Document: Remediation Verification Report

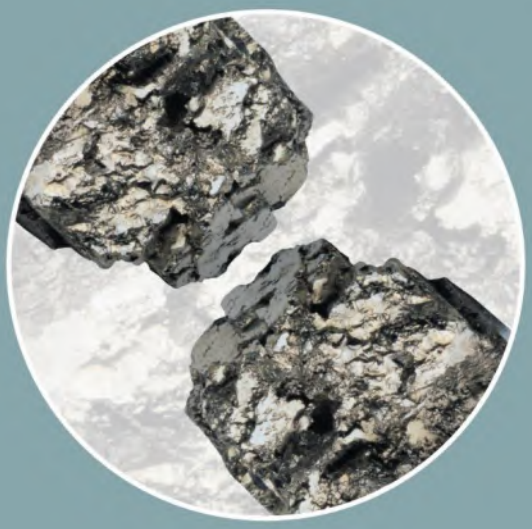
Project: Needham Markey Quarry

Reference No.: GN17820_RV33

Date: September 2022

Prepared for: Hopkins Homes Limited

harrisongeotechnical
ENGINEERING



A division of Harrison Group Environmental Limited

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 08/09/22	INIT SIGN COMMENTS DATE	INIT CD SIGN COMMENTS DATE 09/09/22	INIT SIGN COMMENTS DATE
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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.

VERIFICATION REPORT

FOR REMEDIAL ACTIVITY

AT

NEEDHAM MARKET QUARRY (Plots 96, 197-199, 200-203)

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 system (600mm of combined subsoil and topsoil, with a minimum thickness of topsoil to be 150mm) to the areas of soft landscaping around plots 96, 197-199 and 200-203. 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. We believe that the RMS was issued to Mid Suffolk District Council and the NHBC for their review and comment on the planned remediation.

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 VR), 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 VR), 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 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 96, 197-199 and 200-203.

An engineer from HGE visited site on 09/08/22 to undertake hand dug trial pits within the soft landscaped areas surrounding plots 96, 197-199 and 200-203 to confirm that suitable topsoil and subsoil was present in the gardens (HDTP198-01 to HDTP198-03 and HDTP200-01 to HDTP200-03). Specifically, plots 198 and 200 were targeted for investigation, as the back garden to plot 96 is very small. However the findings are considered representative of plots 96, 197-199 and 200-203 , inclusive. HH undertook a hand dug trial pit within the small back garden of plot 96 and provided a photograph of the encountered material, which is included on the photosheet in the appendix.

During the visit, the following observations were made:

- Concrete edging was observed adjacent to footpaths and curb sides at approximately 45° angle.
- An insufficient topsoil thickness of 120mm was identified within trial pit HDTP198-01 (minimum thickness required is 150mm) and was noted to constitute a small area of the back garden of this plot and is representative of the same areas within plots 197 and 199. Since our site visit, HH have confirmed that additional remedial works including stripping the topsoil back of the affected areas, subsequent additional excavation of subsoil to allow for a minimum thickness of topsoil has been undertaken within plots 197-199. HH have provided a photograph, which is included on the photosheet in the appendix to show the thickness of the topsoil following the further remedial works (200mm).
- A maximum depth of 500mm was completed within plot 198 due to the dense strata noted at this depth, however on visual examination of the material at this depth it is very unlikely that the darker unsuitable material is present and therefore the soils are considered satisfactory for these plots.

The following sections of this report outline the remediation completed for plots 96, 197-199 and 200-203.

3.1 Cover System Material

The material used for the cover system included 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 drawing GN17820-DR502ai 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 white gravelly silty fine to coarse SAND. Gravel is angular fine to coarse flint, concrete and brick with occasional glass and plastic.
- MADE GROUND. Light brownish white sandy gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse flint and chalk.
- MADE GROUND. Brown gravelly very sandy CLAY. Gravel is sub-angular to sub-rounded fine to coarse flint, concrete and brick.
- MADE GROUND. Greyish white very gravelly silty fine to coarse SAND with low cobble content. Gravel is angular fine to coarse concrete, brick and tile. Cobbles are whole bricks.
- White mottled brown CLAY with occasional gravel of sub-angular to sub-rounded fine to coarse chalk.

The materials encountered were considered suitable for use as subsoil from visual inspection. Occasional concrete, brick or flint cobbles were noted. The dark material identified elsewhere on site that contained low levels of contaminants was not encountered in the soft landscaping surrounding plots 198 and 200 and is therefore not considered likely to be encountered within plots 96, 197-199 and 200-203.

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 coarse sand. Gravel is sub-angular to subrounded 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 350mm depth) within the soft landscaping areas surrounding plots 96, 197-199 and 200-203. The minimum thickness of 150mm of topsoil was encountered in the majority of the trial pits during the verification exercise, excluding the trial pit HDTP198-01 where only 120mm of topsoil was noted. Since our site visit, HH have confirmed that additional remedial works including stripping back the affected area, excavation of subsoil to allow for a minimum thickness of topsoil has been undertaken within plots 197-199. HH have provided a photograph, which is included on the photosheet in the appendix to show the thickness of the topsoil following the further remedial works (200mm).

3.1.3 Soil Cover Thickness

A thickness of suitable soil was stated in the RMS to need to be at least 600mm. This was on the basis that the underlying soils were generally suitable, but where darker material is present, a 600mm of soil cover will be appropriate and sufficient. The dark material identified elsewhere on site that contained low levels of contaminants was not encountered within the upper 500mm in the soft landscaping surrounding plot 198 and the upper 600mm in the soft landscaping surrounding plot 200 and is therefore not considered likely to be encountered within plots 197-199 and 200-203. HH undertook a hand dug pit within the small back garden of plot 96 and provided a photograph of the encountered material, which is included on the photosheet in the appendix. Visually the soils (and thickness of topsoil) look sufficient with no evidence of the dark material being present.

The thickness of suitable soil was recorded to be at least 500mm within trial pits completed in plot 198 and 600mm within trial pits completed in plot 200. Following the site visit, HH have confirmed that further remedial works have been undertaken within plots 197-199, including excavation of subsoil to provide a thicker layer of topsoil, which is at least the minimum 150mm required.

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 96, 197-199 and 200-203 at the development known as Needham Market Quarry.

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

Plots 3-64, 97-103, 161-170, 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, 65-95, 104-136, 184-193 and 204-211.

Public Open Space soft landscaping areas within the development phases are yet to be verified.

Report by:

Carl Day BSc (Hons.)
Senior Geoenvironmental Engineer

APPENDICES – Supporting Documentation

Drawings:	GN17820-DR402
	GN17820-DR502ai
	GN17820-DR502
Hand Dug Trial Pit Logs	HDTP198-01 to HDTP198-03
	HDTP200-01 to HDTP200-03
Chemical Analysis Reports:	19-41738-1
Photo Sheet:	GN17820_RV33 Photo Sheet 1

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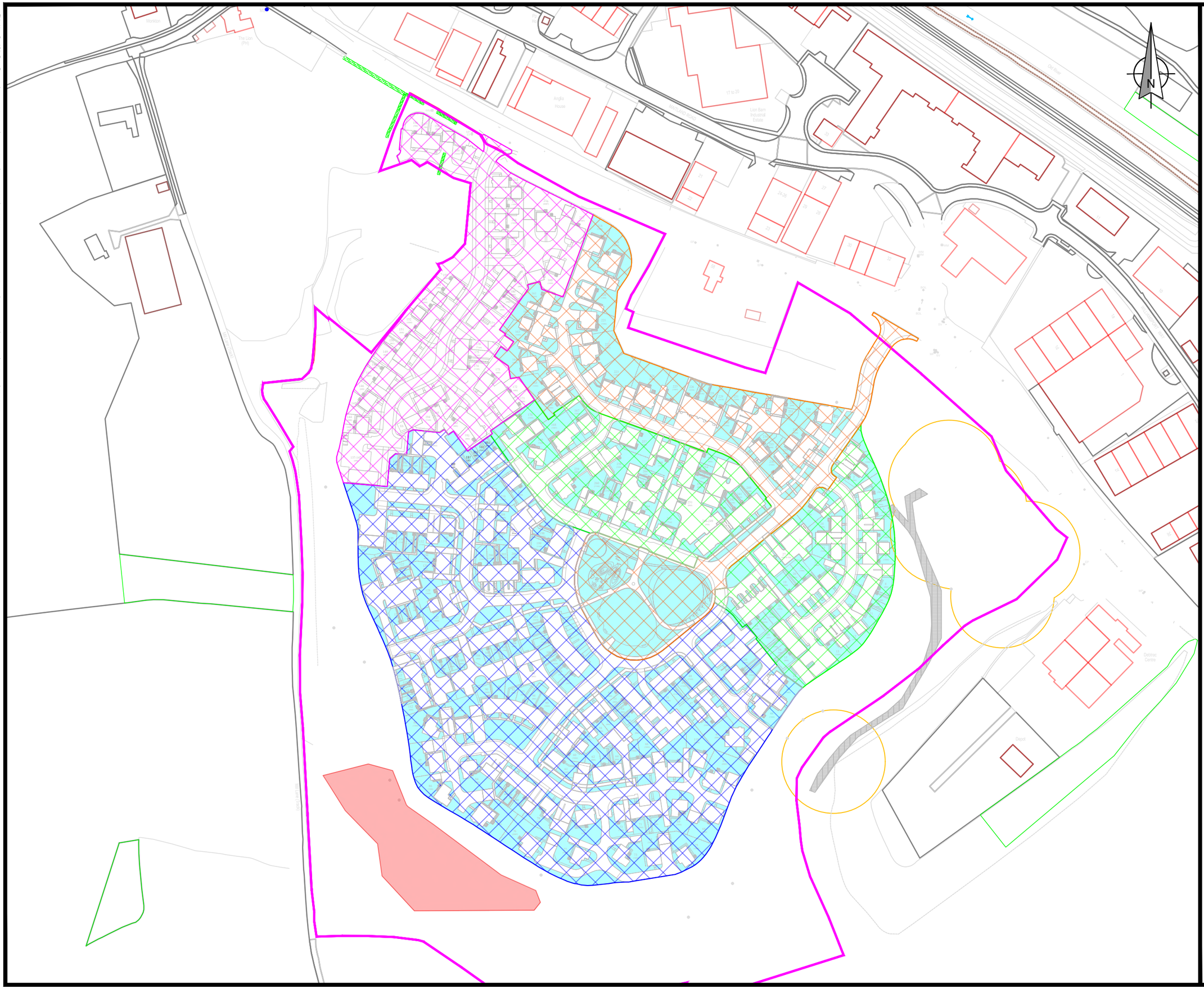

Notes :

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

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

ISOQAR REGISTERED 0026 UKAS MANAGEMENT SYSTEMS UKAS TESTING 4031

Certificate Number 5933
ISO 9001, ISO 14001

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Type 'A' Turning Head

7000

190 188 190 188 184 187 184 187

132 131 132 131 132 131

130 130 130 129 129 129

128 128 128 127 127 127

210 210 210

209 209 209 208 208 208

211 211 211 199 199 198 198 197 197

200 201 202 202

207 206 206 205 205 204 204 207 206

203 203

Cycles

Refuse

6500

RAMP

HDTP198-01

HDTP198-02

HDTP198-03

HDTP200-01

HDTP200-02

HDTP200-03

Minor Access Road (adopted)

Major Access Road (adopted)

Shared Surface Road (adopted)

259 259 259 258 258

261 262 261 262

260 260

263 264 263 264

265 266

WP

PUMPING STATION

LEAP

PUBLIC OPEN SPACE

103 102 102 101 101 100 100 99 99 98

104 105 104 105

N

Key :

HDTP198-01 Hand Dug Trial Pit

Acceptable Cover System

Notes :

HOPKINS HOMES

Client : Hopkins Homes Ltd

Project : Needham Market Quarry

Job No : GN17820 Date : August 2022

Drawing Title : Fieldwork Location Plan - Plot 198-200

Drawing No : GN17820 - DR502ai

Scale : 1:400 @ A3

Drawn by : RW Checked by : CD

Eastings : 609430 Northings : 254100

Revision history

Rev	Date	Revision Data

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Website: www.harrisongroupuk.com

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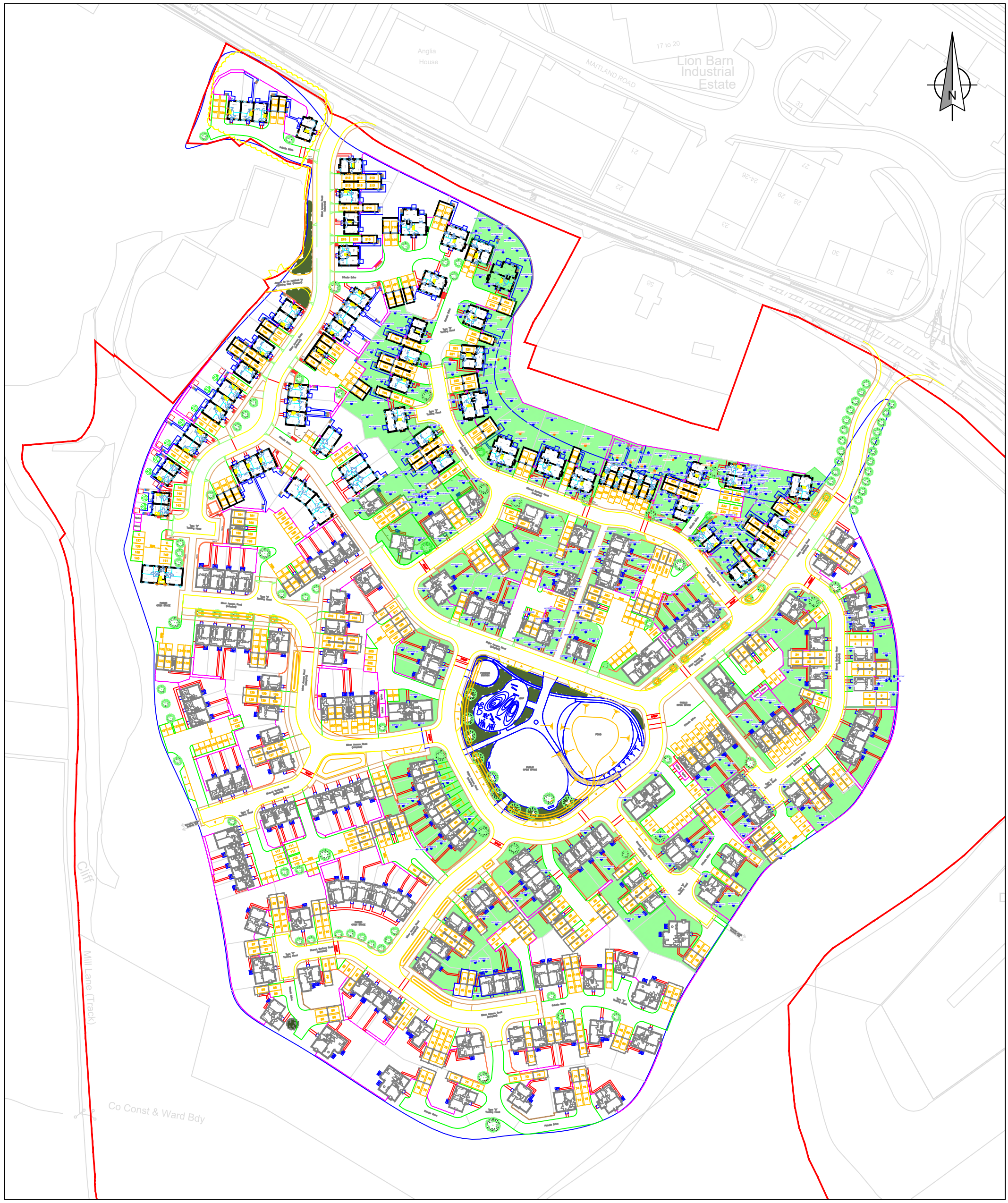
Certificate Number 5933
ISO 9001, ISO 14001



Client :	Hopkins Homes Ltd
Project :	Needham Market Quarry
Job No : GN17820	Date : July 2021
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
R31	07/07/2022	Fieldwork locations for Plots 57-60 added
R32	12/08/2022	Fieldwork locations for Plots 62, 198 & 200 added

Key :

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

Notes :

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Trial Pit Record

HDTP198-01

Sheet 1 of 1

Project ID: **GN17820**	Client: Hopkins Homes Limited	E: 609426.83	N: 254113.17
Location: Needham Market Quarry	Consultant:		
	Plant used: Hand Excavated	Date: 09/08/2022	

Geology Description	Legend	Depth	Elevation (maOD)	Sample / In-Situ Test Information			Installation & Backfill
				Type	Depth	Results / Remarks	
TOPSOIL. Brown slightly gravelly slightly silty fine to coarse SAND. Gravel is sub-angular to sub-rounded fine to coarse flint.							
		0.12					
MADE GROUND. Light brownish white gravelly silty fine to coarse SAND. Gravel is angular fine to coarse flint, concrete and brick with occasional glass and plastic.							
		0.40					
White mottled brown CLAY with occasional gravel of sub-angular to sub-rounded fine to coarse chalk.							
		0.50					
Trial pit terminated at 0.50m: Very dense ground conditions							

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

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Logged by: CD | Checked by: CD

Trial Pit Record

HDTP198-02 | Sheet 1 of 1

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Project ID: **GN17820**	Client: Hopkins Homes Limited	E: 609431.09	N: 254111.49
Location: Needham Market Quarry	Consultant:		
	Plant used: Hand Excavated	Date: 09/08/2022	

Geology Description	Legend	Depth	Elevation (maOD)	Sample / In-Situ Test Information			Installation & Backfill
				Type	Depth	Results / Remarks	
TOPSOIL. Brown slightly gravelly slightly silty fine to coarse SAND. Gravel is sub-angular to sub-rounded fine to coarse flint.							
MADE GROUND. Light brownish white sandy gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse flint and chalk.		0.35					
Trial pit terminated at 0.45m: Very dense ground conditions		0.45					

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 0.45m 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

HDTP198-03 | Sheet 1 of 1

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Project ID: **GN17820**	Client: Hopkins Homes Limited	E: 609444.09	N: 254104.74
Location: Needham Market Quarry	Consultant:		
	Plant used: Hand Excavated	Date: 09/08/2022	

Geology Description	Legend	Depth	Elevation (maOD)	Sample / In-Situ Test Information			Installation & Backfill
				Type	Depth	Results / Remarks	
TOPSOIL. Brown slightly gravelly slightly silty fine to coarse SAND. Gravel is sub-angular to sub-rounded fine to coarse flint.							
MADE GROUND. Light brownish white sandy gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse flint and chalk.		0.30					
Trial pit terminated at 0.50m: Very 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 0.50m 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

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Trial Pit Record

HDTP200-01

Sheet 1 of 1

Project ID: **GN17820**	Client: Hopkins Homes Limited	E: 609424.36	N: 254080.79
Location: Needham Market Quarry	Consultant:		
	Plant used: Hand Excavated	Date: 09/08/2022	

Geology Description	Legend	Depth	Elevation (maOD)	Sample / In-Situ Test Information			Installation & Backfill
				Type	Depth	Results / Remarks	
TOPSOIL. Brown gravelly silty fine to coarse SAND. Gravel is angular fine to coarse flint.							
		0.20					
Structureless CHALK composed of white slightly gravelly slightly silty fine to medium SAND. Gravel is weak low density sub-angular to sub-rounded fine to medium flint and chalk. (Grade Dm)							
		0.60					
Trial pit terminated at 0.60m.							

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

HDTP200-02 | Sheet 1 of 1

Project ID: **GN17820**	Client: Hopkins Homes Limited	E: 609433.87	N: 254081.53
Location: Needham Market Quarry	Consultant:		
	Plant used: Hand Excavated	Date: 09/08/2022	

Geology Description	Legend	Depth	Elevation (maOD)	Sample / In-Situ Test Information			Installation & Backfill
				Type	Depth	Results / Remarks	
TOPSOIL. Brown gravelly silty fine to coarse SAND. Gravel is angular fine to coarse flint.							
MADE GROUND. Brown gravelly very sandy CLAY. Gravel is sub-angular to sub-rounded fine to coarse flint, concrete and 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

HDTP200-03 | Sheet 1 of 1

Project ID: **GN17820**	Client: Hopkins Homes Limited	E: 609432.31	N: 254093.48
Location: Needham Market Quarry	Consultant:		
	Plant used: Hand Excavated	Date: 09/08/2022	

Geology Description	Legend	Depth	Elevation (maOD)	Sample / In-Situ Test Information			Installation & Backfill
				Type	Depth	Results / Remarks	
TOPSOIL. Brown gravelly silty fine to coarse SAND. Gravel is angular fine to coarse flint.							
		0.30					
MADE GROUND. Greyish white very gravelly silty fine to coarse SAND with low cobble content. Gravel is angular fine to coarse concrete, brick and tile. Cobbles are whole bricks.							
		0.60					
Trial pit terminated at 0.60m.							

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

Jamie Cushing
Harrison Group
Kimbeley Street Norwich
NR2 2RJ

t: 01603 613111
f: 01603 618120
e: jamiec@harrisongroupuk.com

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

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

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.

GN17820 – Needham Market Quarry
Verification Report 33 - Photo Sheet 1

Photographs 1-4, taken on the 09th August 2022 showing examples of hand dug trial pits and the nature of the subsoil and topsoil within the soft landscaping of plots 198 and 200-203 (representative of plots 197-199 & 200-203).

Photographs 5-8, taken on the 09th August 2022 showing examples of hand dug trial pits and the nature of the subsoil and topsoil within the soft landscaping of plot 198 (representative of plots 197-199 & 200-203).

Photograph 8, taken by HH on the 18th August 2022 showing the hand dug trial pit and the nature of the subsoil and topsoil within the soft landscaping of plot 96 (very small back garden).

Photograph 9, taken by HH on the 18th August 2022 showing thickness of topsoil within plot 198 (representative of plots 197-199) following remedial works.

Norwich (Registered Office)

Kimberley Street
Norwich
Norfolk
NR2 2RJ

Tel: 01603 613111

London

12 Waterways Business Centre
Navigation Drive
South Ordnance Road
Enfield, EN3 6JJ

Tel: 020 7537 9233

Cambridge

Future Business Centre
Kings Hedges Road
Cambridge
CB4 2HY

Tel: 01223 781585

Colchester

Colchester Business Centre
1 George Williams Way
Colchester
CO1 2JS

Tel: 01206 986675