



**Castledine
Environmental**

LAND CONTAMINATION SURVEYS

Phase 2 Land Contamination Risk Assessment

for

**Change of Use of Agricultural
Buildings to Dwellings (C3) with
Associated Site Works**

on the site of

**Hill Farm, Markfield Lane,
Botcheston LE9 9FH**

Date: March 2021

Status:

Final Report

Reference:

3103D P2 Gill - Botcheston

Date:

01/03/2021

Executive Summary

Based on the information contained in this report, it is the opinion of Castledine Environmental that the site represents a **MODERATE** level of risk with respect to the proposed development.

It is recommended that remediation in-line with section 11.0 is planned and implemented.

It is recommended that the Buildings on site should be subject to an asbestos survey and removal by appropriately qualified personal prior to any demolition or redevelopment occurring in order to ensure site works do not cause future contamination of the site.

This report should be submitted to your Local Planning Authority for agreement to allow the Phase 3 Remediation Strategy and Verification Plan to be written.

A watching brief inline with Appendix F should be had during the course of any permitted demolition, site clearance, or construction works for any obvious contamination (e.g. oil spillage in ground, buried waste, possible asbestos containing material) development should stop and Castledine Environmental should be contacted to determine if further assessment or changes to the remediation scheme are required.

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1.0 QUALITY ASSURANCE

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

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

For and on behalf of Castledine Environmental.

Kevin Castledine

(Director)

2.0 LIMITATIONS

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 Environmental 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 the time.

This survey has not included asbestos within existing structures, invasive plant species, geotechnical considerations 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 at 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.

3.0 INTRODUCTION

Castledine Environmental have been appointed by Mr. J. Singh and Mrs. H.K. Gill to undertake a Phase 2 investigation of land at Hill Farm, Markfield Lane, Botcheston, Leicestershire LE9 9FH.

A Phase 1 report was carried out by Castledine Environmental

- Phase 1 Land Contamination Risk Assessment for Change of Use of Agricultural Buildings to Dwellings (C3) with Associated Site Works on the site of Hill Farm, Markfield Lane, Botcheston – Dated 08/12/2020 and referenced: 3073D

The report is attached as Appendix A

4.0 SCOPE

Castledine Environmental have prepared this report for the sole use and reliance of Mr. J. Singh and Mrs. H.K. Gill and appointees for the purpose of ensuring compliance with:

- paragraph 170, 178, & 179 of the National Planning Policy Framework 2018,
- part C1 of the building regulations.
- Condition No.1 of the Hinckley and Bosworth Borough Council planning approval reference 18/00143/CQGDO
<https://pa.hinckley-bosworth.gov.uk/online-applications/simpleSearchResults.do?action=firstPage>

1. No development approved by this permission shall be commenced until a scheme for the investigation of any potential land contamination on the site has been submitted to and agreed in writing by the Local Planning Authority which shall include details of how any contamination shall be dealt with. The approved scheme shall be implemented in accordance with the agreed details and any remediation works so approved shall be carried out prior to the site first being occupied.

Reason: To ensure there are no adverse risks to the health of the occupiers resulting from contamination of the site, to ensure compliance with condition Q.2(1)(c) of Class Q, Part 3 of the Town and County Planning (General Permitted Development) (England) Order 2015.

This report should be read in conjunction with the reports listed in section 3.0

This report may not be used or relied upon by any unauthorised third party, or for any other proposed use than that specified above, without the explicit written agreement of Castledine Environmental.

The report consists of a risk assessment in accordance with BS10175:2011+A2:2017 and CLR11 "Model Procedures for the Management of Land Contamination".

The objectives of the report are:-

- To assess historical activities at the site with respect to their potential impact on the site environment.
- To characterise the environmental setting of the site, identify migration pathways and vulnerable receptors for contamination originating at the site, focusing on potential soil and groundwater liabilities.
- To assess historical and current surrounding land use in relation to known or potential off site contamination issues that may impact on the subject site and
- To develop a preliminary conceptual site model (CSM).

5.0 SITE DESCRIPTION

The site is located in the village of Botcheston at National Grid Reference: 448423,305312 and is approximately 0.29ha in area.

The site is an irregular rectangle in shape orientated north east to south west. The site is directly bounded by field to the south east and north east,

neighbouring dwellings south and west and scrubland to the north west. The surrounding areas are predominantly agricultural in usage.

The site interior comprises a series of barns orientated in a line running from the south west of site to the north east (see attached site walkover photographs and plan for barn number designations). The remainder of site is occupied by a grassed area, an open area where a barn has been demolished, shipping containers, an access track and an area of rough ground.

The south westernmost barn (Barn No.1) was seen to be in use for the storage of household amenities and miscellaneous furniture. This barn was seen to be concrete based and constructed of cinderblock and potentially asbestos containing corrugated cladding and roofing materials.

The next series of barns, named and numbered "Adjoined Barns No.2" (see site walkover plan), comprise a series of at least 4 No. red bricked barns extending from Barn No.1 north west to an open area. These barns were seen to be in a poor state of repair and comprised former piggeries, with soil, concrete and brick-based flooring and potentially asbestos containing corrugated roofing materials. Some broken corrugated material was noted within the barns. The south westernmost barn in this series is roofless.

Moving north east again from these barns lies an open area, presumably a former barn which has been demolished. The storage of miscellaneous construction materials such as brick pallets, timber, sacking and herras fencing was noted here. Additionally, an area of burning was noted with the remains noted to comprise household refuse including plastics and foodstuffs.

Barn No.3 is located to the north east of the open area and comprises a cinderblock garage type structure adjoined to a red bricked stable-like structure, both of which contained concrete flooring. Both of these structures are roofed with corrugated metal which appears to be relatively new in

comparison the other barns and roofing materials. A rubble spoil pile was noted in this area along with a potential former fuel plinth.

The final and north easternmost barn on site also appears to be relatively new in comparison with the other barns and was seen to be constructed of cinderblock with corrugated metal roofing. The flooring appeared to have been infilled with a clayey, stony medium with areas of made ground including rubble, glass and possible ash and tarmac chippings noted at the entrance to the barn.

Shipping containers are located north of this barn and in the northernmost corner of site. Access to the interior of the containers was unavailable on the day of the site walkover. The containers rest atop a paving stone, timber and brick base which itself lies atop an area of made ground comprised of a gravelled medium, including demolition rubble and tarmacadam chippings. This made ground runs south west for the length of the north western boundary, extending from the shipping containers to the western most corner of site.

The remainder of site is occupied by a heavy-duty concrete access track running the length of site and providing access to the north western faces of the barns and the north eastern extent of site. A grassed area is located between the south eastern face of the barns and the south eastern fenced boundary.

Topographically the site is sloped, with an incline from the north east dropping down to the south west. Potential sources of contamination noted on the site walkover include general agricultural usages; potentially asbestos containing corrugated roofing and cladding materials (noted both on the barns and broken or stored within); areas of made ground comprised of demolition rubble and tarmacadam and glass etc; the area of former burning including burnt plastics, and further made ground deposits located between the access track and the north western boundary, running the length of site.

6.0 FINDINGS IN PREVIOUS REPORT

A number of potentially contaminative sources were identified on-site in the previous Phase 1 Report. These include: the general historical agricultural usage of the site over time; the potentially asbestos containing roofing and cladding materials noted on the buildings; broken roofing and cladding materials noted on historical satellite imagery (residual asbestos fibres); broken asbestos sheeting noted within some of the barns; made ground deposits noted in the north eastern extent of site and along and within the north western boundary of site (glass, tarmac, demolition rubble etc); historical skips, refuse heaps and miscellaneous storage noted along and within this boundary; demolition rubble and a potential former fuel tank plinth noted at the location of Barn No.3; and the area of former burning with evidence of melted plastics, household refuse and foodstuffs noted.

No significant sources of potential ground gas generation have been identified. A potential former fuel tank plinth noted in the north eastern extent of site at Barn No.3 may have the potential to be producing localised hazardous ground vapours. As such, this area was recommended to be investigated.

7.0 CHEMICAL ASSESSMENT CRITERIA

On establishing the presence of pollutant linkages, it is then necessary to assess whether or not any of the linkages are significant, whereby significant harm is being caused or there is significant possibility of significant harm being caused to human health or the environment. In the absence of any evidence of 'significant harm', the risks will be assessed on the basis of a 'significant possibility of significant harm' being caused. In order to initially assess the risks, appropriate Tier 1 assessment criteria are derived which represent benchmark contamination concentrations with respect to relevant receptors. Concentrations recorded in excess of these levels **may** represent a significant risk to a specific receptor when considered as part of a pollutant linkage.

7.1 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 human health risks from long-term exposure to soil contaminants. They are set at levels where there are 'no appreciable' or 'minimal' 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 contaminated land regime.

Following publication of the revised Part IIa Statutory Guidance DEFRA has commissioned the creation of Category 4 Screening levels (C4SL's). They are set at levels where there is a "Low" risk to Human Health (i.e. higher than that of SGV's but still sufficiently low to defiantly not be "Contaminated Land" as defined by section 78A of the Environmental Protection Act 1990 as amended). The C4SL's are calculated using the CLEA model using less conservative exposure and toxicological assumptions than the SGV's. C4SL's have also been calculated for Open Space land use.

LQM in association with the CIEH have produced S4UL's are reproduced with permission; Publication Number S4UL3693

The pathways considered 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.

8.0 SITE WORKS AND FINDINGS

8.1 FIELDWORK 15TH FEBRUARY 2021

Castledine Environmental undertook the site works on the 15th of February 2021. The aim of the site investigation was to identify any potential contamination in shallow site soils and the areas in which they are located. This involve the formation of trial pits across the site, to facilitate to the taking of environmental samples for laboratory analysis. The trial pits were advanced using a mechanical excavator to minimum and maximum depths of 0.45m and 1.10m, respectively. Of the 7 No. trial pits, 2 No. were hand excavated due to their placement in, around and above a known (with additional unknown) services runs. Castledine Environmental utilised a targeted sampling regime, to fully characterise the site conditions.

8.2 GROUND CONDITIONS

The site can generally be characterised as areas of made ground beneath and around buildings and access areas with the remaining areas (the south western proposed garden areas) as natural soils. Made ground was noted at TP01, TP02, TP03 and TP07 with natural soils noted at TP04, TP05 and TP06. The made ground noted at TP01, TP02 and TP03 was noted to increase in depth from the south west to the north east, with the greatest depth of made ground noted at TP03. These deposits comprised a brown to grey, clayey and sandy gravel of ash, sandstone and brick fragments, full brick, metal, plastics, plastic sheeting, clinker and slag. Additional coal and bitumen was noted at TP02 and corrugated sheeting/material and ceramic piping was noted at TP03. This area of made ground is likely associated with the sites former use as a recycling facility, with satellite imagery noting skips, refuse heaps and other features (found in Section 6.9.3 in the previous Phase 1 Report). The made ground encountered at TP07 was noted beneath a concrete base and adjacent to a former fuel plinth. This made ground was noted to extend to a depth of 0.45m with the trial pit cancelled at this depth, due to its proximity to structural foundations. The made ground deposits here were seen to comprise full brick, ash, clinker, gravel sandstone and brick, concrete, metal and plastic sheeting. The ash is likely to have arisen from historical usage as a basing material.

The remaining trial pits TP04, TP05 and TP06 were seen to comprise a dark brown sandy, slightly gravelly clayey Topsoil atop reddish brown mottled grey slightly gravelly, slightly sandy Clays. An increase in the sand content was noted at TP06 as opposed to TP05 and TP04. Natural gravels encountered within these deposits comprised subrounded to rounded sandstone and angular to subangular chert and flint. Topsoils were seen to extend from surface level to a maximum depth of 0.30m with natural clays extending to a maximum confirmed depth of 1.10m. These deposits correspond with the local geological record in the area, likely comprising superficial deposits and residual weathered bedrock deposits (i.e. glacial

till superficial deposits and the Edwalton Member, comprising mudstone and siltstone).

8.3 SAMPLE RESULTS

Sample results have been compared with generic screening criteria (GAC). The sample results are attached as Appendix C

Metals and Semi Metals with Residential Plant Uptake (1% SOM):

Determinant	Units	Accreditation	C4SL	S4UL	Highest Value(s)	Location of Highest value	Exceedance? Y/N
Arsenic	(mg/kg)	MCERTS	37	37	130 / 110	TP02 / TP07	Y
Cadmium	(mg/kg)	MCERTS	26	11	4.1	TP02	N
Chromium (total)	(mg/kg)	UKAS	NC	910	130	TP02	N
Copper	(mg/kg)	MCERTS	NC	2400	890	TP02	N
Lead	(mg/kg)	MCERTS	200	NC	790 / 1700 / 1200 / 1100	TP01 / TP02 / TP03 0.20m / TP03 0.40m	Y
Mercury	(mg/kg)	UKAS	NC	1.2	<2.5	All	N
Nickel	(mg/kg)	MCERTS	NC	130	190	TP07	Y
Zinc	(mg/kg)	MCERTS	NC	3700	5100	TP02	Y
Total Phenols	(mg/kg)	MCERTS			<1.0	All	N
Chromium (Hexavalent)	(mg/kg)	U			16	TP02	
pH	pH units	MCERTS			6.9 – 8.0	TP05 / TP07	
Asbestos					Non-detected		

Petroleum Hydrocarbons Ali-Aro Split with Residential Plant Uptake (1% SOM):

Determinant	S4UL (mg/kg)	Highest Value (mg/kg)	Location of Highest value	Exceedance? Y/N
Aliphatic				
EC 5-6	42	0.13	TP03 0.40m	N
EC >6-8	100	0.49	TP03 0.40m	N
EC >8-10	27	<0.05	TP03 0.40m and TP07	N
EC >10-12	130	<10	TP03 0.40m and TP07	N
EC >12-16	1100	<10	TP03 0.40m and TP07	N
EC >16-35	65000	12	TP03 0.40m	N
EC >35-44	65000	120	TP03 0.40m	N
Aromatic				
EC 5-7 (Benzene)	70	<0.05	TP03 0.40m and TP07	N
EC >7-8 (Toluene)	130	<0.05	TP03 0.40m and TP07	N
EC >8-10	34	<0.05	TP03 0.40m and TP07	N
EC >10-12	74	<10	TP03 0.40m and TP07	N
EC >12-16	140	<10	TP03 0.40m and TP07	N
EC >16-21	260	15	TP03 0.40m	N
EC >21-35	1100	120	TP03 0.40m	N

Non-Metals with Residential and Plant Uptake:

Determinant	Units	Accreditation	C4SL	S4UL	Highest Value	Location of Highest value	Exceedance? Y/N
Acenaphthene	(mg/kg)	UKAS	NC	210	<0.02	All	N
Acenaphthylene	(mg/kg)	UKAS	NC	170	0.03	TP01	N
Anthracene	(mg/kg)	MCERTS	NC	2400	0.82	TP03	N
Benzo(a)anthracene	(mg/kg)	MCERTS	NC	7.2	3.8	TP03	N
Benzo(a)pyrene	(mg/kg)	MCERTS	3.2	2.2	3.2	TP03	Y
Benzo(b)fluoranthene	(mg/kg)	MCERTS	NC	2.2	6.2	TP03	Y
Benzo (g, h, i) perylene	(mg/kg)	MCERTS	NC	320	2.2	TP03	N
Benzo (k) fluoranthene	(mg/kg)	MCERTS	NC	77	2.2	TP03	N
Chrysene	(mg/kg)	MCERTS	NC	15	4.1	TP03	N
Dibenzo (a,h) anthracene	(mg/kg)	MCERTS	NC	0.24	0.54 / 0.24	TP03 0.20m & 0.40m	Y
Fluoranthene	(mg/kg)	MCERTS	NC	280	7.2	TP03	N
Fluorene	(mg/kg)	MCERTS	NC	170	0.26	TP03	N
Indeno (1, 2, 3-cd) pyrene	(mg/kg)	MCERTS	NC	2.3	2.3	TP03	Y
Naphthalene	(mg/kg)	MCERTS	NC	1.5	0.83	TP03	N
Phenanthrene	(mg/kg)	MCERTS	NC	95	4.5	TP03	N
Pyrene	(mg/kg)	MCERTS	NC	620	6.2	TP03	N
Total PAH (Sum of USEPA 16)	(mg/kg)	UKAS	NC	NC	45	TP03 0.20m	N/a

8.4 ANALYSIS OF RESULTS

Metals and semi-metals:

Laboratory analysis has identified exceedances of Arsenic GAC of 37mg/kg by 130mg/kg and 110mg/kg at the locations of TP02 and TP07; Lead GAC of 200mg/kg by 790mg/kg, 1700mg/kg, 1200mg/kg and 1100mg/kg at TP01, TP02, TP03 and TP04, respectively; Nickel GAC of 130mg/kg by 190mg/kg at TP07 and Zinc GAC of 3700mg/kg by 5100mg/kg at TP02. No asbestos or pesticide detected.

Petroleum Hydrocarbons Ali-Aro Split (TPH CWG):

No exceedances identified.

Non-metals:

Laboratory analysis has identified exceedances of Benzo(a)pyrene GAC of 3.2mg/kg and 2.2mg/kg by 3.2mg/kg at TP03 0.20m; Benzo(b)fluoranthene GAC of 2.2mg/kg by 6.2mg/kg at TP03 0.20m; Dibenzo(a,h)anthracene GAC of 0.24mg/kg by 0.54mg/kg and 0.24mg/kg at TP03 0.20m and TP03 0.40m, respectively; and Indeno(1,2,3,-cd) pyrene GAC of 2.3mg/kg by 2.3mg/kg.

TABLE 1 SUMMARY OF SIGNIFICANT POLLUTION LINKAGES

Contaminant	Pathway	Receptor	Probability of Pollutant Linkage	Consequence	Risk	Possible Mitigation
Contaminated Soils	Direct Ingestion & Direct Contact	Site Workers	Li	Md	M	Site workers to wear appropriate PPE for health and safety reasons, considered usage would mitigate this risk to LOW .
Contaminated Soils	Inhalation of Dust	Site Workers	Li	Md	M	
Contaminated Soils	Direct Ingestion & Direct Contact	End Users	Li	Md	M	
Contaminated Soils	Inhalation of Dust	End Users	Li	Md	M	
Contaminated Soils	Direct Ingestion	Flora and Fauna	Li	Md	M	
Contaminated Soils	Vertical and lateral migration	Controlled Waters	Ul	Md	L	Exceedances of arsenic and lead noted at TP02 and TP07, nickel at TP07, zinc at TP02 and lead at TP03, likely associated with made ground. Recommend these areas on site are encapsulated beneath hardstanding. Area of TP07 should be excavated, removed suitably and replaced with certified clean materials.
Contaminated Soils	Direct contact	Services	Ul	Md	L	
Ground Gases (Methane and CO ₂)	Vertical and lateral migration	End Users & Building Envelope	Ul	Md	L	No significant sources of ground gas previously identified.
Volatile and Semi-volatile Organic Compounds	Vertical and lateral migration	End Users & Building Envelope	Ul	Md	L	Noted PAH exceedances are minimal, no significant vapour risk.
Radon	Vertical and lateral migration	End Users & Building Envelope	Ul	Md	L	Site is not in a Radon Affected Area.

KEY: Probability of pollutant linkage Hi = Highly likely, Li = Likely, Lw = Low Likelihood, Ul = Unlikely
Consequence Sv = Severe, Md = Medium, Mi = Mild, Mr = Minor,
Overall Risk VH = Very High, H = High, M = Moderate, M/L = Moderate/Low, L = Low, VL = Very Low

Based on the preliminary CSM for the site, an environmental risk assessment has been undertaken. A simple matrix can provide a consistent basis for decision making. It should be used with caution, recognising the over-simplification that it will normally represent. The probability and consequences are defined according to parameters relevant to the situation; the boundaries of risk acceptability (and tolerability, where relevant) indicated on the matrix provided in Table 2, can be tailored to the factors influencing the significance of the risk. Individual situations are mapped onto the matrix to provide a ready and consistent indication of their acceptability or tolerability.

TABLE 2 RISK CLASSIFICATION MATRIX

		Consequence			
		Severe (Sv)	Medium (Md)	Mild (Mi)	Minor (Mr)
Probability	High (Hi)	Very high risk	High risk	Moderate Risk	Moderate/ Low Risk
	Likely (Li)	High risk	Moderate Risk	Moderate/ Low Risk	Low Risk
	Low Likelihood (Lw)	Moderate Risk	Moderate/ Low Risk	Low Risk	Very Low Risk
	Unlikely (UI)	Moderate/ Low Risk	Low Risk	Very Low Risk	Very Low Risk

Source: CIRIA Report C552, Contaminated Land Risk Assessment. A Guide to Good Practice, 2001

These attributes are evaluated qualitatively against individual hazard assessments to determine the likelihood of a given hazard occurring. The risk evaluations for each plausible pollutant linkage are given in the last three columns of Table 1.

TABLE 3 CLASSIFICATION OF RISK

Very high risk (Vh)	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
High risk (Hi)	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short-term and are likely over the longer term.

Moderate risk (Md)	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer-term.
Low risk (Lw)	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very low risk (Vl)	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

Source: CIRIA Report C552, Contaminated Land Risk Assessment. A Guide to Good Practice, 2001

9.0 REVISED ENVIRONMENTAL RISK ASSESSMENT

Based on the information contained in this report, it is the opinion of Castledine Environmental that the site represents a **MODERATE** level of risk with respect to the proposed development.

It is recommended that remediation in-line with section 11.0 is planned and implemented.

It is recommended that the Buildings on site should be subject to an asbestos survey and removal by appropriately qualified personal prior to any demolition or redevelopment occurring in order to ensure site works do not cause future contamination of the site.

This report should be submitted to your Local Planning Authority for agreement to allow the Phase 3 Remediation Strategy and Verification Plan to be written.

10.0 FURTHER ENVIRONMENTAL INVESTIGATION

It is not envisaged that further testing will be required.

11.0 PROPOSED REMEDIAL ACTIONS AND VERIFICATION

It is recommended that a Phase 3 Remediation Strategy and Verification Plan be produced for the development and implemented during the site works. This should involve the encapsulation of identified hotspots of contamination, with particular attention paid to the northern western

boundary of site, from the location of TP01 to TP03. The area of TP07 should be excavated and replaced with certified clean materials.

These works will require verification. Once the excavations have taken place this should be photographed. If the material is to be encapsulated on site a plan and photographs of where is encapsulated should be made. If it is removed from site a copy of the transfer notes and permit for the site accepting the material should be made. Photos of the placement of the capping system should be made during its placement. If imported material is used copies of the testing certificates will be required.

This report should be submitted to your Local Planning Authority for agreement to allow the Phase 3 Remediation Strategy and Verification Plan to be written.

12.0 REFERENCES**12.1 LEGISLATION AND REGULATIONS****12.1.1 ACTS**

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

12.1.2 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

12.1.3 CONTAMINATED LAND REGULATIONS

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- [5]. The Contaminated Land (England) (Amendment) Regulations 2001 SI2001/No.663
- [6]. The Contaminated Land (England) Regulations 2006 SI2006/No.1380

12.2 STATUTORY GUIDANCE

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12.4 NON STATUTORY TECHNICAL GUIDANCE

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

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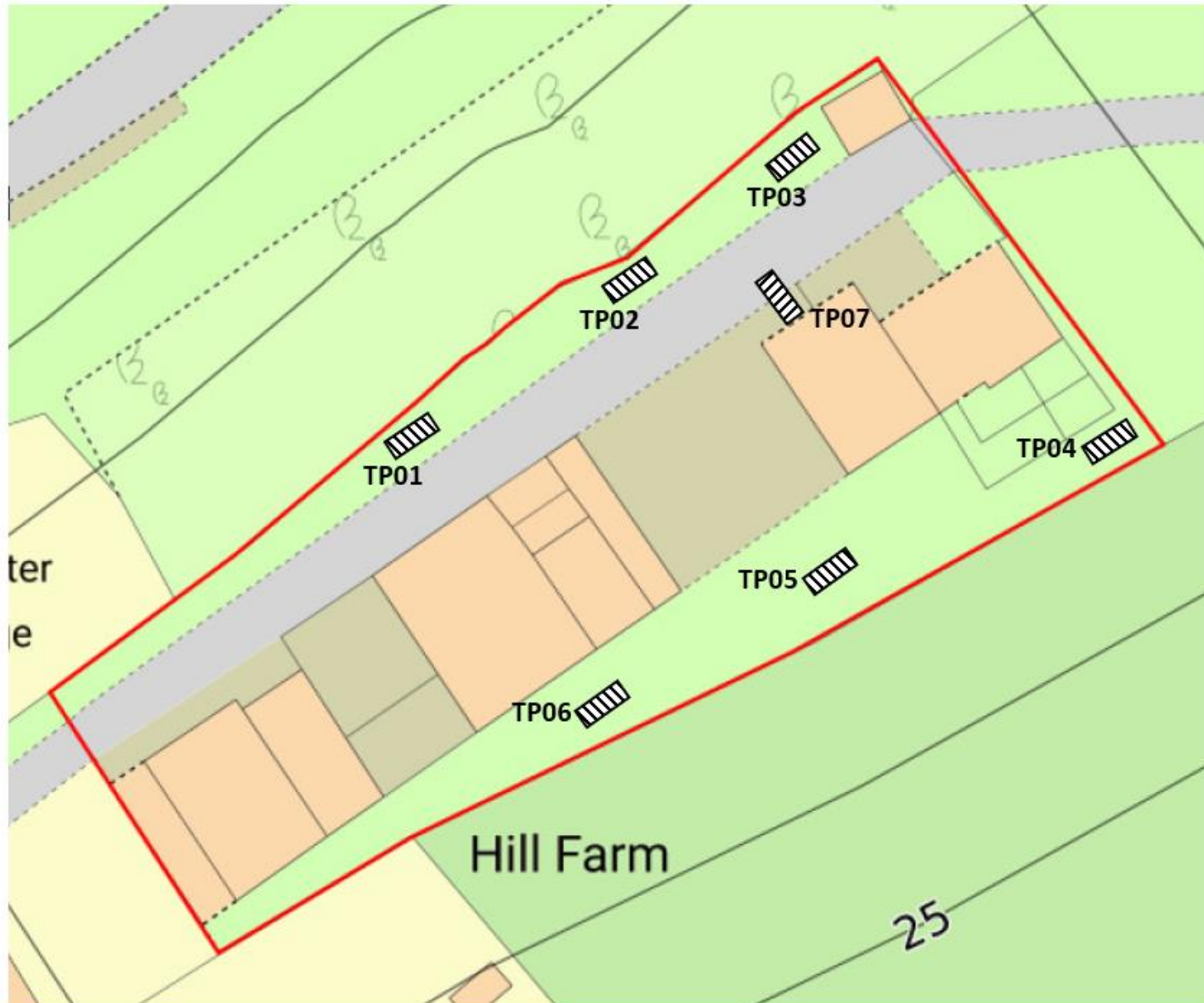
13.0 APPENDICES

APPENDIX A

PHASE 1 REPORT

APPENDIX B

SITE PLAN INCLUDING TRIAL PIT LOCATIONS

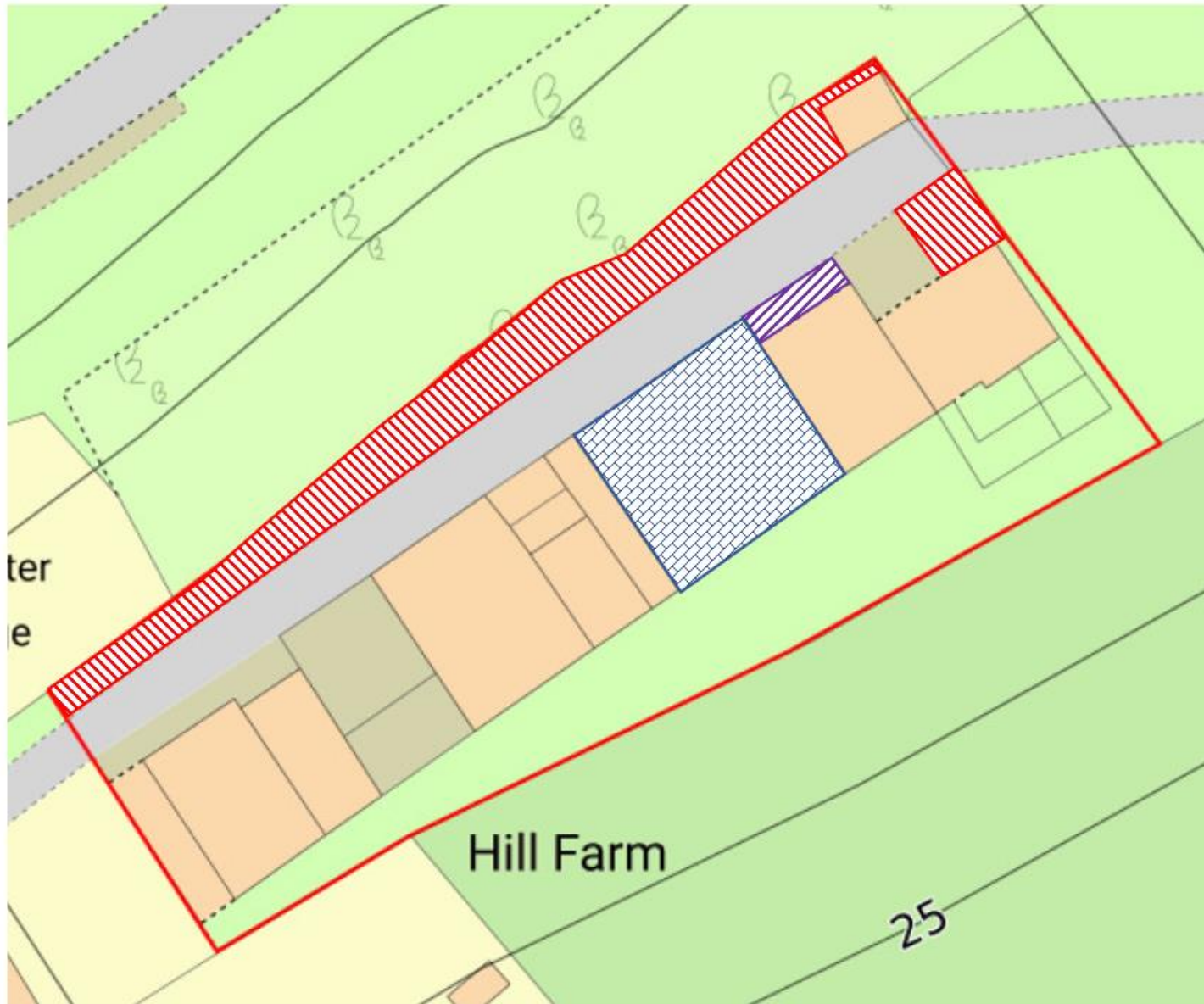


APPENDIX C

TEST RESULTS

APPENDIX D

AREAS TO BE CAPPED



APPENDIX E

TRIAL PIT PHOTOGRAPHS



Trial Pit Photographs

Photo No.1: TP01 located in the western extent of site adjacent to the north western boundary



Address: Hill Farm, Markfield Lane, Botcheston

Client: Mr. J. Singh and Mr. H.K. Gill

Photo No.2: TP01 hand excavated due to known and unknown buried services in the area, showing made ground spoil





Trial Pit Photographs

Photo No.3: TP02 located adjacent to the central area of the north western boundary



Address: Hill Farm, Markfield Lane, Botcheston
Client: Mr. J. Singh and Mr. H.K. Gill

Photo No.4: TP02 hand excavated due to known and unknown buried services in the area, showing made ground spoil





Trial Pit Photographs

Photo No.5: TP03 located in the northern extent of site showing clay pit bottom (left) and service run gravel (right)



Address: Hill Farm, Markfield Lane, Botcheston
Client: Mr. J. Singh and Mr. H.K. Gill

Photo No.6: TP03 pit side showing 0.70m of made ground





Trial Pit Photographs

Photo No.7: TP04 located in the far north eastern corner of site, to east of northern structures on site



Address: Hill Farm, Markfield Lane, Botcheston
Client: Mr. J. Singh and Mr. H.K. Gill

Photo No.8: TP04 showing topsoil atop natural clays





Trial Pit Photographs

Photo No.9: TP05 located adjacent to central area of the south eastern boundary of site in proposed garden area



Address: Hill Farm, Markfield Lane, Botcheston
Client: Mr. J. Singh and Mr. H.K. Gill

Photo No.10: TP05 pit side showing topsoil atop natural clays



Trial Pit Photographs

Photo No.11: TP06 located in the south western extent of the proposed garden areas (see Trial Pit Plan)



Address: Hill Farm, Markfield Lane, Botcheston
Client: Mr. J. Singh and Mr. H.K. Gill

Photo No.12: TP06 spoil showing topsoil and clays



APPENDIX F**WATCHING BRIEF**

It remains possible that previously unexpected soil conditions may be encountered during the construction process. Examples may include oily pockets within the soil, potential for asbestos containing materials, black ashy materials, soils exhibiting strong odours, brightly coloured materials, and former demolition materials.

Should previously undiscovered contamination be encountered during the demolition/construction of the new buildings the following course of action should be adhered to:

1. The ground workers should report any suspected contamination immediately to the Client's site supervisor. The supervisor should contact the Client or their appointed agent who will in turn contact Castledine Environmental to request an engineer to visit the site to assess the extent of the 'contamination'.
2. Castledine Environmental shall make records of their inspection, and pass details of these to the Local Authority.
3. Where the conditions revealed differ from those previously anticipated, the Castledine Environmental shall take samples as deemed appropriate to be dispatched for appropriate chemical testing.
4. Depending on the results of the testing either:
 - a. no further work will be required;
 - b. a further detailed risk assessment will be required; and/or
 - c. Localised specific remedial measures will be necessary.Appraisal criteria will vary depending on the nature of the assessment.
5. The results of any such testing will be sent to the Local Authority Pollution Control Section, Local Authority development control section, and the appointed building inspector. If remediation is required, the LA/Building inspector will be informed of the date and time of the proposed works.

6. Remediation will be undertaken in accordance with a method statement submitted for approval. The works shall be supervised where necessary by Castledine Environmental who shall provide a Verification Report for the Local Authorities.
7. A copy of the discovery strategy should be lodged on site and provisions made to ensure that all workers are made aware of their responsibility to observe, report and act on any potentially suspicious or contaminated materials they may encounter.

