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Proposed Residential Development

Garlands Lane Farm,

Garlands Lane,

Barlestone,

NUNEATON,

Warwickshire, CV13 0JD

Phase 2 Environmental Investigation.

Status:	Final Report
Reference:	CASTLEDINE & CO.
Date:	21 September 2011

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1 Quality Assurance

Castledine & Co. confirm that all reasonable efforts have been made to ensure that the information outlined within this report is accurate.

Castledine & Co. would further confirm that due care; attention and technical skill were used in the creation of this report.

For and on behalf of Castledine & Co.

Kevin Castledine

2 Executive Summary

Site Address	Garland Lane Farm, Garland Lane, Barlestone. CV13 0JD
Client	Messrs A & T Sanderson
Current Use	farm
Proposed Use	Conversion of farm buildings to two domestic dwellings
Date of Investigation	06th September 2011

2.1 Significant Observations

The site is largely covered with crushed brick and concrete

2.2 Risk Assessment

The area around TP3 is impacted with elevated levels of benzo(a)pyrene and TPH band 1 substances at levels that exceed generic risk assessment criteria

2.3 Recommendations

1) That soils around TP3 be removed to a depth of 600mm below ground level and either be:

    a. disposed of to a suitably licensed facility; or

    b. encapsulated under road ways or drives

2) That Testing certificates, for the soil imported for soft landscaping areas, be obtained and its use agreed with the local planning authority prior to it being placed on the soft landscaping areas.

3 Contents

1 Quality Assurance i

2 Executive Summary ii

2.1 Significant Observations ii

2.2 Risk Assessment ii

2.3 Recommendations ii

3 Contents iii

3.1 List Of Tables iv

3.2 List of Appendices v

4 Introduction 1

5 Scope 1

5.1 Limitations 2

6 Fieldworks 3

7 Physical Ground Conditions Encountered 3

7.1 Made Ground 3

7.2 Superficial Deposits 4

8 Groundwater 4

9 Chemical Investigation 4

10 Revised Conceptual Site Model 6

11 Chemical Assessment Criteria 6

11.1 Human Health 7

12 Summary Of Chemical Analytical Results 10

13 Assessment Of Potential Contaminants 11

13.1 Heavy Metals 11

13.2 Polycyclic Aromatic Hydrocarbons 11

13.3 Petroleum Hydrocarbons 11

13.4 Acidity 11

14 Risk Assessment 11
14.1 Human Health 11
14.2 Surrounding Receptors 12
14.3 Underground Water Services. 12
14.4 Hazardous Ground Gases 12

15 Recommendations 13
15.1 Remedial Actions. 13
15.2 Disposal Of Materials 13
15.3 Construction Workers 14
15.4 Further Environmental Investigation 14

16 Environmental Liability Assessment 14

17 References 14
17.1 Legislation and Regulations 14
17.1.1 Acts 14
17.1.2 Planning regulations 14
17.1.3 Building Regulations 15
17.1.4 Contaminated Land Regulations 15
17.1.5 Other Related Regulations 15
17.1.6 Statutory Guidance 16
17.2 British Standards 16
17.3 Non Statutory Technical Guidance 16
17.3.1 Environment Agency 16
17.3.2 CIRIA Publications 16

18 Appendices 17

3.1 List Of Tables

Table 1 Selected Tier 1 Human Health Assessment Criteria Values 9
Table 2 Overview of chemical analytical results 10

3.2 List of Appendices

Appendix 1	PIT LOCATIONS	18
Appendix 2	TRIAL PIT LOGS	19
Appendix 3	PHOTOGRAPHS	23
Appendix 4	LABORATORY REPORTS	31

4 Introduction

Castledine & Co. have been appointed by the clients Messrs A & T Sanderson to undertake a Phase 2 intrusive study and risk assessment of Lane Farm, Garland Lane, Barlestone. CV13 0JD.

This Report should be read in conjunction with:

- Proposed Residential Development Garlands Lane Farm, Garlands Lane, Barlestone, NUNEATON, Warwickshire, CV13 0JD Phase 1 Environmental Investigation

The objective of the investigation was to confirm the presence or otherwise, of the potential pollutant linkages identified in the previous reporting and to subsequently determine whether any unacceptable environmental risks exist in terms of land contamination.

This Report presents the results of the Phase II Environmental Investigation and assesses the environmental risks in terms of both the proposed residential use consent issued by Hinckley and Bosworth Borough Council.

5 Scope

The Environmental Investigation comprised the following elements:

- Breaking out and excavation of 4 trial pits.
- Logging of soils and strata encountered at each location;
- Recovery of representative disturbed soil samples from each location;
- Chemical analysis of selected soil and groundwater samples;
- Factual and interpretative reporting.

Reasonable skill, care and diligence have been used in the design of this site investigation. The inherent variation of ground conditions allows only definition of the actual conditions at the locations and depths of trial pits and boreholes. Beyond these intermediate locations, conditions can only be inferred.

The work has been carried out in general accordance with recognised best practice as outlined in guidance documents such as in the

- Cassella Stranger, 2002. Model Procedures for the Management of Contaminated Land, Contaminated Land Report (CLR) 11
- BS 10175:2011 Investigation of potentially contaminated sites - Code of practice
- BS 8485:2007 Code of practice for the characterization and remediation from ground gas in affected developments

Important aspects of the risk assessment process are transparency and justification.

5.1 Limitations

This report has been prepared by Castledine & Co. for the sole use and reliance of Messrs A & T Sanderson and appointees. No reliance should be made by third parties as to its adequacy or completion in relation to future developments in the area under consideration. Similarly, Castledine & Co. will accept no liability in relation to the use of data contained in this report by third parties.

The conclusions and recommendations made in this report are limited to those based on the findings of the investigation. Where comments are made based on information obtained from third parties, Castledine & Co. assumes that all third party information is true and correct. No independent action has been undertaken to validate the findings of third parties.

The assessments and interpretation have been made in line with legislation and guidelines in force at the time of writing, representing best practice at that time.

This survey has not included asbestos within existing structures, invasive plant species or any elements unconnected with potential ground contamination at the site. If required, such surveys should be undertaken by suitably accredited organisations.

There may be other conditions prevailing on the site which have not been disclosed by this investigation and which have not been taken into account by this Report. Responsibility cannot be accepted for conditions not revealed by the investigation.

Geotechnical considerations are also beyond the scope of this investigation.

6 Fieldworks

The ground investigation took place on 06th September 2011 and generally comprised machine excavation of 4 trial pits (designated TP1 to TP4) to a maximum depth of 2.2m bgl, to allow ground conditions to be assessed, both laterally and vertically, and to allow soil and water samples to be taken for chemical assessment purposes. The locations of the exploratory holes and sampling points were determined by reference to the conditions identified in the Phase I Investigation and were generally sited in areas of potential contaminative influence or proposed garden/soft landscaped areas. Where no such potentially contaminative influence was identified, exploratory holes were sited to provide a general coverage of the site area.

The approximate trial pit locations, trial pit logs and photographs are presented in Appendices.1, 2 and 3 respectively. Soils for inorganic analysis were sealed in air-tight polythene tubs. Soils for organic analysis were sealed in amber glass jars with the minimal practicable headspace. Samples were retained in refrigerated storage conditions and dispatched for laboratory analysis within 18 hours.

7 Physical Ground Conditions Encountered

The ground conditions over the entire site, as proven during the current works were in accordance with the published geological literature and expectations from the desk study.

7.1 Made Ground

Made Ground was encountered to depths of between 0.3 and 1m bgl. across the site and ranged from topsoil to crushed brick. Hard cover concrete.

7.2 Superficial Deposits

A red clay was observed in TP1 from 0.3m to 0.6m with black staining evident

Moderately soft light clay was present in TP2 and TP3. This stratum was generally devoid of any malodour or textural evidence of obvious contamination.

Brown clay was observed in TP4 at 0.35m bgl.

8 Groundwater

No groundwater was encountered during the investigation.

9 Chemical Investigation

Sampling and analyses were selected with consideration to the findings of the Phase I desk study and the range of strata encountered during the fieldworks. The sampling strategy targeted specific potential contaminant hotspots and as such, statistical analysis in accordance was not appropriate. Collected samples were analysed for a basic suite of common contaminants, which can be collated into three sets, each specific to a general type of contamination.

The samples from the excavations were retained for chemical analysis and dispatched to Nicholls Colton Analytical Ltd for testing. MCERTS / UKAS accredited methods have been used where available / applicable.

The following tests were performed on samples of soil:

- Heavy Metal suites comprising: Arsenic, Cadmium, Chromium, Nickel, Mercury, Copper, Lead and Zinc
- Speciated C-Banded Petroleum Hydrocarbon Analysis (TPHCWG)
- Speciated Polycyclic Aromatic Hydrocarbons (PAH).
- Soil Organic Matter and pH.

During the site investigation, no samples suspected of containing asbestos materials were visually identified and therefore no testing for asbestos was undertaken.

Full copies of the laboratory reports are presented in Appendix 4.

10 Revised Conceptual Site Model

In order to assess the risks posed by potential on-site contamination sources, a conceptual site model (CSM) is developed based on the intended end use of the site, which is a simplification of the environmental setting of the site. The CSM is used to identify any potential pollutant linkages, which may exist when the three key elements described below are present:

A source – A substance which is in, on or under the land and has the potential to cause harm when exposed to a receptor.

A receptor – Something which could be adversely affected when exposed to a contamination source such as humans, controlled waters or an ecological system

A pathway – A mechanism by which a receptor is exposed to a contamination source

Each element can exist in isolation without posing a significant risk, and it is only when the three elements are linked that a potential risk can exist and a potential pollutant linkage be created, whereby contamination can travel from a source, via an identifiable pathway, to a receptor.

The objective of this ground investigation was to determine the likely presence, or otherwise, of the potential pollutant linkages identified by the Phase I investigation. In light of the investigation data and observations available at the time of writing, the presence of a number of pollutant linkages has been established or inferred.

11 Chemical Assessment Criteria

On establishing the presence of pollutant linkages, it is then necessary to assess whether or not any of the linkages pose an unacceptable risk. In order to initially assess the risks, appropriate Tier 1 assessment criteria are derived which represent minimal/negligible risk contamination concentrations with respect to relevant receptors. Concentrations recorded in excess of these levels may represent an unacceptable risk to a specific receptor when considered as part of a pollutant linkage.

11.1 Human Health

The Environment Agency, through its Contaminated Land Exposure Assessment (CLEA) framework, published toxicological reports (TOX) and soil guideline values (SGVs).

SGVs are science-based generic assessment criteria that indicate minimal/negligible human health risks from long-term exposure to soil contaminants. They are set at levels where there is ‘no appreciable’, ‘minimal’ or where other legislation uses a higher level of risk the same ‘negligible’, risks to human health. For each substance, different SGVs are applicable according to land use, for example, whether residential, allotment or commercial. They have been widely seen as over precautionary and offering councils a very weak indication of whether sites represent a "significant possibility of significant harm" (SPOSH) requiring determination under the Part IIa of the Environmental Protection Act 1990.

Where published SGVs are not available, the results have been compared to ATRISKsoil Soil Screening Values (SSVs).

Atkins Ltd has derived ATRISKsoil Soil Screening Values SSVs using the 2009 guidance (SC050021/SR3 (the CLEA Report) and SC050021/SR2 (the TOX report)) for commercial/industrial, residential without home grown produce, residential with home grown produce and allotment land uses. These are based on the default assumptions provided in the CLEA framework. Atkins SSVs for 6% soil organic matter (SOM) have been derived in line with the new guidance using the CLEA model.

For the purposed of this investigation, the 6% SOM assumption is considered to derive appropriate outputs for the investigation site.

The pathways considered in deriving the Atkins SSVs for the standard land uses include:

- Ingestion of soils;
- Ingestion of household dust;
- Ingestion of contaminated vegetables (residential with plant uptake only);
- Ingestion of soil attached to vegetables (residential with plant uptake only);
- Dermal contact with soils;
- Dermal contact with household dust;
- Inhalation of fugitive dusts from soils;
- Inhalation of fugitive household dust;
- Inhalation of vapours in outdoor air; and
- Inhalation of vapours in buildings.

These exposure routes have been evaluated independently of one another to identify the most sensitive exposure route. The SSV adopted for a given land use scenario is the most stringent screening value of all those relevant to the site.

The current proposals are to redevelop the site for a residential use with gardens. It is considered appropriate to compare the chemical testing results to those SGVs/SSVs with the appropriate 'residential with plant uptake' settings. Selected Tier 1 Human Health Assessment Criteria Values are detailed in the following table.

Table 1 Selected Tier 1 Human Health Assessment Criteria Values

Parameter	Assessment Criteria (mgkg-1)	Source
Arsenic	32	SGV
Cadmium	10	SGV
Chromium (III)	12900	SSV
Chromium (VI)	14.5	SSV
Copper	4020	SSV
lead	342	SSV
Mercury Elemental Hg^{4}	1	SGV
Mercury Inorganic Hg^{2+}	170	SGV
Mercury Methyl Hg^{+4}	11	SGV
Nickel	130	SGV
Selenium	350	SSV
Vanadium	115	SSV
Zinc	17200	SSV
Benzene	0.33	SGV
Ethylbenzene	350	SGV
Phenol	420	SGV
Toluene	610	SGV
xylene -m	240	SGV
xylene -o	250	SGV
xylene -p	230	SGV
Acenaphthene	2130	SSV
Anthracene	18300	SSV
Benzo[a]anthracene	8.54	SSV
Benzo[a]pyrene	0.998	SSV
Benzo[b]flouranthene	9.86	SSV
Benzo[g,h,i] perylene	103	SSV
Benzo[k]fluoranthene	100	SSV
chrysene	927	SSV
Dibenz[a,h]anthracene	1	SSV
Fluoranthene	2160	SSV
Fluorene	1930	SSV
Indeno[1,2,3-c,d]pyrene	9.75	SSV
Napthalene	8.71	SSV
Pyrene	1550	SSV
TPH Aliphatic >C05-06	259	SSV
TPH Aliphatic >C06-08	14700	SSV
TPH Aliphatic >C08-10	144	SSV
TPH Aliphatic >C10-12	4140	SSV
TPH Aliphatic >C12-16	5260	SSV
TPH Aliphatic >C16-35	145000	SSV
TPH Aromatic >EC05-07	0.33	SSV
TPH Aromatic >EC07-08	610	SSV
TPH Aromatic >EC07-08	610	SSV
TPH Aromatic >EC08-10	177	SSV
TPH Aromatic >EC10-12	389	SSV
TPH Aromatic >EC12-16	687	SSV
TPH Aromatic >EC16-21	804	SSV
TPH Aromatic >EC21-35	1220	SSV

*The value presented is the lower of the aqueous or vapour saturation limits. The inhalation of vapour pathway contributes less than ten percent of total exposure which is unlikely to significantly affect the combined assessment criterion. In the absence of free product Atkins directs users towards using the combined assessment criterion given by CLEA

12 Summary Of Chemical Analytical Results

Table 2 Overview of chemical analytical results

Determinant	Units	Sample				Assessment Criteria	Source
		TP1	TP2	TP3	TP4		
Arsenic	(mg/kg)	10.5		18.5	14.5	32	SGV
Cadmium	(mg/kg)	< 2.5		< 2.5	< 2.5	10	SGV
Chromium (Total)	(mg/kg)	26.8		32.3	18.2	12900	SSV
Hexavalent Chromium	(mg/kg)	< 1.1		< 1.1	< 1.2	14.5	SSV
Copper	(mg/kg)	7.9		58.6	64	4020	SSV
Lead	(mg/kg)	20.7		139	134	342	SSV
Mercury	(mg/kg)	< 0.7		< 0.7	< 0.7	1	SGV
Nickel	(mg/kg)	29.2		41.6	94.4	130	SGV
Zinc	(mg/kg)	86.7		357	216	17200	SSV
Total Phenols	(mg/kg)	< 1.1		< 1.1	< 1.2	420	SGV
Acenaphthene	(mg/kg)	< 0.1		0.1	< 0.1	2130	SSV
Anthracene	(mg/kg)	< 0.1		0.3	0.1	18300	SSV
Benzo(a)anthracene	(mg/kg)	< 0.1		1.5	0.6	8.54	SSV
Benzo(a)pyrene	(mg/kg)	< 0.1		2.1	0.8	0.998	SSV
Benzo(b)fluoranthene	(mg/kg)	< 0.1		2.5	1	9.86	SSV
Benzo(g,h,i)perylene	(mg/kg)	< 0.1		1.4	0.6	103	SSV
Benzo(k)fluoranthene	(mg/kg)	< 0.1		0.9	0.4	100	SSV
Chrysene	(mg/kg)	< 0.1		1.9	0.7	927	SSV
Dibenzo (a,h) anthracene	(mg/kg)	< 0.1		0.3	0.1	1	SSV
Fluoranthene	(mg/kg)	< 0.1		3.5	1.4	2160	SSV
Fluorene	(mg/kg)	< 0.1		0.1	< 0.1	1930	SSV
Indeno(1,2,3,-cd)pyrene	(mg/kg)	< 0.1		0.4	0.6	9.75	SSV
Naphthalene	(mg/kg)	< 0.1		0.2	< 0.1	8.71	SSV
Pyrene	(mg/kg)	< 0.1		3.3	1.2	1550	SSV
TPH Band 1 (>C6-C10)	(mg/kg)	< 5.6	< 5.8	8	< 6.2	0.33	SSV
TPH Band 2 (>C10-C12)	(mg/kg)	< 5.6	< 5.8	< 56.5	< 6.2	389	SSV
TPH Band 3 (>C12-C16)	(mg/kg)	< 5.6	< 5.8	7.4	< 6.2	687	SSV
TPH Band 4 (>C16-C21)	(mg/kg)	< 5.6	27	38.4	20	804	SSV
TPH Band 5 (>C21-C35)	(mg/kg)	20.9	83	387	293	1220	SSV
Gasoline Range Organics (>C8to C10)	(mg/kg)	< 5.6	< 5.8	8	< 6.2	144	SSV
Diesel Range Organics (>C10 to C21)	(mg/kg)	< 11	30	49.2	26.5	389	SSV
Mineral Range Organics (>C21 to C40)	(mg/kg)	35.9	90.2	542	357	1220	SSV

	Indicates results in excess of the selected Human Health Assessment Criteria Values

13 Assessment Of Potential Contaminants

13.1 Heavy Metals

No samples exceeded SGV's / SSV's for Heavy metals.

13.2 Polycyclic Aromatic Hydrocarbons

The sample taken from TP3 exceeded the SSV for benzo(a)pyrene

13.3 Petroleum Hydrocarbons

The sample taken from TP3 exceeded the SSV for the TPH Band C6-C10.

13.4 Acidity

Determinant	Units	Sample					Assessment Criteria	Source
		TP1	TP2	TP3	TP4A	TP5		
pH	N/A	7.4		7.9	7.5	7.6		SSV

All samples show a slightly alkaline soil with pH ranging from 7.4 to 7.6

14 Risk Assessment

14.1 Human Health

Of the potential linkages referred to in the CSM only benzo(a)pyrene and TPH band 1 linkages are likely.

Given the relatively low recorded levels of hydrocarbon contamination recorded it considered appropriate to discount potential indoor/outdoor inhalation of vapour.

It is evident that much of the near surface material across the site is unsuitable to form external top cover and it is also unlikely to be retained at the near surface for aesthetic reasons. The replacement/capping of this material with clean cover would remove any plausible external pollutant linkage within proposed gardens and soft landscaping areas.

14.2 Surrounding Receptors

On the basis of the ground conditions encountered and the absence of near surface groundwater, the risk of off site migration of contaminants adversely affecting nearby residents/property or the adjacent watercourse is not considered to be significant.

14.3 Underground Water Services.

Underground services can be affected by the presence of a range of contaminants in the soil. Reference has been made to the Water Regulations Advisory Services information and guidance note 'The Selection of Materials for Water Pipes to be Laid in Contaminated Land' (Ref. No 9-04-03) dated October 2002. Whilst only a limited number of the potential contaminants that could affect water supply pipes have been reviewed as part of this assessment, it has been established that the made ground and all near surface soils contained levels of Petroleum Hydrocarbons and metals which may represent a hazard to certain types of water supply pipes.

If water services are to be installed in soils of similar nature to those sampled, Statutory Authorities may require provision of specific water supply pipes to prevent the tainting of water. A copy of the Final Phase II Environmental Investigation Report should be supplied to the relevant authority such that a decision may be made.

14.4 Hazardous Ground Gases

No putrescible waste was discovered within the trial pits therefore the potential for onsite degradation of organic matter to produce hazardous ground gases is considered to be low.

No nearby landfill sites were identified in the phase 1 desk study report.

15 Recommendations

As a result of this investigation, the following recommended are considered appropriate for the proposed development:

15.1 Remedial Actions.

1) That soils around TP3 be removed to a depth of 600mm below ground level and either be:

    a. disposed of to a suitably licensed facility; or

    b. encapsulated under road ways or drives

2) That Testing certificates, for the substances analysed above, for the soil imported for soft landscaping areas, be obtained and its use agreed with the local planning authority prior to it being placed on the soft landscaping areas.

15.2 Disposal Of Materials

If off-site disposal is required, analytical results relevant to the materials being disposed of should be provided to landfill operators / waste carrier to confirm whether it meets their license agreements and to confirm disposal costs.

The waste producer is responsible for ensuring that basic characterisation of the waste has taken place to establish its key characteristics. All waste materials should be handled in accordance with the Duty of Care for waste relevant to Waste Management Licensing. Materials should be classified and disposed of according to the Landfill Directive. Correct testing (e.g. Waste Acceptance Criteria testing) may need to be undertaken prior to disposal.

The size of the development may require a site waste management plan as required by the Site Waste Management Plans Regulations 2008 SI2008/No.314

15.3 Construction Workers

The potential health hazard imposed on construction workers engaged in site works by the near surface material encountered over the majority of the site area is considered to be low on the basis of the chemical analyses carried out. Standard health and safety measures are considered adequate and as such, high standards of personal hygiene should always be maintained amongst site personnel and ground workers in particular should be encouraged to use gloves and dust masks. Washing facilities should also be provided and used prior to eating/smoking to prevent any hand to mouth transfer. In dry conditions, it may be necessary to dampen down exposed materials to prevent dust generation and operatives should be encouraged to wear dust masks.

15.4 Further Environmental Investigation

No further environmental investigation is required

16 Environmental Liability Assessment

Under the assessment requirements outlined in Part IIA Environmental Protection Act 1990; it is considered that the site is unlikely to be classified as being ‘contaminated land’ if the remedial measures outlined above are implemented with the development.

17 References

17.1 Legislation and Regulations

17.1.1 Acts

[1] Environmental Protection Act 1990, Part IIA: inserted by Environment Act 1995, Section 57. See Environment Act 1995 for text of Part IIA.

17.1.2 Planning regulations

[2] The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 SI1999/No.293

[3] The Town and Country Planning (Environmental Impact Assessment) (England and Wales) (Amendment) Regulations 2000 SI2000/No.2867

17.1.3 Building Regulations

[4] The Building Regulations 2000 SI2000/No.2531

[5] The Building (Amendment) Regulations 2001 SI2001/No.3335

[6] The Building (Amendment) Regulations 2002 SI2002/No.440

[7] The Building (Amendment) (No. 2) Regulations 2002 SI2002/No.2871

[8] The Building (Amendment) Regulations 2003 SI2003/No.2692

17.1.4 Contaminated Land Regulations

[9] The Contaminated Land (England) Regulations 2000. SI2000/No.227

[10] The Contaminated Land (England) (Amendment) Regulations 2001 SI2001/No.663

[11] The Radioactive Contaminated Land (Enabling Powers) (England) Regulations 2005 SI2005/No.3467

[12] The Radioactive Contaminated Land (Modification of Enactments)(England) Regulations 2006 SI2006/No.1379

[13] The Contaminated Land (England) Regulations 2006 SI2006/No.1380

[14] The Radioactive Contaminated Land (Modification of Enactments) (England) (Amendment) Regulations 2007 SI2007/No.3245

[15] The Radioactive Contaminated Land (Modification of Enactments) (England) (Amendment) Regulations 2008 SI2008/No.520

17.1.5 Other Related Regulations

[16] The Environmental Permitting (England and Wales) Regulations 2007 SI2007/No. 3538

[17] The Site Waste Management Plans Regulations 2008 SI2008/No.314

[18] The Environmental Damage (Prevention and Remediation) Regulations 2009 SI2009/No.153

17.1.6 Statutory Guidance

[19] Department of Environment, Food and Rural Affairs. 2006. DEFRA Circular 01/2006 Environmental Protection Act 1990: Part 2A Contaminated Land. Department of Environment, Food and Rural Affairs

[20] Office of the Deputy Prime Minister. 2004. Planning Policy Statement 23 Planning and Pollution Control. London: Office of the Deputy Prime Minister.

[21] Office of the Deputy Prime Minister. 2004. Planning Policy Statement 23 Planning and Pollution Control – Annex 1: Pollution Control, Air and Water Quality. London: Office of the Deputy Prime Minister.

[22] Office of the Deputy Prime Minister. 2004. Planning Policy Statement 23 Planning and Pollution Control – Annex 2: Development on Land Affected by Contamination. London: Office of the Deputy Prime Minister.

17.2 British Standards

[23] BS 5930:1999 Code of practice for site investigations

[24] BS 10175:2011 Investigation of potentially contaminated sites - Code of practice

[25] BS 8485:2007 Code of practice for the characterization and remediation from ground gas in affected developments

17.3 Non Statutory Technical Guidance

17.3.1 Environment Agency

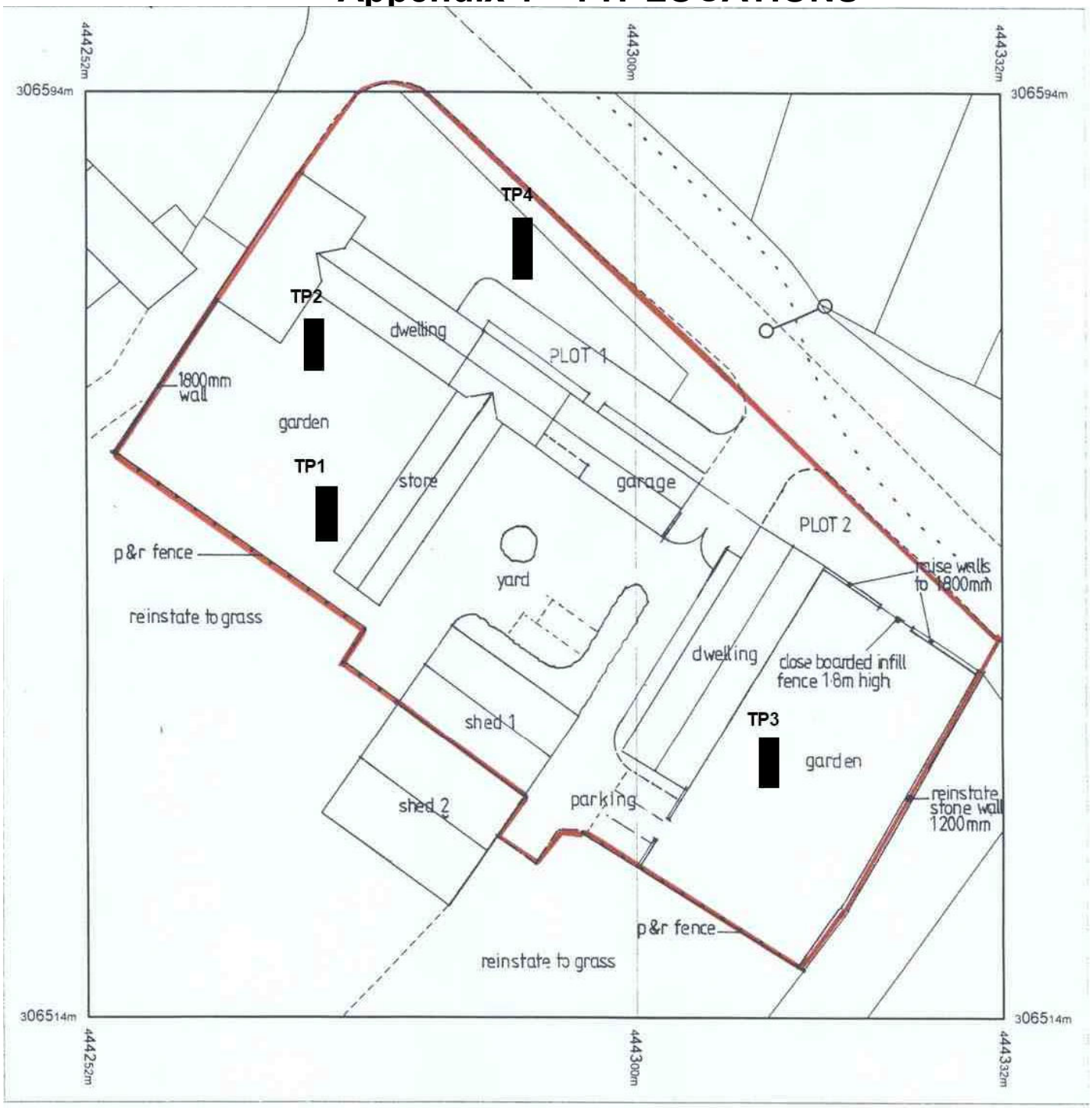
[26] Cassella Stranger, 2002. Model Procedures for the Management of Contaminated Land, Contaminated Land Report (CLR) 11, Department for Environment, Food, and Rural Affairs.

17.3.2 CIRIA Publications

[27] Wilson, S., Oliver, S., Mallett, H., Hutchings, H., and Card, G.. 2007, C 665 Assessing risks posed by hazardous ground gases to buildings London: Construction Industry Research and Information Association

18 Appendices

Appendix 1 PIT LOCATIONS



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Metres
0 5 10 15 20

Scale 1:500

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GARLAND LANE FARM BARNS

GARLANDS LANE

BARLESTONE

LEICS CV13 0JD

Appendix 2 TRIAL PIT LOGS

Project. Garland Lane Farm, Garland Lane, Barlestone.				Trial Pit 1		
Client				Date		
Messrs A & T Sanderson				06/09/2011		
Method.		Pit Dimensions. (m)		Project Reference.		
Mechanical Excavator		1.5 x 0.5		CASTLEDINE & CO.		
Groundwater	Depth (m)	Description of Strata	Legend	Samples		
				Type	Depth (m)	
					From	To
	0.075	Concrete cover				
	0.3	Fine rubble				
	0.6	Red clay with black staining		bulk	0.5	
	2.2	clay				
Remarks		Key				
ground will need to be made up further still				CASTLEDINE & CO.		
		Logged By	Scale	Sheet		
		CASTLEDINE & CO.	Not to Scale	1 of 1		

Project. Garland Lane Farm, Garland Lane, Barlestone				Trial Pit 2		
Client				Date		
Messrs A & T Sanderson				06/09/2011		
Method.		Pit Dimensions. (m)		Project Reference.		
Mechanical Excavator		1.5 x 0.5		CASTLEDINE & CO.		
Groundwater	Depth (m)	Description of Strata	Legend	Samples		
				Type	Depth (m)	
					From	To
	0.075	concrete				
	0.25	Soil with stone inclusions		Bulk	0.2	
	0.35	Crushed brick				
		Light clay				
Remarks		Key				
		Logged By	Scale	Sheet		
		CASTLEDINE & CO.	Not to Scale	1 of 1		

CASTLEDINE & CO.

Project. Garland Lane Farm, Garland Lane, Barlestone.				Trial Pit 3		
Client				Date		
Messrs A & T Sanderson				06/09/2011		
Method.		Pit Dimensions. (m)		Project Reference.		
Mechanical Excavator		1.5 x 0.5		CASTLEDINE & CO.		
Groundwater	Depth (m)	Description of Strata	Legend	Samples		
				Type	Depth (m)	
					From	To
	0.5	Top soil with grass roots		Bulk	0.1	
	1	Demolition rubble				
		clay				

Remarks	Key			CASTLEDINE & CO.
	Logged By	Scale	Sheet	
	CASTLEDINE & CO.	Not to Scale	1 of 1	

Project. Garland Lane Farm, Garland Lane, Barlestone.				Trial Pit 4		
Client				Date		
Alec Statham				30/08/2011		
Method.		Pit Dimensions. (m)		Project Reference.		
Mechanical Excavator		1.5 x 0.5		CASTLEDINE & CO.		
Groundwater	Depth (m)	Description of Strata	Legend	Samples		
				Type	Depth (m)	
					From	To
	0.35.	Soil with cobbles and bricks		bulk	0.25	
		Brown clay				
Remarks		Key				
		Logged By	Scale	Sheet		
		CASTLEDINE & CO.	Not to Scale	1 of 1		

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Appendix 3 PHOTOGRAPHS

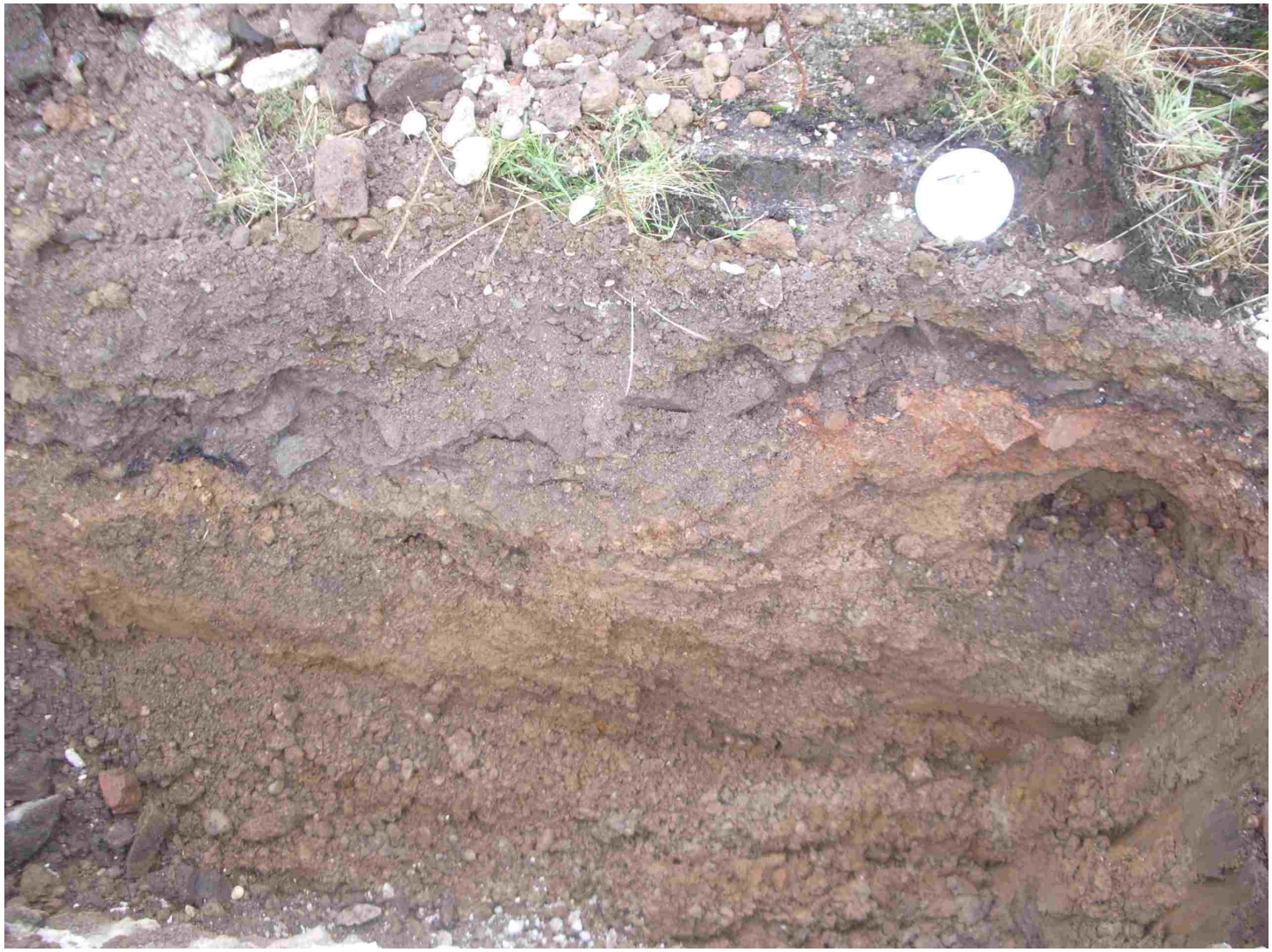
Trial Pit 1



Trial Pit 1



Trial Pit 2



Trial Pit 3



Trial Pit 3



Trial Pit 4



Trial Pit 4



Appendix 4 LABORATORY REPORTS