2018.

The work described in this report represents validation and verification of remediation comprising a suitable soil cover (600mm of combined subsoil and topsoil, with a minimum thickness of topsoil to be 150mm) to the areas of soft landscaping around plots 76-83 of the Needham Market development. A remediation method statement (RMS) for the site was compiled and provided for the client to submit to the regulatory authorities in December 2017. The RMS (reference GN17820_RMS1) detailed the method of remediation to be undertaken, based on the ground investigations and assessment previously completed, and provided the planned principles for verification. We believe that the RMS was issued to Mid Suffolk District Council and the NHBC for their review and comment on the planned remediation verification.

The plots which require validation of the suitability of the soils in gardens and soft landscaping can be identified in drawing GN17820_DR402 (appended to this report), which highlights the development phasing plan (phases 1A, 1B, 2 and 3). Specifically, plots which require confirmation of the suitability of the near-surface soils, and the need for a soil cover, includes plot numbers 1-136, 161-170, 184-193, 197-211, 218-266 and soft landscaping areas in these development phases.

To date, potentially unsuitable material (as outlined in the RMS) has only been encountered in two plots in the western portion of phase 2 of the development (see verification reports GN17820_RV14 and GN17820_RV15) and in both instances further chemical testing of the material determined this was chemically suitable to remain. Following discussions between the client, the regulator and the NHBC it was agreed that a reduction in the number of plots that are to be tested as part of the remaining validation was sensible. The agreed strategy involved a reduction in the testing frequency to 1 in every 2 plots across the remainder of phase 2, as this was within an area formally used as part of the landfill, then reducing to 1 in 4 plots for phase 3 where it is understood the landfill did not extend into. This proposal was caveated that should potentially unsuitable material be encountered then the frequency of plots tested would be locally increased until confidence can be gained that no further plots are impacted, before returning to the agreed upon frequency.

Subsequent remediation verification reports are in production for additional affected plots/areas, as each area is remediated.

2 BACKGROUND INFORMATION

2.1 Verification Report Structure

This document has been set out as follows:

- A brief background of the site, the findings of previous investigations and nature of the remediation planned.
- A description of the activities undertaken.
- Details of soil sampling undertaken to date.
- Concluding with an assessment of the suitability for use.

Appended to this document is supporting evidence as follows:

- Photographs taken during the verification of the suitability of the cover system material.
- Chemical analysis of the material used within the cover system (topsoil).

2.2 Site Setting, History and Investigation

Harrison Group Environmental Limited (HGE) provided ground investigation for Hopkins Homes (HH) under the direction of Coffey Geotechnics Limited (CG) as part of their interpretative report on contamination and geotechnical aspects of the former chalk quarry, which was completed to provide HH with information for their development prior to acquiring the site. Reference should be made to CG report (reference 02095AA_R_003A-InterpReport v6, dated 23rd May 2014). Part of CG recommendations were for ground improvement in parts of the site, where deep fill material was placed as part of quarrying activity, and for two zones to require ground gas protection measures.

HGE were contacted by HH in 2017 to assess the ground gas regime during and after earthworks, and to assess the exposure of made ground soils by their earthworks contractor (Breheny Civil Engineering) when they removed approximately 2m thickness of surcharge toward the conclusion of ground improvement. We were also asked to consider the suitability of topsoil and subsoil stockpiled by Breheny Civil Engineering (BCE) as part of earthworks for reuse within the development.

The HGE report on the ground gas regime (reference GN17820_SI_GGrev1, dated November 2017) should be referred to for the details. In summary, the concentrations of ground gases were not found to significantly differ during or after earthworks. The two zones requiring protection measures to CS2 in accordance with BS8485 were refined to specifically include plots 109-111, 116 and 121-126 in zone 1 and plots 1, 230, 234-239, 240-249, 251-256, 265 and 266 in zone 2. Drawing GN17820_DR104 (appended to the RMS document) identifies the two zones referred to and the plots affected.

HGE report on the suitability of identified soil for use within the residential development (GN17820_SI_Soilrev1, also dated November 2017) should be referred to for details. Based on the available ground investigation information the quarry backfill material was generally found to comprise reworked glacial drift and structureless chalk but was also noted to include some organic soils with low levels of PAH compounds in some soil samples analysed. It was considered likely that where the darker organic/ashy material was encountered it may potentially be unsuitable to remain where exposed in the near surface of domestic gardens. These areas approximately correspond to development phases 1B and 2, but may extend to areas within phase 3. It was recommended that where unsuitable material is exposed or is present within the near surface of domestic gardens and soft landscaping areas, that a suitable soil cover system is implemented. In order to determine the affected gardens and soft landscaping areas, it was proposed that HGE undertake shallow trial pit excavations.

A stockpile of topsoil (S02) was imported from Hopkins Homes' Bramford site during the summer of 2018. The topsoil was considered physically suitable for reuse in gardens with chemical analysis of this material confirming its chemical suitability. There was a minimal amount of anthropogenic content to the stockpiled topsoil, which was inert and does not present a significant risk to end users, but may be physically undesirable. It was recommended that this undesirable content is removed from topsoil planned for use in gardens and areas of public open space, where observed during moving and placing the topsoil.

A remediation method statement (RMS) for the site was compiled following completion of the site investigation works and submitted to the regulatory authorities in December 2017 (reference GN17820_RMS1). The method for ensuring soil suitability is detailed in sections 4, 5 and 6 of the RMS. Section 3 within the RMS document details the need for gas protection measures. HH have confirmed that gas protection measures are being installed where required and verification of these works is being undertaken by others.

The plots which require validation of the suitability of the soils in gardens and soft landscaping can be identified in drawing GN17820_DR402 (appended to this report), which highlights the development phasing plan (phases 1A, 1B, 2 and 3). Specifically, plots which require investigation before the suitability of the near-surface soils (and the need for a soil cover) can be confirmed includes plot numbers 1-136, 161-170, 184-193, 197-211, 218-266 and soft landscaping areas in these development phases.

3 SOIL REMEDIATION

As described above, the verification process was planned to comprise confirmation that there is sufficient thickness of suitable cover soil within the garden areas of plots 1-136, 161-170, 184-193, 197-211, 218-266 and soft landscaping areas in these development phases, as indicated on drawing GN17820_DR402 within the appendix. The work described in this report represents validation and verification of remediation comprising a suitable soil cover system (subsoil and topsoil) within areas of soft landscaping surrounding plots 76-83.

Engineers from HGE visited site on 19/05/23 to undertake hand dug trial pits within the soft landscaped areas surrounding plots 76-83 to confirm that suitable topsoil and subsoil was present in the gardens (HDTP77-01 to HDTP77-02, HDTP77-03, HDTP79-01, HDTP80-01 and HDTP74-03). Specifically, plots 77, 79 and 80 were targeted for investigation, however, the findings are considered representative of plots 76-83 inclusive.

During the visit, the following observations were made:

- Concrete edging was observed adjacent to footpaths and curb sides at approximately 45° angle.
- A maximum depth of excavation of 500mm was completed within HDTP77-01, HDTP80-01 and HDTP80-02 due to encountering very hard ground, however the cover system was deemed suitable upon reaching this depth, from the point of view of the lack of dark, potentially contaminated material, which has been the focus of the need for a cover in other plots on the site.
- At the time of the site visit topsoil had not been placed within the front gardens of plots 80-83. However, since our site visit HH have provided photographs of the topsoil being placed within the front gardens of these plots, which have been reviewed and are deemed suitable.

The following sections of this report outline the remediation completed for plots 76-83.

3.1 Cover System Material

The material used for the cover system includes site won subsoil and imported topsoil (from previously verified stockpile S02 as mentioned in section 2.2 of this report).

The fieldwork locations are shown on drawings GN17820-DR502ao included within the appendix. Hand excavated trial pits were undertaken to record the thickness and physical descriptions of the materials present and to confirm material suitability.

3.1.1 Site Won Subsoil

The material was generally described as made ground consisting of the following.

- MADE GROUND. Light brownish grey sandy gravelly clay. Gravel is sub-angular to sub-rounded fine to coarse flint and chalk with occasional brick.
- MADE GROUND. Dense white and grey sandy gravelly silt. Gravel is sub-angular to sub-rounded fine to coarse flint with occasional brick and ash. This material was considered to be potentially unsuitable for use in the cover system due to the presence of occasional ash.

The potentially unsuitable subsoil material was identified within the back garden of plot 80 only. A sample of the subsoil material noted within the back garden of plot 80 (ES1, 0.15-0.5m) was taken to submit for chemical testing at an accredited laboratory. The results of this testing are discussed further in section 3.2 of this report.

The materials encountered within plot 77 and 79 were considered suitable for use as subsoil from visual inspection. The dark material identified elsewhere on site that contained low levels of contaminants was not encountered in the soft landscaping surrounding plots 77, 79 or 80 and is therefore not considered likely to be encountered within plots 76-83.

3.1.2 Imported Topsoil

Topsoil from stockpile S02 (imported from Hopkins Homes' Bramford Site) was previously considered suitable for reuse in gardens and chemical analysis of this material has confirmed its chemical suitability. The results of the chemical analysis are appended to this report. The material was previously deemed physically suitable for use as a topsoil, as the soil appeared to be an appropriate consistency for use in garden areas. The material within S02 was described as dark brown slightly gravelly slightly silty sand with fine to medium subangular to subrounded flint. A total of ten samples were submitted to a laboratory in May 2019 for testing of a general suite of contaminants and an asbestos screen. No asbestos was detected, and the levels of all other contaminants were below the screening criteria adopted at the time.

During the verification works, the material was generally described as brown slightly gravelly slightly silty to silty fine to medium sand. Gravel is angular to rounded fine to coarse flint. This recent description is generally consistent with the previous description, allowing for some variability, and therefore has been confirmed as the same material. This material was used for the topsoil (ground level up to 300mm depth) within the soft landscaping areas surrounding plots 76-83. The minimum thickness of 150mm of topsoil was encountered in all of the trial pits during the verification exercise.

3.1.3 Soil Cover Thickness

A thickness of suitable soil was stated in the RMS to need to be at least 600mm. The dark material identified elsewhere on site that contained low levels of contaminants was not encountered within the upper 600mm in the soft landscaping surrounding plots 77, 79 and 80 and is therefore not considered likely to be encountered within plots 76-83.

The thickness of suitable soil was recorded to be at least 600mm within the trial pits completed, excluding HDTP77-01, HDTP80-01 and HDTP80-02 where each trial pit was terminated at 500mm due to encountering very hard ground.

3.2 Soil Sampling and Analysis

During a site visit on the 19/05/23, one soil sample from HDTP80-01 (ES1, 0.15-0.5m) where potentially unsuitable subsoil was encountered was submitted for chemical testing. This sample was scheduled for testing of polycyclic aromatic hydrocarbons (PAH, USEPA 16).

The results of this chemical analysis are appended to this report (23-16989-0) and summarised in table 3.2 below. As defined by the RMS the detected concentrations have been compared to soil screening values (S4UL and C4SL) for a residential land use with home grown produce (1% SOM).

Determinant	Maximum recorded concentration (mg/kg)	S4UL and C4SL* for residential use with home grown produce (mg/kg)	Exceeded
Naphthalene	<0.1	2.3	No
Acenaphthylene	<0.1	170	No
Acenaphthene	<0.1	210	No
Fluorene	<0.1	170	No
Phenanthrene	0.56	95	No
Anthracene	0.13	2400	No
Fluoranthene	1.2	280	No
Pyrene	1.2	620	No
Benzo(a)anthracene	0.59	7.2	No
Chrysene	0.55	15	No
Benzo[b]fluoranthene	<0.1	2.6	No
Benzo[k]fluoranthene	<0.1	77	No
Benzo(a)pyrene	<0.1	2.2	No
Indeno[1,2,3-cd]pyrene	<0.1	27	No
Dibenzo(ah)anthracene	<0.1	0.24	No
Benzo[ghi]perylene	<0.1	320	No

Table 3.2: Summary of soil chemical analysis for validation sample from rear garden of Plot 80.

The table shows that the detected concentrations of each contaminant were below the generic assessment criteria (C4SL and S4UL) and were therefore considered suitable for use. the subsoil material encountered within plot 80 was therefore considered suitable for use.

4 CONCLUSIONS

Harrison Group Environmental Limited considers that a suitable cover system of suitable thickness, comprising chemically and physically suitable material, has been implemented. We are satisfied that there will be no significant risk to human health from residual contamination in the soft landscaping that surrounds plots 76-83 at the development known as Needham Market Quarry.

This report should be submitted to the regulators in order to conclude the remediation process.

Plots 3-75, 96-103, 112-118, 119, 121-126, 161-170, 197-203 and 218-266 have previously been validated and are shown as green on appended drawing GN17820-DR502 which shows a summary of the validation completed to date. The requirement for remediation in other plots is currently being assessed and the remediation undertaken as appropriate. Further remediation verification reports are in production for

additional affected plots/areas on the whole development, as each area is built and remediated. These include plots 1, 2, 84-95, 104-111, 120, 127-136, 184-193 and 204-211.

Public open space and soft landscaping areas within the development phases are yet to be verified.

Report by:	Checked and approved by:
	
Carl Day BSc (hons.) Senior Geoenvironmental Engineer	Stephen Williams BSc (Hons.) FGS Managing Director

APPENDICES – Supporting Documentation

Drawings:	GN17820-DR402
	GN17820-DR502ao
	GN17820-DR502
Hand Dug Trial Pit Logs	HDTP77-01, HDTP77-02 & HDTP77-03
	HDTP79-01
	HDTP80-01 and HDTP80-02.
Chemical Analysis Reports:	19-41738-1 (I2 Report 2019)
	23-16989-0 (Eurofins Report 2023)
Photo Sheet:	GN17820_RV38 Photo Sheet 1

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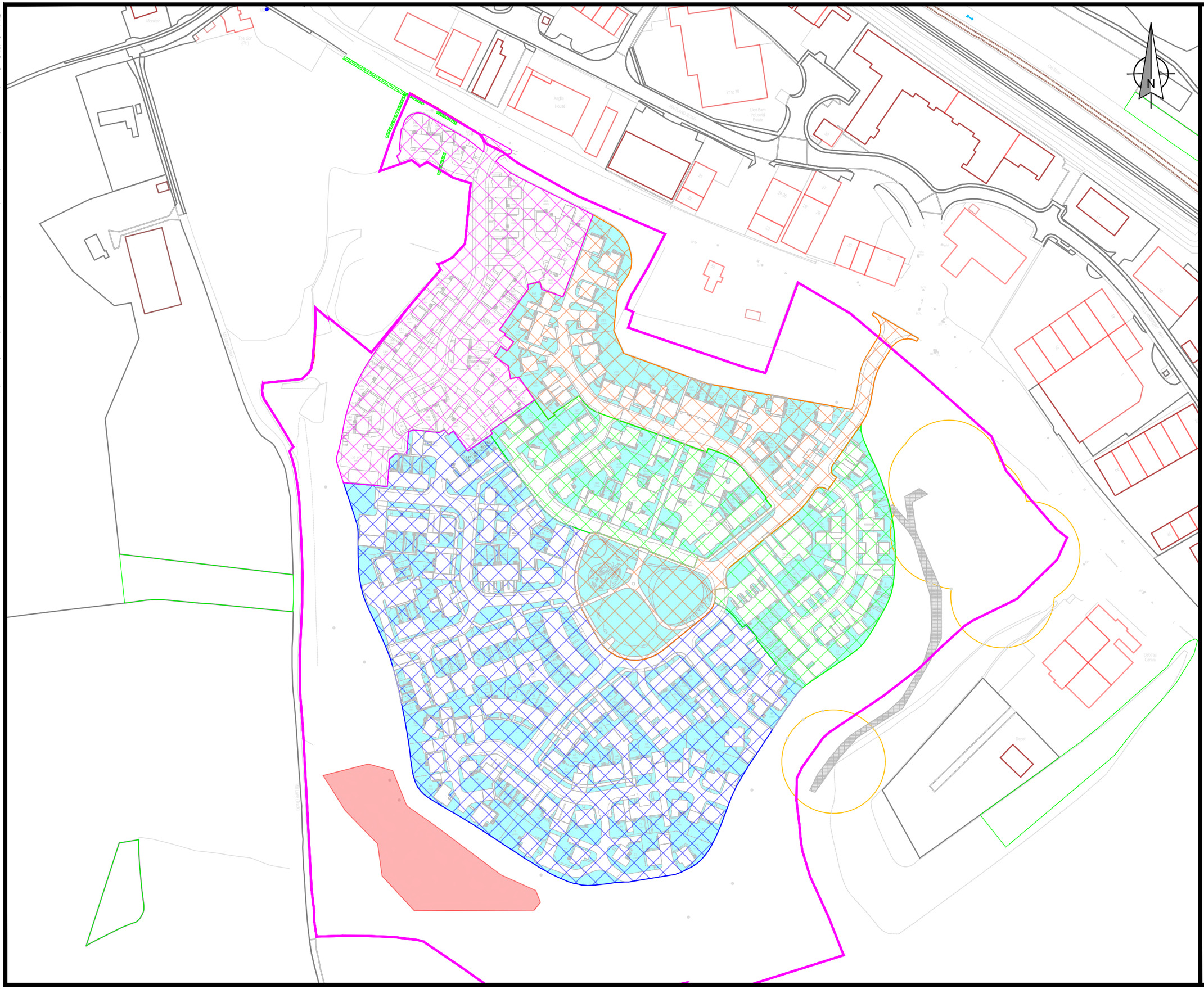

Notes :

HOPKINS HOMES

Client : Hopkins Homes Limited

Project : Needham Market Quarry

Job No : GN17820 Date : December 2017

Drawing Title : Development Layout with Phases and Plots Requiring Suitable Soil Verifying

Drawing No : GN17820 - DR402

Scale : 1:2000 @ A3

Drawn by : RW Checked by : JA

Eastings : 609411 Northings : 254247

Revision history

Rev	Date	Revision Data

harrisongroup ENVIRONMENTAL

Norwich: 01603 613111 London: 020 7537 9233
Cambridge: 01223 781585 Laboratory: 01603 416333

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Website: www.harrisongroupuk.com

ISOQAR REGISTERED 0026 UKAS MANAGEMENT SYSTEMS UKAS TESTING 4031

Certificate Number 5933
ISO 9001, ISO 14001

Key :

HDTP77-01	Hand Dug Trial Pit
	Acceptable Cover System

Notes :

HOPKINS HOMES

Client : Hopkins Homes Ltd	
Project : Needham Market Quarry	
Job No : GN17820	Date : May 2023
Drawing Title : Fieldwork Location Plan - Plot 76-83	
Drawing No : GN17820 - DR502ao	
Scale : 1:250 @ A3	
Drawn by : RW	Checked by : CD
Eastings : 609430	Northings : 253940

Revision history

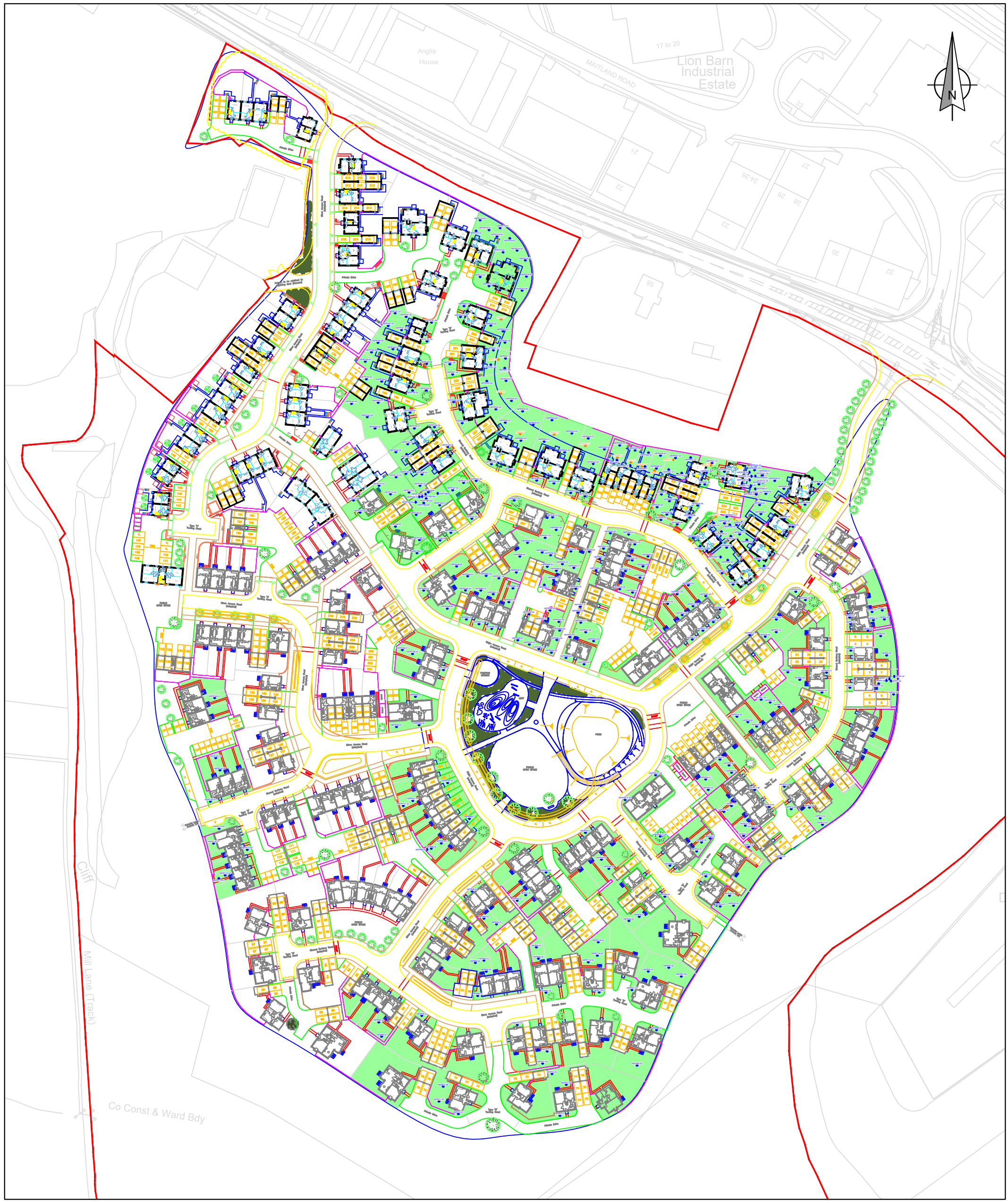
Rev	Date	Revision Data

harrisongroup ENVIRONMENTAL

Norwich: 01603 613111 London: 020 7537 9233
Cambridge: 01223 781585 Laboratory: 01603 416333

Email: info@harrisongroupuk.com
Website: www.harrisongroupuk.com

Certificate Number 5933
ISO 9001, ISO 14001
0026
4031



Client :	Hopkins Homes Ltd
Project :	Needham Market Quarry
Job No : GN17820	Date : January 2023
Drawing Title :	Fieldwork Location Plan
Drawing No :	GN17820 - DR502
Scale :	1:1500 @ A3
Drawn by : RW	Checked by : MR
Eastings : 609480	Northings : 254090

Revision history

Rev	Date	Revision Data
R36	16/01/2023	Fieldwork locations for Plots 112-117 added
R37	10/03/2023	Fieldwork locations for Plots 69-75 added
R38	24/05/2023	Fieldwork locations for Plots 76-83 added

Key :

- Site Boundary
- HDTP220-01 — Hand Dug Trial Pit
- TP220-01 — Machine Excavated Trial Pit
- Acceptable Cover System

Notes :

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UKAS MANAGEMENT SYSTEMS
UKAS TESTING 4031

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Trial Pit Record

HDTP77-01

Sheet 1 of 1

Project ID: **GN17820**	Client: Hopkins Homes Limited	E: 609450.36	N: 253918.12
Location: Needham Market Quarry	Consultant:		
	Plant used: Hand Excavated	Date: 19/05/2023	

Geology Description	Legend	Depth	Elevation (maOD)	Sample / In-Situ Test Information			Installation & Backfill
				Type	Depth	Results / Remarks	
TOPSOIL. Brown slightly gravelly silty fine to medium SAND. Gravel is sub-angular to sub-rounded fine to coarse flint.							
		0.16					
MADE GROUND. Light brownish grey sandy gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse flint and chalk with occasional brick. *At 0.40m: Cobble of flint present.*							
		0.50					
Trial pit terminated at 0.50m.							

Weather: Sunny and dry

Pit Stability: Stable

Shoring Used:

Pit Dimensions: L: 0.30m x W: 0.30m

Water Strike

Date	Water Strike (m)	Time Elapsed (mins)	Standing Level (m)	Remarks
				No groundwater encountered

Remarks

1. Backfill: GL to 0.50m arisings.
2. Approximate coordinates.

Norwich Office: 01603 613111
London Office: 020 7537 9233
Cambridge Office: 01223 781585
Colchester Office: 01206 986675
Testing Services: 01603 416333
E-mail: info@harrisongroupuk.com
Website: www.harrisongroupuk.com

Logged by: CD | Checked by: CD

Trial Pit Record

HDTP77-02

Sheet 1 of 1

Project ID: **GN17820**	Client: Hopkins Homes Limited	E: 609442.21	N: 253923.39
Location: Needham Market Quarry	Consultant:		
	Plant used: Hand Excavated	Date: 19/05/2023	

Geology Description	Legend	Depth	Elevation (maOD)	Sample / In-Situ Test Information			Installation & Backfill
				Type	Depth	Results / Remarks	
TOPSOIL. Brown slightly gravelly silty fine to medium SAND. Gravel is sub-angular to sub-rounded fine to coarse flint.							
MADE GROUND. Light brownish grey sandy gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse flint and chalk with occasional brick.		0.20					
Trial pit terminated at 0.60m.		0.60					

Weather:	Sunny and dry
Pit Stability:	Stable
Shoring Used:	
Pit Dimensions:	L: 0.30m x W: 0.30m

Water Strike

Date	Water Strike (m)	Time Elapsed (mins)	Standing Level (m)	Remarks
				No groundwater encountered

Remarks

1. Backfill: GL to 0.60m arisings.
2. Approximate coordinates.

Norwich Office: 01603 613111
London Office: 020 7537 9233
Cambridge Office: 01223 781585
Colchester Office: 01206 986675
Testing Services: 01603 416333
E-mail: info@harrisongroupuk.com
Website: www.harrisongroupuk.com

Logged by: CD | Checked by: CD | Fm-Hn-R-3069-Rev E

Trial Pit Record

HDTP77-03

Sheet 1 of 1

Project ID: **GN17820**	Client: Hopkins Homes Limited	E: 609444.00	N: 253929.65
Location: Needham Market Quarry	Consultant:		
	Plant used: Hand Excavated	Date: 19/05/2023	

Geology Description	Legend	Depth	Elevation (maOD)	Sample / In-Situ Test Information			Installation & Backfill
				Type	Depth	Results / Remarks	
TOPSOIL. Brown slightly gravelly silty fine to medium SAND. Gravel is sub-angular to sub-rounded fine to coarse flint.							
MADE GROUND. Light brown sandy gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse flint and chalk with occasional brick.		0.25					
Trial pit terminated at 0.60m.		0.60					

Weather:	Sunny and dry
Pit Stability:	Stable
Shoring Used:	
Pit Dimensions:	L: 0.30m x W: 0.30m

Water Strike

Date	Water Strike (m)	Time Elapsed (mins)	Standing Level (m)	Remarks
				No groundwater encountered

Remarks

1. Backfill: GL to 0.60m arisings.
2. Approximate coordinates.

Norwich Office: 01603 613111
London Office: 020 7537 9233
Cambridge Office: 01223 781585
Colchester Office: 01206 986675
Testing Services: 01603 416333
E-mail: info@harrisongroupuk.com
Website: www.harrisongroupuk.com

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Trial Pit Record

HDTP79-01

Sheet 1 of 1

Project ID: **GN17820**	Client: Hopkins Homes Limited	E: 609434.99	N: 253959.39
Location: Needham Market Quarry	Consultant:		
	Plant used: Hand Excavated	Date: 19/05/2023	

Geology Description	Legend	Depth	Elevation (maOD)	Sample / In-Situ Test Information			Installation & Backfill
				Type	Depth	Results / Remarks	
TOPSOIL. Brown slightly gravelly silty fine to medium SAND. Gravel is sub-angular to sub-rounded fine to coarse flint.							
MADE GROUND. Light brown slightly sandy gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse flint and chalk with occasional brick. *At 0.50m: Cobble of flint present.*		0.30					
Trial pit terminated at 0.60m.		0.60					

Weather:	Sunny and dry
Pit Stability:	Stable
Shoring Used:	
Pit Dimensions:	L: 0.30m x W: 0.30m

Water Strike

Date	Water Strike (m)	Time Elapsed (mins)	Standing Level (m)	Remarks
				No groundwater encountered

Remarks

1. Backfill: GL to 0.60m arisings.
2. Approximate coordinates.

Norwich Office: 01603 613111
London Office: 020 7537 9233
Cambridge Office: 01223 781585
Colchester Office: 01206 986675
Testing Services: 01603 416333
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Website: www.harrisongroupuk.com

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Trial Pit Record

HDTP80-01

Sheet 1 of 1

Project ID: **GN17820**	Client: Hopkins Homes Limited	E: 609418.11	N: 253950.66
Location: Needham Market Quarry	Consultant:		
	Plant used: Hand Excavated	Date: 19/05/2023	

Geology Description	Legend	Depth	Elevation (maOD)	Sample / In-Situ Test Information			Installation & Backfill
				Type	Depth	Results / Remarks	
TOPSOIL. Brown slightly gravelly silty fine to medium SAND. Gravel is sub-angular to sub-rounded fine to coarse flint.							
MADE GROUND. Dense white and grey sandy gravelly SILT. Gravel is sub-angular to sub-rounded fine to coarse flint with occasional brick and ash.		0.15		ES1	0.15 - 0.50		
At 0.40m: Cobble of flint present.							
Trial pit terminated at 0.50m: Dense ground conditions		0.50					

Weather: Sunny and dry

Pit Stability: Stable

Shoring Used:

Pit Dimensions: L: 0.30m x W: 0.30m

Water Strike

Date	Water Strike (m)	Time Elapsed (mins)	Standing Level (m)	Remarks
				No groundwater encountered

Remarks

1. Backfill: GL to 0.60m arisings.
2. Approximate coordinates.

Norwich Office: 01603 613111
London Office: 020 7537 9233
Cambridge Office: 01223 781585
Colchester Office: 01206 986675
Testing Services: 01603 416333
E-mail: info@harrisongroupuk.com
Website: www.harrisongroupuk.com

Logged by: CD | Checked by: CD | Fm-Hn-R-3069-Rev E

Trial Pit Record

HDTP80-02

Sheet 1 of 1

Project ID: **GN17820**	Client: Hopkins Homes Limited	E: 609416.92	N: 253956.65
Location: Needham Market Quarry	Consultant:		
	Plant used: Hand Excavated	Date: 19/05/2023	

Geology Description	Legend	Depth	Elevation (maOD)	Sample / In-Situ Test Information			Installation & Backfill
				Type	Depth	Results / Remarks	
TOPSOIL. Brown slightly gravelly silty fine to medium SAND. Gravel is sub-angular to sub-rounded fine to coarse flint.							
MADE GROUND. Dense white and grey sandy gravelly SILT. Gravel is sub-angular to sub-rounded fine to coarse flint with occasional brick and ash.		0.25					
Trial pit terminated at 0.50m: Dense ground conditions		0.50					

Weather: Sunny and dry

Pit Stability: Stable

Shoring Used:

Pit Dimensions: L: 0.30m x W: 0.30m

Water Strike

Date	Water Strike (m)	Time Elapsed (mins)	Standing Level (m)	Remarks
				No groundwater encountered

Remarks

1. Backfill: GL to 0.60m arisings.
2. Approximate coordinates.

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Analytical Report Number : 19-41738

Project / Site name:	Needham Market Quarry	**Samples received on:**	17/05/2019
Your job number:	GN17820	**Samples instructed on:**	17/05/2019
Your order number:	GN17820-33605-JC	**Analysis completed by:**	24/05/2019
Report Issue Number:	1	**Report issued on:**	24/05/2019
Samples Analysed:	10 soil samples		

Signed:

Zina Abdul Razzak
Senior Quality 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: 19-41738

Project / Site name: Needham Market Quarry
Your Order No: GN17820-33605-JC

Lab Sample Number				1224213	1224214	1224215	1224216	1224217
Sample Reference				SO2-01	SO2-02	SO2-03	SO2-04	SO2-05
Sample Number				1	1	1	1	1
Depth (m)				0.00-0.50	0.00-0.50	0.00-0.50	0.00-0.50	0.00-0.50
Date Sampled				15/05/2019	15/05/2019	15/05/2019	15/05/2019	15/05/2019
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	25	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	8.8	7.6	8.8	8.7	9.4
Total mass of sample received	kg	0.001	NONE	0.47	0.50	0.48	0.49	0.49
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.1	8.1	9.0	7.9	7.8
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.8	0.8	0.8	0.8	0.8
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.64	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.87	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.83	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.46	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.26	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.26	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.19	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.18	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	3.69	< 0.80	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	5.2	10	14	7.2	6.5
Boron (water soluble)	mg/kg	0.2	MCERTS	1.2	1.3	1.0	1.2	1.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	11	11	8.7	12	13
Copper (aqua regia extractable)	mg/kg	1	MCERTS	15	16	18	13	14
Lead (aqua regia extractable)	mg/kg	1	MCERTS	28	25	25	25	24
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	10	11	11	11	11
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	1.2
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	40	39	55	37	38

Analytical Report Number: 19-41738

Project / Site name: Needham Market Quarry
Your Order No: GN17820-33605-JC

Lab Sample Number				1224213	1224214	1224215	1224216	1224217
Sample Reference				SO2-01	SO2-02	SO2-03	SO2-04	SO2-05
Sample Number				1	1	1	1	1
Depth (m)				0.00-0.50	0.00-0.50	0.00-0.50	0.00-0.50	0.00-0.50
Date Sampled				15/05/2019	15/05/2019	15/05/2019	15/05/2019	15/05/2019
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	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	15	14	13	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	19	18	19	< 10	< 10

Analytical Report Number: 19-41738

Project / Site name: Needham Market Quarry
Your Order No: GN17820-33605-JC

Lab Sample Number				1224218	1224219	1224220	1224221	1224222
Sample Reference				SO2-06	SO2-07	SO2-08	SO2-09	SO2-10
Sample Number				1	1	1	1	1
Depth (m)				0.00-0.50	0.00-0.50	0.00-0.50	0.00-0.50	0.00-0.50
Date Sampled				15/05/2019	15/05/2019	15/05/2019	15/05/2019	15/05/2019
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	%	N/A	NONE	8.9	9.0	8.5	9.4	11
Total mass of sample received	kg	0.001	NONE	0.51	0.51	0.50	0.58	0.59
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.7	7.8	8.0	7.5	7.8
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.9	0.7	0.7	0.9	0.8
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.5	11	12	9.1	8.7
Boron (water soluble)	mg/kg	0.2	MCERTS	1.1	1.1	1.1	0.9	1.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	11	14	9.2	11	13
Copper (aqua regia extractable)	mg/kg	1	MCERTS	13	14	15	11	12
Lead (aqua regia extractable)	mg/kg	1	MCERTS	24	23	22	24	23
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	0.6	0.5	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	10	11	11	10	11
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	37	35	31	35	37

Analytical Report Number: 19-41738

Project / Site name: Needham Market Quarry
Your Order No: GN17820-33605-JC

Lab Sample Number				1224218	1224219	1224220	1224221	1224222
Sample Reference				SO2-06	SO2-07	SO2-08	SO2-09	SO2-10
Sample Number				1	1	1	1	1
Depth (m)				0.00-0.50	0.00-0.50	0.00-0.50	0.00-0.50	0.00-0.50
Date Sampled				15/05/2019	15/05/2019	15/05/2019	15/05/2019	15/05/2019
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	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	12	< 10	< 10

Analytical Report Number : 19-41738

Project / Site name: Needham Market Quarry

* 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 *
1224213	SO2-01	1	0.00-0.50	Brown loam and sand with vegetation and gravel.
1224214	SO2-02	1	0.00-0.50	Brown loam and sand with gravel and stones.
1224215	SO2-03	1	0.00-0.50	Brown loam and sand with gravel.
1224216	SO2-04	1	0.00-0.50	Brown loam and sand with vegetation and gravel.
1224217	SO2-05	1	0.00-0.50	Brown loam and sand with vegetation and gravel.
1224218	SO2-06	1	0.00-0.50	Brown loam and sand with vegetation and gravel.
1224219	SO2-07	1	0.00-0.50	Brown loam and sand with vegetation and gravel.
1224220	SO2-08	1	0.00-0.50	Brown loam and sand with gravel.
1224221	SO2-09	1	0.00-0.50	Brown loam and sand with vegetation and gravel.
1224222	SO2-10	1	0.00-0.50	Brown loam and sand with gravel.

Analytical Report Number : 19-41738

Project / Site name: Needham Market Quarry

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion 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
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

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

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Interim Report

Report No.:	23-16989-0		
Initial Date of Issue:			
Re-Issue Details:			
Client	Harrison Group Environmental Ltd		
Client Address:	Kimberley Street Norwich Norfolk NR2 2RJ		
Contact(s):	Carl Day		
Project	GN17820 Needham Manliet Quarry		
Quotation No.:	Q22-29662	**Date Received:**	23-May-2023
Order No.:	GN17820/40965/CD	**Date Instructed:**	23-May-2023
No. of Samples:	7		
Turnaround (Wkdays):	7	**Results Due:**	01-Jun-2023
Date Approved:		**Subcon Results Due:**	14-Jun-2023
Approved By:			

Details:

Please note that the interim data available has passed our Quality Control Criteria but has not been verified by an approved signatory and may be subject to amendment on approval. Chemtest cannot therefore be held responsible for decisions made on interim data sets but only for the data submitted on a final report containing an approval date and signature.

Results - Soil

Project: GN17820 Needham Manliet Quarry

Client: Harrison Group Environmental Ltd		**Chemtest Job No.:**			23-16989	23-16989	23-16989	23-16989	23-16989	23-16989	23-16989
Quotation No.: Q22-29662		**Chemtest Sample ID.:**			1643562	1643563	1643564	1643565	1643566	1643567	1643568
Order No.: GN17820/40965/CD		Client Sample Ref.:			1	2	3	4	5	1	1
		Sample Location:			TS1	TS1	TS1	TS1	TS1	80-01	TS1
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.00	0.00	0.00	0.00	0.00	0.15	0.00
		Bottom Depth (m):			0.50	0.50	0.50	0.50	0.50	0.50	0.50
		Date Sampled:			19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023
		Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
ACM Type	U	2192		N/A	-	-	-	-	-		
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected		
Moisture	N	2030	%	0.020	9.1	9.9	11	8.8	11	12	11
pH	U	2010		4.0	8.9	8.7	8.7	> 12.0	9.0		
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.87	0.87	0.81	26	0.88		
Arsenic	U	2455	mg/kg	0.5	10	10	10	4.7	7.9		
Beryllium	U	2455	mg/kg	0.5	0.5	0.5	0.6	< 0.5	< 0.5		
Cadmium	U	2455	mg/kg	0.10	0.16	0.16	0.16	< 0.10	0.13		
Chromium	U	2455	mg/kg	0.5	10	11	11	12	8.1		
Copper	U	2455	mg/kg	0.50	9.7	10	11	5.2	8.2		
Mercury	U	2455	mg/kg	0.05	< 0.05	< 0.05	0.05	< 0.05	< 0.05		
Nickel	U	2455	mg/kg	0.50	10	11	11	8.2	9.1		
Lead	U	2455	mg/kg	0.50	19	20	20	5.2	15		
Selenium	U	2455	mg/kg	0.25	0.36	0.34	0.39	< 0.25	0.28		
Vanadium	U	2455	mg/kg	0.5	20	21	23	17	16		
Zinc	U	2455	mg/kg	0.50	42	44	47	16	33		
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50		
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05		
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05		
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05		
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25		
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0		
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05		
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0		
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	4.4	< 3.0	4.2	3.3	3.9		
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10		
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0		
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05		
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05		
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05		
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25		
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	11	11	11	10	12		

Results - Soil

Project: GN17820 Needham Manliet Quarry

Client: Harrison Group Environmental Ltd		**Chemtest Job No.:**			23-16989	23-16989	23-16989	23-16989	23-16989	23-16989	23-16989
Quotation No.: Q22-29662		**Chemtest Sample ID.:**			1643562	1643563	1643564	1643565	1643566	1643567	1643568
Order No.: GN17820/40965/CD		Client Sample Ref.:			1	2	3	4	5	1	1
		Sample Location:			TS1	TS1	TS1	TS1	TS1	80-01	TS1
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.00	0.00	0.00	0.00	0.00	0.15	0.00
		Bottom Depth (m):			0.50	0.50	0.50	0.50	0.50	0.50	0.50
		Date Sampled:			19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023
		Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	2.1	< 2.0	< 2.0	< 2.0	< 2.0		
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	< 1.0	< 1.0	1.3	< 1.0	< 1.0		
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	13	12	13	12	14		
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50		
Total EPH >C10-C35	U	2690	mg/kg	10.00	17	17	17	15	19		
Total Organic Carbon	U	2625	%	0.20	0.41	0.71	0.58	0.49	0.74		
Naphthalene	U	2700	mg/kg	0.10						< 0.10	
Acenaphthylene	U	2700	mg/kg	0.10						< 0.10	
Acenaphthene	U	2700	mg/kg	0.10						< 0.10	
Fluorene	U	2700	mg/kg	0.10						< 0.10	
Phenanthrene	U	2700	mg/kg	0.10						0.56	
Anthracene	U	2700	mg/kg	0.10						0.13	
Fluoranthene	U	2700	mg/kg	0.10						1.2	
Pyrene	U	2700	mg/kg	0.10						1.2	
Benzo[a]anthracene	U	2700	mg/kg	0.10						0.59	
Chrysene	U	2700	mg/kg	0.10						0.55	
Benzo[b]fluoranthene	U	2700	mg/kg	0.10						< 0.10	
Benzo[k]fluoranthene	U	2700	mg/kg	0.10						< 0.10	
Benzo[a]pyrene	U	2700	mg/kg	0.10						< 0.10	
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10						< 0.10	
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10						< 0.10	
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10						< 0.10	
Total Of 16 PAH's	U	2700	mg/kg	2.0						4.2	
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		

Results - Soil

Project: GN17820 Needham Manliet Quarry

Client: Harrison Group Environmental Ltd		**Chemtest Job No.:**			23-16989	23-16989	23-16989	23-16989	23-16989	23-16989	23-16989
Quotation No.: Q22-29662		**Chemtest Sample ID.:**			1643562	1643563	1643564	1643565	1643566	1643567	1643568
Order No.: GN17820/40965/CD		Client Sample Ref.:			1	2	3	4	5	1	1
		Sample Location:			TS1	TS1	TS1	TS1	TS1	80-01	TS1
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.00	0.00	0.00	0.00	0.00	0.15	0.00
		Bottom Depth (m):			0.50	0.50	0.50	0.50	0.50	0.50	0.50
		Date Sampled:			19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023
		Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0		
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		

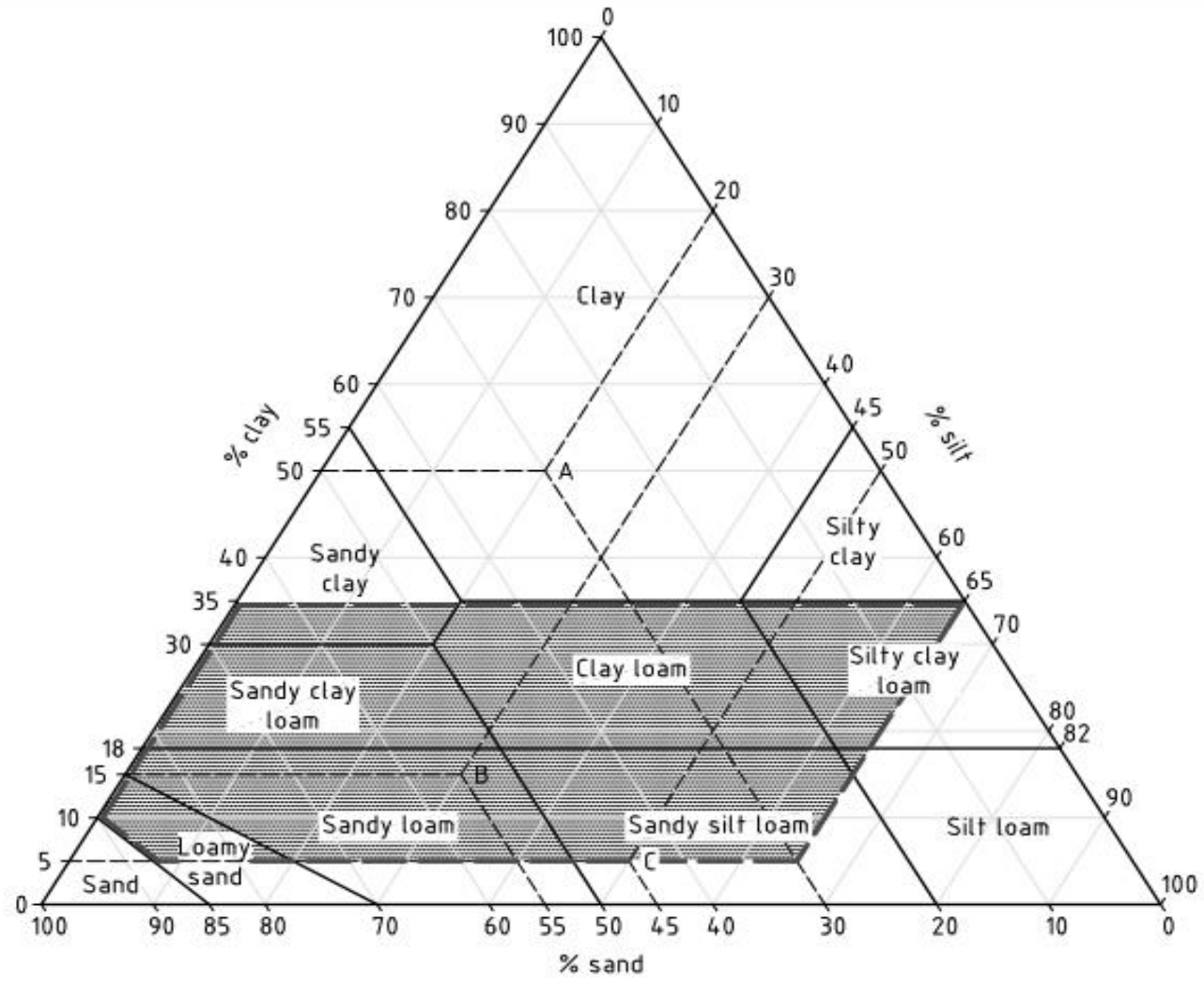
Results - Topsoil Report

BS3882:2015

Chemtest Job No.: 23-16989
Chemtest Sample ID.: 1643568
Client Sample Ref.: 1
Sample Location: TS1
Client Sample ID.:
Top Depth (m): 0.00
Bottom Depth (m): 0.50
Date Sampled: 19-May-2023
Time Sampled:

Parameter	Units	Multipurpose Range	Result	Compliant with Multipurpose Range? (Y/N)	Compliant with Specific Purpose Range? (Y/N)		
Texture					**Acid**	**Low F**	**Calc.**
Clay content (Sub Contracted)	%		To Follow				
Silt content (Sub Contracted)	%		To Follow				
Sand content (Sub Contracted)	%		To Follow				
Soil texture class		See Attached Chart	To Follow	#VALUE!			
Mass Loss on Ignition							
Clay 5-20%		3.0-20	0.95	NO	NO	NO	NO
Clay 20-35%		5.0-20					
Stone Content	**% m/m**						
>2mm (Sub Contracted)		0-30	To Follow	NO			
>20mm (Sub Contracted)		0-10	To Follow	NO			
>50mm (Sub Contracted)		0	To Follow	NO			
Soil pH value		5.5-8.5	8.9	NO	NO	YES	YES
Carbonate (Calcareous only)	%		< 0.10				NO
Electrical Conductivity	µS/cm	If >3300 do ESP	1800	YES			
Available Nutrient Content							
Nitrogen %		>0.15	0.030	NO	NO		NO
Extractable phosphorus	mg/l	16-140	4.7	NO	NO	YES	NO
Extractable potassium	mg/l	121-1500	170	YES	YES		YES
Extractable magnesium	mg/l	51-600	93	YES	YES		YES
Carbon : Nitrogen Ratio		<20:1	18.7/1	YES	YES	YES	YES
Exchangeable sodium	**%**	<15	4.0				
Available Calcium	mg/l		520				
Available Sodium	mg/l		130				
Phytotoxic Contaminants (by soil pH)		**< 6.0** / **6.0-7.0** / **> 7.0**					
Zinc (Nitric Acid extract)	mg/kg	<200 / <200 / <300	90	YES			
Copper (Nitric Acid extract)	mg/kg	<100 / <135 / <200	23	YES			
Nickel (Nitric Acid extract)	mg/kg	<60 / <75 / <110	23	YES			
Visible Contaminants	**% mm**						
>2mm		<0.5	0.000	YES			
….. of which plastics		<0.25	0.000	YES			
….. man-made sharps		zero in 1kg	0.000	YES			

Topsoil:
Texture Classification Chart



Key

Area within which the texture of topsoil is required to fall

NOTE Examples of textural classification are as follows.

- *Soil A with 30% sand, 20% silt and 50% clay is in the "clay" textural class.*
- *Soil B with 55% sand, 30% silt and 15% clay is in the "sandy loam" textural class.*
- *Soil C with 45% sand, 50% silt and 5% clay is in the "sandy silt loam" textural class.*

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2020	Electrical Conductivity	Electrical conductivity (EC) of aqueous extract or calcium sulphate solution for topsoil	Measurement of the electrical resistance of a 2:1 water/soil extract.
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2115	Total Nitrogen in Soils	Nitrogen	Determination by elemental analyser
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2260	Carbonate	Carbonate	Titration
2400	Cations	Cations	ICP-MS
2420	Phosphate	Phosphate	Spectrophotometry - Discrete analyser
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2620	LOI 440	LOI 440 Trommel Fines	Determination of the proportion by mass that is lost from a soil by ignition at 440°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

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

GN17820 – Needham Market Quarry
Verification Report 38 - Photo Sheet 1

Photographs 1-4, taken on the 19th May 2023 showing examples of hand dug trial pits and the nature of the subsoil and topsoil within the soft landscaping of plot 77 (back and front garden).

Photographs 5-8, taken on the 19th May 2023 showing examples of hand dug trial pits and the nature of the subsoil and topsoil within the soft landscaping of plot 79 (front garden).

Photographs 9-12, taken on the 19th May 2023 showing examples of hand dug trial pits and the nature of the subsoil and topsoil within the soft landscaping of plot 80 (back garden).

Client Supplied Photographs 13-15, taken on the 31st May 2023 showing topsoil placement within the front gardens of plots 80-83.

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