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PHASE 4: VALIDATION REPORT

COUNTRYSIDE PARTNERSHIPS LTD

RESIDENTIAL DEVELOPMENT

ABBAYFIELD HOUSE

REGENCY MEWS

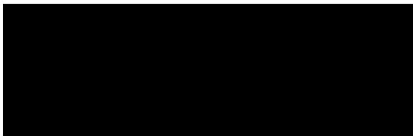
DRINGHOUSES

YORK

YO24 1LL

Project No: 22-626

Prepared By:
Geoff Heron



Date: 15th February 2024

Approved By:
John Ditchburn



Date: 15th February 2024

The information and / or advice contained in this Phase 4: Validation Report is based solely on, and is limited to, the boundaries of the site, the immediate area around the site, and the historical use(s) unless otherwise stated. This 'Report' has been prepared in order to collate information relating to the physical, environmental and industrial setting of the site, and to highlight, where possible, the likely problems that might be encountered when considering the future development of this site for the proposed end use. All comments, opinions, diagrams, cross sections and / or sketches contained within the report, and / or any configuration of the findings is conjectural and given for guidance only and confirmation of the anticipated ground conditions should be considered before development proceeds. Agreement for the use or copying of this report by any Third Party must be obtained in writing from Arc Environmental Limited (ARC). If a change in the proposed land use is envisaged, then a reassessment of the site should be carried out.

Report Type:- Phase 4: Validation Report

Project:- 22-626 – Abbeyfield House, Regency Mews, Dringhouses, York, YO24 1LL

Prepared For:- Abbeyfield York Society Ltd / Countryside Partnerships Ltd

CONTENTS

1.0	INTRODUCTION	Page 3
2.0	SITE DETAILS	Page 3
3.0	SCOPE OF WORKS	Page 3
4.0	REMEDIATION STRATEGY SUMMARY	Page 3
	4.1 –Validation of Unforeseen Contamination (Site Wide)	Page 3
	4.2 –Validation of ‘Hot Spot’ Removal	Page 4
	4.3 –Verification of Imported Topsoil	Page 4
	4.4 – Validation Report	Page 4
5.0	VALIDATION OF REMEDIATION WORKS	Page 4
	5.1– Validation of Unforeseen Contamination (Site Wide)	Page 4
	5.2 –Validation of ‘Hot Spot’ Removal	Page 4
	5.3 – Verification of Imported Topsoil	Page 5
6.0	CONCLUSIONS	Page 7

APPENDICES

Appendix I	Site Location Plan, Aerial Photograph, Proposed Development Layout Plan
Appendix II	Photographic Record Sheet
Appendix III	Pre-importation Information and Laboratory Screening Results

1.0 Introduction

February 2024

As requested by Countryside Partnerships Ltd, a Phase 4: Validation Report has been completed detailing the effective completion of the remediation works required for this site, as outlined within the Phase 3: Remediation Strategy completed by ARC Environmental, Ref. 19-063. The site is located at Regency Mews, Dringhouses, York. The development comprises a care home with associated soft landscaped areas and car parking.

The following documents should be read in conjunction with this report;

Phase 1: Desk Study Report, Ref. 17-195, Arc Environmental Ltd, May 2017

Phase 2: Ground Investigation Report, Ref. 17-195, Arc Environmental Ltd, July 2017

Phase 3: Remediation Statement & Validation Proposal Sheets Ref. 19-063, Arc Environmental Ltd, March 2019

Hotspot Removal Validation Report, Ref. 22-626.01L, Arc Environmental Ltd, July 2022

2.0 Site Details

Table 2.1

Site Name & Address:	Abbeyfield House, Regency Mews, Dringhouses, York, YO24 1LL.
OS Grid Reference:	458600, 449700 (representative of the central part of the site).
Description of Location:	The site is located within a residential setting to the south west of York City Centre in North Yorkshire. Residential properties are recorded adjacent to the northern, eastern and southern boundaries of the site, a surface watercourse recorded to the west with a cricket ground beyond. Currently the site comprises Abbeyfield House, a retirement apartment block, on the west of the site and a residential property on the east of the site.
Site Boundaries:	N, E & S = Residential properties, W = Watercourse with Sports Ground beyond.
Location Plans:	See Appendix I.
Layout Plan (Proposed):	See Appendix I.

3.0 Scope of Works

Table 3.1

Client:	Abbeyfield York Society Limited / Countryside Partnerships Ltd.
Project Type:	Proposed Care Home with associated gardens and car parking.
Validation Works	Removal of delineated 'hot spot' and laboratory screening of imported topsoil. Manually excavated trial pits to recover samples of imported materials from soft landscaped areas.
Reporting:	Remediation Strategy detailing the removal of hot spot and screening of all imported materials for use in soft landscaping.

The information contained in this report is limited to the area of the site, as indicated on the Proposed Development Layout Plan (Appendix I). When considering the full scope of the development any features and / or issues not specifically mentioned in this report cannot be assumed to have been covered.

4.0 Remediation Strategy Summary

4.1 Validation of Unforeseen Contamination (Site Wide):-

A 'watching brief' by the Main Contractor and Arc Environmental Ltd was recommended to identify any unforeseen contamination across the site during the groundworks / construction works.

4.0 Remediation Strategy Summary (Cont'd)

4.2 Validation of Hot Spot Removal:-

The ground investigation identified that the made ground present around BH8 contained elevated levels of Lead and Dibenz(ah)anthracene (PAH) that represented a potential risk to future end users, where exposure pathways were available.

4.3 Verification of Imported Topsoil:-

All imported topsoil to be screened following emplacement to confirm suitability for use on site. The verification screening would meet the YALPAG Verification Requirements for Cover Systems, Technical Guidance for Developers, Landowners and Consultants –Yorkshire and Lincolnshire Pollution Advisory Group (YALPAG), Version 4.1 June 2021, with the testing schedules and frequencies dependent upon the origin / source of imported topsoil.

4.4 Validation Report:-

Following completion of the required remediation works, a final Phase 4: Validation Report would be produced and submitted to the LA confirming all the works undertaken and verification that the Remediation Strategy has met all the requirements for the development of this site, including identification and remediation of any unforeseen or unknown ground contamination (if present), the removal of the hot spot and the screening of all imported materials.

The production of the Phase 4: Validation Report would allow the LA to discharge any outstanding planning conditions associated with land contamination on this site.

5.0 Validation of Remediation Works

To ensure that all elements of the Phase 3: Remediation Strategy are properly implemented, Validation works have been undertaken and comprise the following:

5.1 Validation of Unforeseen Contamination (Site Wide):-

In conjunction with Adapt Civils Ltd and through periodic site visits by Arc Environmental, a 'watching brief' has been completed which has verified that there has been no evidence of any unforeseen or unknown contamination, during the construction of this development. No further materials were excavated and removed from site and no waste classification was required.

5.2 Validation of 'Hot Spot' Removal:-

Site visits were undertaken on 11th & 25th February 2019 to excavate a series of manual trial pits to recover samples for screening in order to delineate the 'hot spot' around BH8. Consequently, the 'hot spot' was delineated and the made ground to be removed noted to be c. 0.20m thick. Full details of the Hotspot Removal can be seen in a separate report Ref. 22-626.01L and dated 25th July 2022.

5.0 Validation of Remediation Works (Cont'd)

5.3 Verification of Imported Topsoil:-

During the construction works, Countryside Partnerships Ltd identified a source of potentially suitable & 'clean' topsoil, which was to be utilised in areas of gardens and soft landscaping across the site. The manufactured material was considered as a 'greenfield' source and having been tested prior to importation, was deemed suitable for use on this development. The total volume of material imported was c.350 cubic metres and the pre-importation results can be seen in Envirochem Analysis Report 23-36060 attached in Appendix III.

A site visit was undertaken on 1st February 2024 to verify the emplacement of imported topsoil. The thickness of topsoil was noted as being a minimum 150mm. As part of the validation works, a visual and olfactory inspection of the samples recovered was undertaken during the site visit to ensure these materials were absent of obvious contamination (i.e. staining, obvious fuel odours, fragments of asbestos containing materials and the like). In total 3 no. samples were recovered and dispatched to Chemtech Environmental Limited for analysis.

To ascertain the suitability of the materials, the soils were screened for the following analytes:

Arsenic, Cadmium, Chromium (III & VI), Copper, Lead, Mercury, Nickel, Selenium, Zinc, Cyanide and Total Organic Carbon.

Asbestos fibres (presence).

Speciated Polycyclic Aromatic Hydrocarbons (PAH's), based on the current USEPA 16 PAH's.

Speciated Total Petroleum Hydrocarbons (TPH's –Ali / Aro split + BTEX).

A summary of the results can be seen in Table 1 below and continues on the following page. The results can also be seen in the Chemtech Environmental Limited analytical test report (Ref. 130229) attached in Appendix III. The results have been assessed against the most up to date and appropriate guidelines.

Table 1

Analyte	Critical Concentration (C _c)	Concentrations (C _M) recorded
Arsenic	40 ⁽¹⁾	16
Cadmium	85 ⁽¹⁾	1.8
Chromium III	910 ⁽¹⁾	76
Chromium VI	6 ⁽¹⁾	< 0.04
Copper	7100 ⁽¹⁾	25
Lead	310 ⁽²⁾	18.4
Mercury	56 ⁽¹⁾	< 0.7
Nickel	180 ⁽¹⁾	29
Selenium	430 ⁽¹⁾	< 3
Zinc	40000 ⁽¹⁾	94
Cyanide	34 ⁽³⁾	< 1
Asbestos	Presence	NAD

⁽¹⁾ = The LQM / ClEH Suitable 4 Use Levels –Residential without home-grown produce (2.5% SOM), ⁽²⁾ = CL:AIRE Category 4 Screening Levels – Residential without home-grown produce, ⁽³⁾ = ATRISK^{SOIL} Soil Screening Values (2015).

5.0 Validation of Remediation Works (Cont'd)

5.3 Verification of Imported Topsoil (Cont'd):-

Table 1 (cont'd)

Analyte	Critical Concentration (CC)	Concentrations (CM) recorded
Lead	310 ⁽²⁾	184
Mercury	56 ⁽¹⁾	<0.7
Nickel	180 ⁽¹⁾	29
Selenium	430 ⁽¹⁾	<3
Zinc	40000 ⁽¹⁾	94
Cyanide	34 ⁽³⁾	<1
Asbestos	Presence	NAD
Acenaphthene	4700 ⁽¹⁾	0.76
Acenaphthylene	4600 ⁽¹⁾	0.02
Anthracene	35000 ⁽¹⁾	0.41
Benzo(a)anthracene	14 ⁽¹⁾	0.26
Benzo(a)pyrene	3.2 ⁽¹⁾	0.23
Benzo(b)fluoranthene	4.0 ⁽¹⁾	0.27
Benzo(ghi)perylene	360 ⁽¹⁾	0.17
Benzo(k)fluoranthene	110 ⁽¹⁾	0.11
Chrysene	31 ⁽¹⁾	0.25
Dibenz(ah)anthracene	0.32 ⁽¹⁾	0.04
Fluoranthene	1600 ⁽¹⁾	0.84
Fluorene	3800 ⁽¹⁾	0.26
Indeno(123cd)pyrene	46 ⁽¹⁾	0.14
Naphthalene	5.6 ⁽¹⁾	<0.02
Phenanthrene	1500 ⁽¹⁾	1.50
Pyrene	3800 ⁽¹⁾	0.68
Benzene	0.70 ⁽¹⁾	<0.001
Toulene	1900 ⁽¹⁾	<0.001
Ethylbenzene	190 ⁽¹⁾	<0.001
o-Xylene	210 ⁽¹⁾	<0.001
m & p-Xylene	180 ⁽¹⁾	<0.001
TPH Aliphatic (C5-C6)	78 ⁽¹⁾	<0.05
TPH Aliphatic (C6-C8)	230 ⁽¹⁾	<0.05
TPH Aliphatic (C8-C10)	65 ⁽¹⁾	0.1
TPH Aliphatic (C10-C12)	330 ⁽¹⁾	<0.5
TPH Aliphatic (C12-C16)	2400 ⁽¹⁾	<0.5
TPH Aliphatic (C16-C35)	92000 ⁽¹⁾	<4.5
TPH Aliphatic (C35-C44)	92000 ⁽¹⁾	<1
TPH Aromatic (EC5-EC7)	690 ⁽¹⁾	<0.05
TPH Aromatic (EC7-EC8)	1800 ⁽¹⁾	<0.05
TPH Aromatic (EC8-EC10)	110 ⁽¹⁾	<0.05
TPH Aromatic (EC10-EC12)	590 ⁽¹⁾	<0.5
TPH Aromatic (EC12-EC16)	2300 ⁽¹⁾	<1
TPH Aromatic (EC16-EC21)	1900 ⁽¹⁾	4.98
TPH Aromatic (EC21-EC35)	1900 ⁽¹⁾	7.18
TPH Aromatic (EC35-EC44)	1900 ⁽¹⁾	<1.5

⁽¹⁾ = The LQM / ClEH Suitable 4 Use Levels –Residential without home-grown produce (2.5% SOM), ⁽²⁾ = CL:AIRE Category 4 Screening Levels – Residential without home-grown produce, ⁽³⁾ = ATRISK^{SOIL} Soil Screening Values (2015).

6.0 Conclusions

Ground investigation works were undertaken on this site during 2017 and from the findings of these works, a Phase 3: Remediation Strategy was prepared by Arc Environmental Ltd. Arc Environmental Ltd was then requested by Countryside Partnerships Ltd to oversee the implementation and completion of the Remediation Strategy on this site.

The Remediation Strategy confirmed the extent of remedial works to be undertaken comprising the removal of the contamination hot spot and the validation of all materials imported to site. The validation works have confirmed the following:

No unforeseen contamination was found on the remainder of the site during the groundworks / construction works.

The 'hot spot' around BH8 was successfully removed.

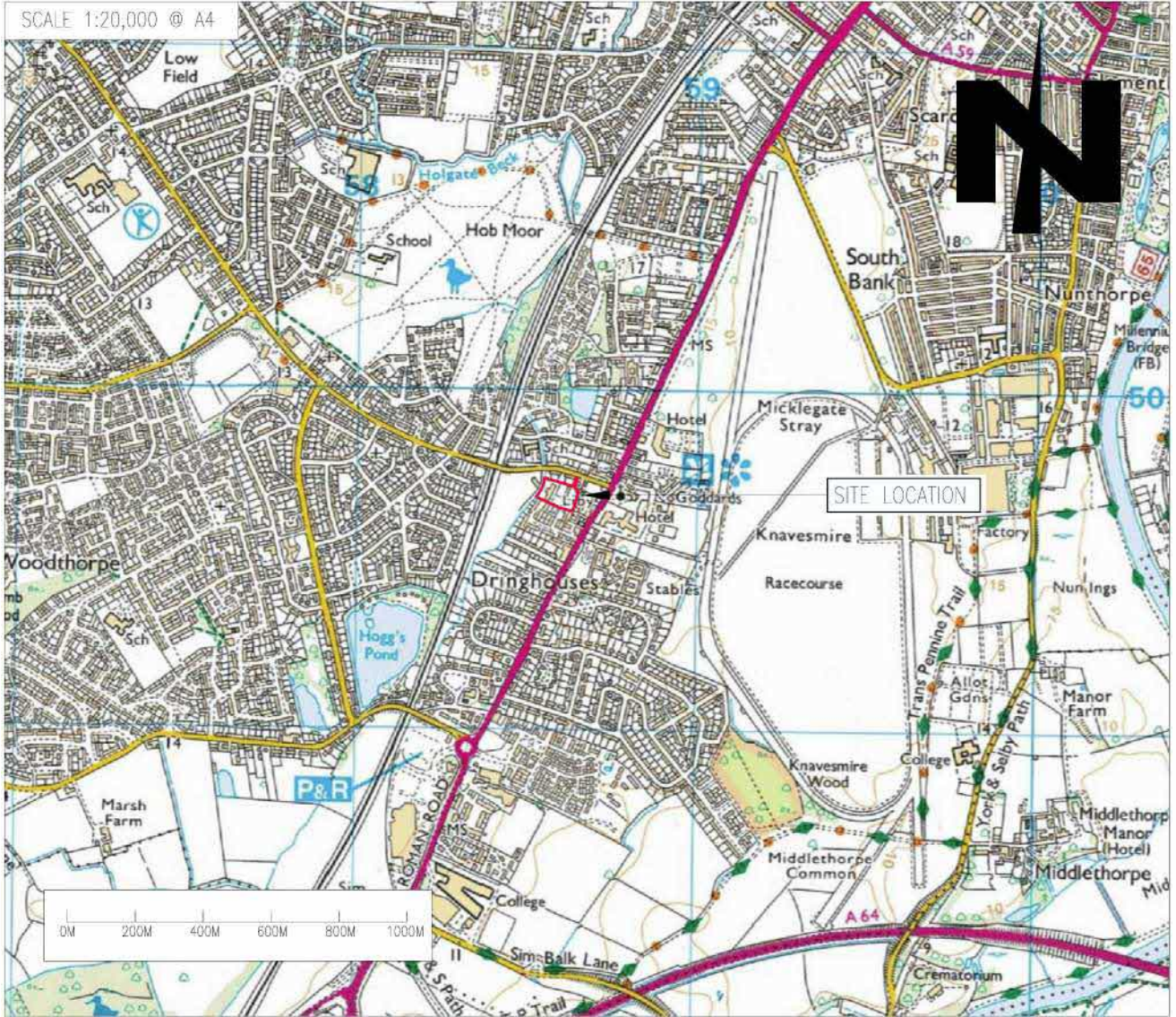
All imported materials were screened prior to importation and the results forwarded to Arc Environmental Ltd for verification of suitability.

All imported material was screened once emplaced in gardens and soft landscaped areas and confirmed as being suitable for use in a residential setting.

As anticipated from the original scope of works detailed in the Remediation Strategy, there have been no significant variations. In the opinion of Arc Environmental Ltd, and the subsequent site visits and testing, the remediation / validation works have been fulfilled in general accordance with the Phase 3: Remediation Strategy.

END OF REPORT

Appendix I



Client: **ABBEYFIELD YORK SOCIETY LTD /
COUNTRYSIDE PARTNERSHIPS LTD**

Project Title:
Abbe/ c/c locSC
ke; ency Nws
Cingluuoco, Yo', , v'D4 ILL

Drawing Title:

Location Plan

rev.	date	amendment	drawn	checked

Job Reference: 122-626
Drawing Number: -
Revision: 1 -

Drawn by: FJ
Date: 07.02.24
Scale at A4: As shown

Checked by: AH
Approved by: All
The contractor shall check all dimensions on site before commencement of any works. No dimensions to be scaled off this drawing.
© City of York Resvec

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The contractor shall check all dimensions on site before commencement of any works. No dimensions to be scaled off this drawing.
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LEGEND	
	APPROXIMATE SITE BOUNDARY

rev.	date	amendments	drawn	chckd

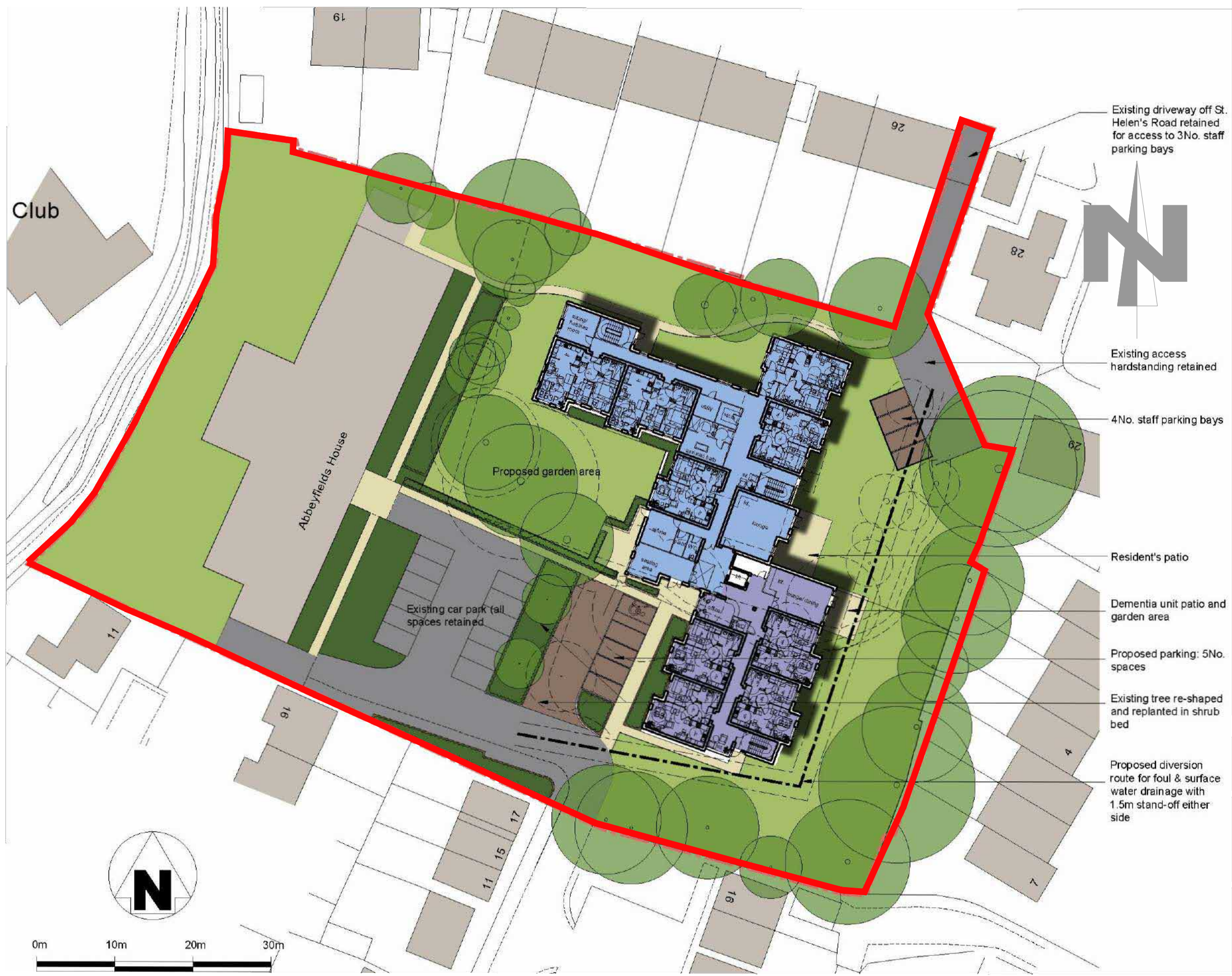
Client:
**ABBNEYFIELD YORK SOCIETY LTD /
COUNTRYSIDE PARTNERSHIPS LTD**

Project Title:
Abbeyfield House
Regency Mews
Dringhouses, York, YO24 1LL

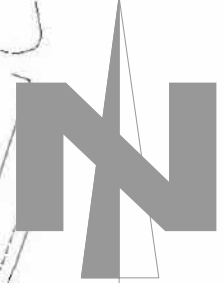
Drawing Title:
Aerial Photograph

Scale at A3: NTS @ A3	Date: 07.02.24	Drawn by: P.D	Approved by: A.M
--------------------------	-------------------	------------------	---------------------

Job Ref: 22-626	Drg no: —	Rev: —
--------------------	--------------	-----------



Existing driveway off St. Helen's Road retained for access to 3No. staff parking bays



Existing access hardstanding retained

4No. staff parking bays

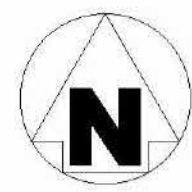
Resident's patio

Dementia unit patio and garden area

Proposed parking: 5No. spaces

Existing tree re-shaped and replanted in shrub bed

Proposed diversion route for foul & surface water drainage with 1.5m stand-off either side



ARC ENVIRONMENTAL LTD

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The contractor shall check all dimensions on site before commencement of any works. No dimensions to be scaled off this drawing.
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LEGEND	
	APPROXIMATE SITE BOUNDARY

rev.	date	amendments	drawn	chckd

Client:
**ABBAYFIELD YORK SOCIETY LTD /
 COUNTRYSIDE PARTNERSHIPS LTD**

Project Title:
 Abbeyfield House
 Regency Mews
 Dringhouses, York, YO24 1LL

Drawing Title:
 Proposed Development Layout Plan

Scale at A3: 1:500 @ A3 | Date: 02.07.24 | Drawn by: P.D. | Approved by: A.M.

Job Ref: 22-626 | Drg no: - | Rev: -

Appendix II



ARC ENVIRONMENTAL LTD

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The contractor shall check all dimensions on site before commencement of any works. No dimensions to be scaled off this drawing.
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rev.	date	amendments	drawn chkd

Client:
Countryside Partnerships

Project Title:
**Abbeyfield House
 Regency Mews, Dringhouses,
 York, YO24 1LL**

Drawing Title:
**Photographic Record Sheet -
 Validation of Imported Material**

Scale at A3: | Date: **07.02.24** | Drawn by: **GNH** | Approved by:

Job Ref: | Drg no: | Rev:
22-626

Appendix III



Our Ref: 23-36060
Your Ref: A - -OUR -

ENVIROCHEM

Analytical Laboratories Ltd.

12 The Gardens
Broadcut, Fareham
Hampshire
PO16 8SS



Tel: (01329) 287777
Fax: (01329) 287755
www.envirochem.co.uk
lab@envirochem.co.uk

Analysis Report

Client: Hull & Yorkshire
Unit 1
Factory Industrial Estate
Swan St.
Hull
HU2 0PH
England

Sample Details: 3 soil samples for analysis

Date report issued: 19 May 2023

Issue number: 1

Number of pages (including this header): 4

Accreditation

All analytes marked **M** have been analysed under the scope of our MCERTS accreditation

All analytes marked **U** have been analysed under the scope of our UKAS accreditation

All analytes marked **m** have been subcontracted and analysed under the scope of their MCERTS accreditation

All analytes marked **u** have been subcontracted and analysed under the scope of their UKAS accreditation

All results labelled with an asterisk (*) are non-conforming due to incorrect sample storage or handling. The result may be invalid.

The results shown in this test report specifically refer to the sample(s) as received unless otherwise stated.

The report shall not be reproduced except in full, without the written approval of Envirochem.

All comments are beyond the scope of our accreditation.

Unless sampled by Envirochem, all sample details are supplied by the client.

Uncertainty of measurement is not accounted for in reported results.

Signed on behalf of Envirochem by an authorised signatory

[Redacted Signature] Dan Dockree

Authorised Signatory



ENVIROCHEM

Analytical Laboratories Ltd.

www.envirochem.co.uk

lab@envirochem.co.uk



Client: Hull & Yorkshire
 Site: Overhall, Scunthorpe
 Sampled By: Client
 Envirochem Job No. 23-36060

Submitted By: Courier
 Date Received: 12 May 2023
 Date Completed: 18 May 2023
 Date Issued: 19 May 2023

Determination	Units	Method	Detection Limit	Lab Sample No.	114428	114429	114430		
				Deviating Codes	DF	DF	DF		
Sample Location / Details				Type	Sandy Cly Lm St	Sandy Cly Lm St	Sandy Cly Lm St		
				Sample Date	03/05/2023	03/05/2023	03/05/2023		
				Sample Time	1100	1100	1100		
				Sample Location / Details	HAY - 1005 - 1 - Conninsby	HAY - 1005 - 2 - Legbourne	HAY - 1005 - 3 - Scarfo top		
Particle size > 2mm	%	5.01	-		27.1	18.0	18.5		
water content 105C	%	6.01	1.0		11.0	10.9	10.3		
% water , air dried(<30Å)	%	5.01	1.0		10.8	11.0	10.3		
pH	pH Units	5.06, 6.03	1.00		9.36 M*	8.24 M*	8.09 M*		
arsenic	mg/kg (dry)	5.18, 6.08	4.0		31.5 M*	17.0 M*	11.5 M*		
cadmium	mg/kg (dry)	5.18, 6.08	0.5		1.3 M*	0.8 M*	< 0.5 M*		
chromium	mg/kg (dry)	5.18, 6.08	2		91 M*	38 M*	23 M*		
Chromium VI	mg/ kg	6.19	0.05		< 0.05	< 0.05	< 0.05		
copper	mg/kg (dry)	5.18, 6.08	2		18 M*	17 M*	15 M*		
mercury	mg/kg (dry)	5.18, 6.08	0.2		< 0.2 M*	< 0.2 M*	3.4 M*		
nickel	mg/kg (dry)	5.18, 6.08	3		27 M*	21 M*	21 M*		
lead	mg/kg (dry)	5.18, 6.08	40		76 M*	53 M*	< 40 M*		
antimony	mg/kg (dry)	5.18, 6.08	1		2	< 1	< 1		
selenium	mg/kg (dry)	5.18, 6.08	1		2 M*	< 1 M*	< 1 M*		
zinc	mg/kg (dry)	5.18, 6.08	15		121 M*	88 M*	77 M*		
total TPH (C10 - C40)	mg/ kg	6.04	50.0		114	56.9	< 50.0		
TPH Aliphatic (C8-C10)	mg/ kg	6.04	5.00		< 5.00	< 5.00	< 5.00		
TPH Aliphatic (C10-C12)	mg/ kg	6.04	5.0		< 5.0	< 5.0	< 5.0		
TPH Aliphatic (C12-C16)	mg/ kg	6.04	5.0		< 5.0	< 5.0	< 5.0		
TPH Aliphatic (C16-C21)	mg/ kg	6.04	5.0		< 5.0	< 5.0	< 5.0		
TPH Aliphatic (C21-C40)	mg/ kg	6.04	5.0		51.8	8.2	11.0		
TPH Aromatic (C8-C10)	mg/ kg	6.04	5.00		< 5.00	< 5.00	< 5.00		
TPH Aromatic (C10-C12)	mg/ kg	6.04	5.0		< 5.0	< 5.0	< 5.0		
TPH Aromatic (C12-C16)	mg/ kg	6.04	5.0		< 5.0	< 5.0	< 5.0		
TPH Aromatic (C16-C21)	mg/ kg	6.04	5.0		8.1	5.1	< 5.0		
TPH Aromatic (C21-C40)	mg/ kg	6.04	5.0		47.6	40.6	19.4		
total PAHs	mg/ kg	6.05	2.0		2.3	< 2.0	< 2.0		
PAH Napthalene	mg/ kg	6.05	0.10		< 0.10	< 0.10	< 0.10		
PAH Acenaphthylene	mg/ kg	6.05	0.10		< 0.10	< 0.10	< 0.10		
PAH Acenaphthene	mg/ kg	6.05	0.10		< 0.10	< 0.10	< 0.10		
PAH Fluorene	mg/ kg	6.05	0.10		< 0.10	< 0.10	< 0.10		
PAH Anthracene	mg/ kg	6.05	0.10		< 0.10	< 0.10	< 0.10		
PAH Phenanthrene	mg/ kg	6.05	0.10		< 0.10	< 0.10	< 0.10		
PAH Fluoranthene	mg/ kg	6.05	0.10		0.13	< 0.10	< 0.10		
PAH Pyrene	mg/ kg	6.05	0.10		< 0.10	< 0.10	< 0.10		



ENVIROCHEM

Analytical Laboratories Ltd.

www.envirochem.co.uk

lab@envirochem.co.uk



Client: Hull & Yorkshire
 Site: Overhall, Scunthorpe
 Sampled By: Client
 Envirochem Job No. 23-36060

Submitted By: Courier
 Date Received: 12 May 2023
 Date Completed: 18 May 2023
 Date Issued: 19 May 2023

Determination	Units	Method	Detection Limit	Lab Sample No.	114428	114429	114430		
				Deviating Codes	DF	DF	DF		
Sample Location / Details				Type	Sandy Cly Lm St	Sandy Cly Lm St	Sandy Cly Lm St		
				Sample Date	03/05/2023	03/05/2023	03/05/2023		
				Sample Time	1100	1100	1100		
				Sample Location / Details	HAY - 1005 - 1 - Conninsby	HAY - 1005 - 2 - Legbourne	HAY - 1005 - 3 - Scarfo top		
PAH Benz(a)anthracene	mg/ kg	6.05	0.10		< 0.10	< 0.10	< 0.10		
PAH Chrysene	mg/ kg	6.05	0.10		< 0.10	< 0.10	< 0.10		
PAH Benzo(b)fluoranthene	mg/ kg	6.05	0.10		1.14	0.79	0.52		
PAH Benzo(k)fluoranthene	mg/ kg	6.05	0.10		< 0.10	< 0.10	< 0.10		
PAH Benzo(a)pyrene	mg/ kg	6.05	0.10		< 0.10	< 0.10	< 0.10		
PAH Indeno(1,2,3-c,d)pyrene	mg/ kg	6.05	0.10		0.73	0.66	0.66		
PAH Dibenzo(a,h)anthracene	mg/ kg	6.05	0.10		< 0.10	< 0.10	< 0.10		
PAH Benzo(g,h,i)perylene	mg/ kg	6.05	0.10		< 0.10	< 0.10	< 0.10		



Method Summaries:-

Method Summaries (Soils/ sludges/ solid wastes)

- 5.01 - Soil sample pre-treatment, air-drying, crushing, sieving and subdividing
- 5.02 - Solvent extraction (acetone/heptane) of soils for hydrocarbon analyses
- 5.04 - Aqueous leaching of soil and waste samples
- 5.05 - Soil texture classification
- 5.06 - Aqueous extraction of dried soils/sludges/waste in a ration of 2.5:1
- 5.18 - Digestion of solid samples in aqua-regia using hot-block for metals analysis
- 6.01 - Gravimetric determination of water content of solid samples by oven drying at 105°C.
- 6.02 - Determination of anions by ion chromatography
- 6.03 - Determination of pH in aqueous samples and extracts by pH electrode.
- 6.04 - Determination of petroleum hydrocarbons by Gas chromatography of solvent extracts (FID)
- 6.05 - Determination of poly-aromatic- hydrocarbons by gas chromatography linked mass spectrometry (GC-MS)
- 6.06 - Determination of poly-chlorinated-biphenyls (PCBs) by gas chromatography linked mass spectrometry (GC-MS)
- 6.07 - Determination of dissolved organic carbon (DOC) and total organic carbon (TOC) by furnace combustion and infra-red detection of carbon dioxide.
- 6.08 - Determination of metals in digests and leachates by inductively coupled plasma optical emission spectrophotometry (ICP-OES)
- 6.09 - Determination of loss on ignition by gravimetry and combustion in muffle furnace
- 6.11 - Determination of BTEX by headspace GC analysis

Method Summaries (water sample)

- 5.07 - Pretreatment of water samples prior to metals analysis, including acidification
- 5.09 - Solvent extraction (acetone/heptane) of waters for hydrocarbons analyses
- 6.02 - Determination of anions by ion chromatography
- 6.03 - Determination of pH in aqueous samples and extracts by pH electrode.
- 6.04 - Determination of TPH by Gas chromatography of solvent extracts (FID)
- 6.05 - Determination of poly-aromatic- hydrocarbons by gas chromatography linked mass spectrometry (GC-MS)
- 6.06 - Determination of poly-chlorinated-biphenyls (PCBs) by gas chromatography linked mass spectrometry (GC-MS)
- 6.07 - Determination of dissolved organic carbon (DOC) by furnace combustion and infra-red detection of carbon dioxide.
- 6.08 - Determination of metals in solution by inductively coupled plasma optical emission spectrophotometry (ICP-OES)
- 6.10 - Determination of suspended solids by filtration, drying at 103°C and gravimetry.
- 6.19 - Colorimetric tests

Deviating Codes

- A - Missing sample date
- B - Missing sample time (water samples only)
- C - Incorrect sample container
- D - Not received in cooled state
- E - Insufficient sample
- F - Exceeds storage time (sampling to receipt)
- G - Exceeds storage time (receipt to analysis)
- P - Missing preservatives
- N - No sample temperature
- I - Insufficient paint sample supplied (<0.1g)



ANALYTICAL TEST REPORT

Contract no: 130229

Contract name: Abbeyfield House, Regency Mews, York

Client reference: 22-626

Clients name: ARC Environmental

Clients address: Solum House, Unit 1 Elliott Court
St Johns Road
Meadowfield
DH7 8PN

Samples received: 02 February 2024

Analysis started: 02 February 2024

Analysis completed: 13 February 2024

Report issued: 13 February 2024

Key

- U UKAS accredited test
- M MCERTS & UKAS accredited test
- \$ Test carried out by an approved subcontractor
- I/S Insufficient sample to carry out test
- N/S Sample not suitable for testing
- NAD No Asbestos Detected

Approved by:



Abbie Neasham-Bourn
Senior Reporting Administrator

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
130229-1	V1	-	Sandy Loamy Clay with Gravel	-	-	20.7
130229-2	V2	-	Sandy Loamy Clay with Gravel	-	-	20.3
130229-3	V3	-	Sandy Loamy Clay with Gravel	-	-	20.8

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SOILS

Lab number			130229-1	130229-2	130229-3
Sample id			V1	V2	V3
Depth (m)			-	-	-
Date sampled			01/02/2024	01/02/2024	01/02/2024
Test	Method	Units			
Moisture Content	CE001	% w/w	20.7	20.3	20.8
Arsenic (total)	CE264 ^M	mg/kg As	12	16	14
Cadmium (total)	CE264 ^M	mg/kg Cd	<1.6	<1.6	1.8
Chromium (total)	CE264 ^U	mg/kg Cr	68	64	76
Chromium (III)	CE208	mg/kg CrIII	68	64	76
Chromium (VI)	CE263	mg/kg CrVI	<0.04	<0.04	<0.04
Copper (total)	CE264 ^M	mg/kg Cu	21	25	25
Lead (total)	CE264 ^U	mg/kg Pb	51	184	63
Mercury (total)	CE264 ^U	mg/kg Hg	<0.7	<0.7	<0.7
Nickel (total)	CE264 ^M	mg/kg Ni	24	26	29
Selenium (total)	CE264	mg/kg Se	<3	<3	<3
Zinc (total)	CE264 ^M	mg/kg Zn	74	94	90
pH	CE004 ^M	units	8.5	8.3	8.5
Sulphate (2:1 water soluble)	CE061 ^U	mg/l SO ₄	<10	<10	<10
Cyanide (free)	CE077	mg/kg CN	<1	<1	<1
Total Organic Carbon (TOC)	CE197	% w/w C	2.3	2.3	2.3
PAH					
Acenaphthene	CE087 ^M	mg/kg	<0.02	<0.02	0.76
Acenaphthylene	CE087 ^M	mg/kg	<0.02	<0.02	0.02
Anthracene	CE087 ^U	mg/kg	<0.02	0.03	0.41
Benzo(a)anthracene	CE087 ^U	mg/kg	0.09	0.09	0.26
Benzo(a)pyrene	CE087 ^U	mg/kg	0.07	0.09	0.23
Benzo(b)fluoranthene	CE087 ^M	mg/kg	0.09	0.10	0.27
Benzo(ghi)perylene	CE087 ^M	mg/kg	0.05	0.05	0.16
Benzo(k)fluoranthene	CE087 ^M	mg/kg	0.03	0.03	0.11
Chrysene	CE087 ^M	mg/kg	0.10	0.10	0.25
Dibenz(ah)anthracene	CE087 ^M	mg/kg	<0.02	<0.02	0.04
Fluoranthene	CE087 ^M	mg/kg	0.15	0.21	0.84
Fluorene	CE087 ^U	mg/kg	<0.02	<0.02	0.26
Indeno(123cd)pyrene	CE087 ^M	mg/kg	0.05	0.05	0.14
Naphthalene	CE087 ^M	mg/kg	<0.02	<0.02	<0.02
Phenanthrene	CE087 ^M	mg/kg	0.03	0.14	1.50
Pyrene	CE087 ^M	mg/kg	0.12	0.16	0.68
PAH (total of USEPA 16)	CE087	mg/kg	0.78	1.05	5.93

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SOILS

Lab number			130229-1	130229-2	130229-3
Sample id			V1	V2	V3
Depth (m)			-	-	-
Date sampled			01/02/2024	01/02/2024	01/02/2024
Test	Method	Units			
BTEX & TPH					
Benzene	\$	mg/kg	<0.001	<0.001	<0.001
Toluene	\$	mg/kg	<0.001	<0.001	<0.001
Ethylbenzene	\$	mg/kg	<0.001	<0.001	<0.001
m & p-Xylene	\$	mg/kg	<0.001	<0.001	<0.001
o-Xylene	\$	mg/kg	<0.001	<0.001	<0.001
VPH Aliphatic (>C5-C6)	\$	mg/kg	<0.05	<0.05	<0.05
VPH Aliphatic (>C6-C8)	\$	mg/kg	<0.05	<0.05	<0.05
VPH Aliphatic (>C8-C10)	\$	mg/kg	<0.05	0.1	<0.05
EPH Aliphatic (>C10-C12)	CE250	mg/kg	<0.5	<0.5	<0.5
EPH Aliphatic (>C12-C16)	CE250	mg/kg	<0.5	<0.5	<0.5
EPH Aliphatic (>C16-C35)	CE250	mg/kg	<4.5	<4.5	<4.5
EPH Aliphatic (>C35-C44)	CE250	mg/kg	<1	<1	<1
VPH Aromatic (>EC5-EC7)	\$	mg/kg	<0.05	<0.05	<0.05
VPH Aromatic (>EC7-EC8)	\$	mg/kg	<0.05	<0.05	<0.05
VPH Aromatic (>EC8-EC10)	\$	mg/kg	<0.05	<0.05	<0.05
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	<0.5	<0.5	<0.5
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	<1	<1	<1
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	<2	<2	4.98
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	<5	<5	7.18
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	<1.5	<1.5	<1.5
Subcontracted analysis					
Asbestos (qualitative)	\$	-	NAD	NAD	NAD

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE001	Moisture Content	Gravimetry	As received		0.1	% w/w
CE264	Arsenic (total)	Aqua Regia Extraction, ICPOES	Dry	M	1.8	mg/kg As
CE264	Cadmium (total)	Aqua Regia Extraction, ICPOES	Dry	M	1.6	mg/kg Cd
CE264	Chromium (total)	Aqua Regia Extraction, ICPOES	Dry	U	2	mg/kg Cr
CE208	Chromium (III)	Calculation: Cr (total) - Cr (VI)	Dry		1	mg/kg CrIII
CE263	Chromium (VI)	Discrete Analyser	Dry		0.04	mg/kg CrVI
CE264	Copper (total)	Aqua Regia Extraction, ICPOES	Dry	M	1.6	mg/kg Cu
CE264	Lead (total)	Aqua Regia Extraction, ICPOES	Dry	U	3	mg/kg Pb
CE264	Mercury (total)	Aqua Regia Extraction, ICPOES	Dry	U	0.7	mg/kg Hg
CE264	Nickel (total)	Aqua Regia Extraction, ICPOES	Dry	M	2.1	mg/kg Ni
CE264	Selenium (total)	Aqua Regia Extraction, ICPOES	Dry	U	3	mg/kg Se
CE264	Zinc (total)	Aqua Regia Extraction, ICPOES	Dry	M	4	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO ₄
CE077	Cyanide (free)	Extraction, Continuous Flow Colorimetry	As received		1	mg/kg CN
CE197	Total Organic Carbon (TOC)	Carbon Analyser	Dry		0.1	% w/w C
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
\$	Benzene	Headspace GC-FID	As received	U	0.001	mg/kg
\$	Toluene	Headspace GC-FID	As received	U	0.001	mg/kg
\$	Ethylbenzene	Headspace GC-FID	As received	U	0.001	mg/kg
\$	m & p-Xylene	Headspace GC-FID	As received	U	0.001	mg/kg
\$	o-Xylene	Headspace GC-FID	As received	U	0.001	mg/kg
\$	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.005	mg/kg
\$	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.005	mg/kg
\$	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.005	mg/kg
CE250	EPH Aliphatic (>C10-C12)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C12-C16)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C16-C35)	Solvent extraction, GCxGC-FID	As received		15	mg/kg

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE250	EPH Aliphatic (>C35-C44)	Solvent extraction, GCxGC-FID	As received		10	mg/kg
\$	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.005	mg/kg
\$	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.005	mg/kg
\$	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.005	mg/kg
CE250	EPH Aromatic (>EC10-EC12)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC12-EC16)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC16-EC21)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC21-EC35)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC35-EC44)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

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DEVIATING SAMPLE INFORMATION

Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
130229-1	V1	-	N	
130229-2	V2	-	N	
130229-3	V3	-	N	

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ADDITIONAL INFORMATION

Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones, where applicable.