

PJ CAREY (CONTRACTORS) LTD

**Phase 1a Section 2
Graven Hill, Bicester**

**Land Contamination Verification Report for Earthworks Fill
(to assist with discharging original Planning Condition
No 58)**

Job No: 173044

Date of Report: 25th April 2019

Report Ref: 173044/VR/002



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Report for

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Draft 24/04/19	For client review and comment

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1.0 INTRODUCTION

Overview of project

- 1.1 AA Environmental Limited (AAe) has been appointed by PJ Carey (Contractors) Limited (hereafter referred to as Careys) to assist with the management of the environmental aspects associated with the redevelopment of land at Graven Hill, London Road, Bicester OX26 6HF.
- 1.2 The site comprises a former Ministry of Defence (MOD) logistics and freight terminal located south of the A41 in Bicester. The site is currently being redeveloped for residential purposes, including associated infrastructure works and leisure/community facilities.
- 1.3 The following reports have been produced for the site by Waterman Infrastructure & Environment Limited (Waterman) and submitted for approval by the local authority to satisfy the associated planning conditions:
- 'Environmental Interpretative Report for Land Transfer Area 1' September 2015 (Report reference: WIB13983-104-R-1-1-7-GH).
 - 'Remediation Options Appraisal and Remedial Strategy Report - Land Transfer Area 1' January 2016 (Report reference: WIB13983-104-R-2-2-3-MA-MACF).
- 1.4 The site is being developed in different sections, as presented on Figure 1 (Careys drawing 3252-PJC/AAe-00S00).

Scope of report

- 1.5 AAe was instructed by Careys to verify chemical compliance of subsoil within areas of earthworks fill against the specification presented in the Waterman Remediation Strategy.
- 1.6 This Verification Report is one a series of documents that verify the land quality of the areas of soft landscaping. This plan specifically covers earthworks completed by Careys within Section 2, as presented on Figure 2.
- 1.7 The agreed Remedial Options Appraisal and Remedial Strategy report was developed following a series of site investigations and contamination assessments. The investigation identified that the majority of the site was uncontaminated and suitable for residential development. As part of the verification regime, Careys as the enabling and earthworks contractor had to test the excavated and imported materials to demonstrate that the material was of a suitable quality. The required quality standards were set out by Waterman¹.
- 1.8 The earthworks cut and fill plans have been provided by Careys. An inspection and testing regime has been undertaken by AAe within areas of earthworks fill to determine compliance against the site specification. Where non-conformances were recorded, corrective actions have been completed by Careys under the supervision of AAe in accordance with the 'Remedial Method Statement for Non-Conforming Works (RMS)' presented at Appendix A.
- 1.9 This report has been prepared to assist in discharging Planning Condition No 58 of 'new' outline consent 18/00325/OUT. In accordance with Planning Condition No 58 this report shall be submitted by Careys to the Local Planning Authority, and their approval in writing obtained. Planning Condition No. 58 states:
- "58 The development of Graven Hill shall not be occupied until:*
- (a) In respect of Phase 0, Phase 1a and Phase 1b as shown on Drawing No: 1982-A-L-572-I, the remedial works have been carried out in accordance with the approved:*

¹ Subsequent to the derivation of the standards, Waterman have advised Careys that asbestos chrysotile fibres are permitted at a level 0.001%.

- *Remediation Options Appraisal and Remediation Strategy Report for Land Transfer Area 1 (ref: WIB13983-104-R-2-2-3-MA-MACF dated January 2016) prepared by Waterman Infrastructure & Environment Ltd.*
- *A verification report that demonstrates the effectiveness of the remediation carried out must be submitted to and approved in writing by the Local Planning Authority.*

(b) In respect of all subsequent phases, if remedial works have been identified in condition 52, the remedial works have been carried out in accordance with the scheme approved under condition 52. A verification report that demonstrates the effectiveness of the remediation carried out must be submitted to and approved in writing by the Local Planning Authority."

Limitations and assumptions

- 1.10 All testing has been completed in line with quality control procedures. All information provided in this report is based on the ground encountered during the investigations. It should be recognised that during any investigation the conditions identified may not be fully representative of the wider conditions.
- 1.11 The purpose of this report is to verify chemical compliance of subsoil within areas of earthworks fill completed by Careys. Inspection and testing by AAe is therefore limited to the specified areas of earthworks fill. A reliance is placed on the provided cut and fill plans to accurately represent the earthworks undertaken by Careys. This report does not verify soil quality in areas of earthworks cut.
- 1.12 This report does not verify geotechnical suitability of materials used as earthworks fill.
- 1.13 It is understood that Careys are contracted to complete the enabling earthworks (including provision of subsoil) to 150 mm below finished level. This report does not verify works completed by third-party contractors or self-builders following handover by Careys. Where follow on contractors/self-builders have operated and/or imported materials this report cannot be relied upon to demonstrate the final land quality.

2.0 VERIFICATION OF EARTHWORKS FILL

Fieldwork

- 2.1 The section has been sub-divided into areas of cut and fill, as presented on Figure 2. To verify the chemical quality of subsoil, trial pits were constructed at locations made available by Careys to be representative of earthworks fill. The trial pits were marked out by the Careys Site Engineer and the ground levels recorded.
- 2.2 Table 2.1 presents the calculated fill volume for the soft landscaping in each sub-area and the required number of tests against the frequency specified within the approved remedial strategy (1 test per 250 m³ site-won fill).

Table 2.1 Section 2 Sub-Areas		
Sub-Area	Fill Volume (calculated by Careys) m ³	Minimum number of tests required to achieve 1 per 250 m ³ of fill.
2-1	<500	2
2-2	105	1
2-3	310	2
2-4	N/A Cut	N/A
2-5	N/A Cut	N/A
2-6	700	3
2-7	900	4

- 2.3 Trial pits were completed on 22nd January and 26th March 2019. The location of the trial pits is presented on Figure 2.
- 2.4 AAe inspected the trial pits for any visual or olfactory evidence of contamination and collected representative samples of the subsoil for laboratory testing analysis in accordance with quality control requirements.
- 2.5 Photo plates of the trial pits are presented in Appendix B.

Chemical Results

- 2.6 Table 2.2 presents a summary of the scheduled environmental testing within the verification trial pits in fill areas.

Table 2.2 Summary of environmental testing		
Type of Test	Number	Laboratory Report
Full Environmental Suite (incl. metals, TPHs, PAHs and asbestos screen)	16	19-02478 19-11460

- 2.7 The results of the environmental laboratory testing are presented in Appendix C.

Assessment of Chemical Results

- 2.8 The soil results have been consolidated and compared against the specification provided in the Waterman Remediation Strategy. The consolidated data is presented in Appendix D. Where the testing suite includes determinants for which limiting values for the protection of human health are not included in the Waterman Remediation Strategy, the Soil Guidance Values (SGVs) presented in Appendix G have been adopted. Non-compliances against the specification are summarised in Table 2.3 below and shown on Figure 2.

Table 2.3 Summary of non-compliance with specification	
Location	Non-Compliance
Plot 71 (Front)	Asbestos fibre 0.002%
Plot 71 (Rear)	PAH
Plot 72 (Rear)	PAH

3.0 REMEDIATION OF NON-CONFORMING AREAS

Strategy

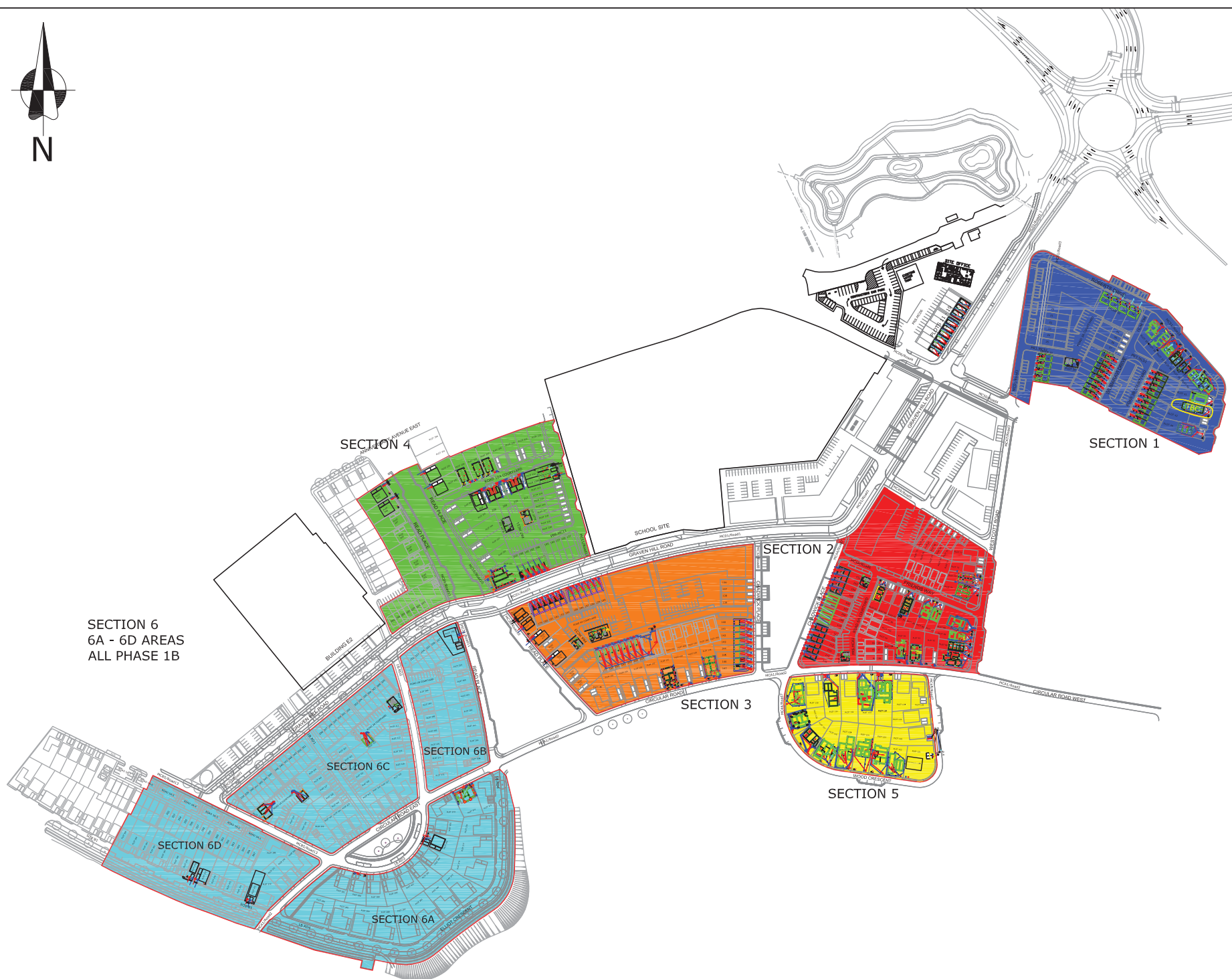
- 3.1 The strategy for the remediation of non-conforming plots is set out in the 'Remedial Method Statement for Non-Conforming Works (RMS)' presented at Appendix A, and can be summarised as follows:
- Removal of impacted soils from non-conforming areas to 450 mm below finished formation level.
 - Placement of a permeable geotextile marker layer over the residual soils.
 - Reinstatement with acceptable soils from pre-approved stockpiles only.
 - Inspection of the non-conforming areas to verify that the reinstated soil has been constructed to a minimum depth of 450 mm above the geotextile marker layer.

Inspection of remedial works

- 3.2 AAe attended site on 9th, 10th and 16th April 2019 site to verify the remediation of the non-conforming soft landscaping areas. The areas of soft landscaping within the specified were fully excavated to the plot boundaries.
- 3.3 Photo plates of the remedial works are presented in Appendix E.
- 3.4 Soils within the non-conforming areas were excavated by Careys to 450 mm below finished formation level. The residual soils were capped with a permeable geotextile marker layer.
- 3.5 The soft landscaping was reinstated with 450 mm acceptable site-won subsoil fill, from the following stockpiles:
- Stockpile 0007 (SPGTP313/314) – Chemtest Report 18-18674 (8 Samples)
 - Stockpile 0008 (SPHTP311/312) – Chemtest Report 18-18546 (7 Samples)
- 3.6 Certificates of analysis for the stockpiles are presented in Appendix F.

FIGURES

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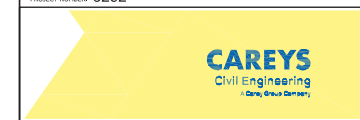
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S ENGINEER'S AND SPECIALISTS' DRAWINGS AND SPECIFICATIONS.

WORKS INDICATED ON THIS DRAWING ARE TO BE MANAGED IN LINE WITH PJC-CE QUALITY ASSURANCE PROCEDURES. DO NOT SCALE FROM THIS DRAWING IN EITHER PAPER OR DIGITAL FORM. USE WRITTEN DIMENSIONS ONLY.

A1	27.06.18	CONSTRUCTION ISSUE	CR
Rev	Date	Description	By
DRAWING STATUS: CONSTRUCTION			

PROJECT ADDRESS:
GRAVEN HILL DEVELOPMENT
ANNIVERSARY AVENUE
BICESTER
OX26 6HF

DRAWING TITLE:
SITE REMEDIATION
STRATEGY - WHOLE SITE,
ALL SECTIONS & AREAS FOR
VALIDATION WITH RED LINE
BOUNDARIES



PROJECT NUMBER: 3252			
Tel: 020 8900 0221 www.careyspk.co.uk			
DRAWN BY: CR	DESIGNED BY: CR	CHECKED BY: KD	DATE: 27.06.18
DRAWING NUMBER: 3252-PJC/AAE - 00S000			SCALE (MM): N/A
			REV: A1




Key:

- Approximate Section Boundary
- PJC Sample location
- Asbestos Fragment or Asbestos Fibres Found in Trial Pit
- Exceedance of PAH and/or metals

Section 2 Exceedance Notes

- P71 F - Chrysotile Asbestos fibres/clumps 0.002%
- P71 B - Dibenz(a,h)Anthracene 0.64mg/kg versus 0.28mg/kg
- P72 B - Dibenz(a,h)Anthracene 0.39mg/kg versus 0.28mg/kg

Rev.	Details	Drawn Chkd.	Date
Project 173044 Graven Hill, Bicester			
Title Earthworks Fill Verification Plan - Section 2			
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Scale 1:600(A3)	Date Apr'19	Drawn RH	Chkd. JNT
Drg. No. Figure 2			Rev. A

APPENDIX A

Remedial Method Statement for Non-Conforming Works


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APPENDIX B


Photo Plates - Verification Trial Pits

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Comment	Project 173044
<u>Strata comprises:</u>	Reference 2 Plot 71 Back
0.00-0.40m Dark greyish brown sandy gravelly CLAY. Gravel is subangular fine of brick, concrete and hardcore. (MADE GROUND)	Date 22/01/19
0.40-0.605m: Dark greyish brown silty CLAY. (PETERBOROUGH MEMBER)	Originator Richard Heath
	<div><div>AA Environmental Limited Units 4-8 Cholswell Court Shippon, Abingdon OX13 6HX T: (01235) 536042 F: (01235) 523849 info@aae-llp.com www.aae-llp.com</div></div>




Comment	Project 173044
	Reference 2 Plot 71 Back Arisings
	Date 22/01/19
	Originator Richard Heath
	<div>  <div> AA Environmental Limited Units 4-8 Cholswell Court Shippon, Abingdon OX13 6HX T: (01235) 536042 F: (01235) 523849 info@aae-llp.com www.aae-llp.com </div> </div>



Comment	Project 173044
<u>Strata comprises:</u>	Reference 2 Plot 71 Front
0.00-0.20m Dark greyish brown sandy gravelly CLAY. Gravel is subangular fine of brick, concrete and hardcore. (MADE GROUND)	Date 22/01/19
0.20-0.50m: Dark greyish brown silty CLAY. (PETERBOROUGH MEMBER)	Originator Richard Heath
	<div><p>Environmental Consultants</p></div> <div>AA Environmental Limited Units 4-8 Cholswell Court Shippon, Abingdon OX13 6HX T: (01235) 536042 F: (01235) 523849 info@aae-llp.com www.aae-llp.com</div>




Comment	Project 173044
	Reference 2 Plot 71 Front Arisings
	Date 22/01/19
	Originator Richard Heath
	<div>  <div> AA Environmental Limited Units 4-8 Cholswell Court Shippon, Abingdon OX13 6HX T: (01235) 536042 F: (01235) 523849 info@aae-llp.com www.aae-llp.com </div> </div>




Comment <u>Strata comprises:</u> 0.0-0.45m: Dark greyish brown becoming dark grey silty CLAY. (PETERBOROUGH MEMBER)	Project 173044
	Reference 2 Plot 72 Back
	Date 22/01/19
	Originator Richard Heath
	<div data-bbox="667 1624 874 1794" data-label="Image"> </div> <div data-bbox="1145 1615 1431 1861" data-label="Text"> <p>AA Environmental Limited Units 4-8 Cholswell Court Shippon, Abingdon OX13 6HX T: (01235) 536042 F: (01235) 523849 info@aee-llp.com www.aee-llp.com</p> </div>




Comment	Project 173044
	Reference 2 Plot 72 Back Arisings
	Date 22/01/19
	Originator Richard Heath
	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  </div> <div style="text-align: right;"> AA Environmental Limited Units 4-8 Cholswell Court Shippon, Abingdon OX13 6HX T: (01235) 536042 F: (01235) 523849 info@aae-llp.com www.aae-llp.com </div> </div>



Comment	Project 173044
<u>Strata comprises:</u>	Reference 2 Plot 72 Front
0.0-0.45m: Dark greyish brown silty CLAY. (PETERBOROUGH MEMBER)	Date 22/01/19
	Originator Richard Heath
	<div></div> <div>AA Environmental Limited Units 4-8 Cholswell Court Shippon, Abingdon OX13 6HX T: (01235) 536042 F: (01235) 523849 info@aae-llp.com www.aae-llp.com</div>



Comment	Project 173044
	Reference 2 Plot 72 Front Arisings
	Date 22/01/19
	Originator Richard Heath
	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  </div> <div style="text-align: right;"> AA Environmental Limited Units 4-8 Cholswell Court Shippon, Abingdon OX13 6HX T: (01235) 536042 F: (01235) 523849 info@aae-llp.com www.aae-llp.com </div> </div>