



**Castledine
Environmental**

LAND CONTAMINATION SURVEYS

Phase 1 Land Contamination Risk Assessment

for

Proposed Residential Development – Erection of 5 No. Dwellings

on land off

River Bank / Cradge Bank, Spalding PE11 3AA

Date: August 2022

Status:

Final Report

Reference:

3352D P1 Bates - Spalding

Date:

25/08/2022

EXECUTIVE SUMMARY

The site is currently occupied by a number of buildings including a former store, workshop and garage; a pool-room for canine hydrotherapy; a dwelling structure and a number of outbuildings such as covered storage units and sheds, some in use for vehicle storage. Historically, the site has been occupied by the workshop unit since at least circa.1903, with the site usage following this comprising multiple vehicle storages, maintenance and other, unknown usages and storages. The historical development and usage of the site along with an adjacent industrial usage has the potential to have contaminated the site.

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 further investigation inline with Section 11.0 is planned and carried out on site.

This report should be submitted to your Local Planning Authority for agreement to allow the Phase 2 intrusive testing to be undertaken.

CONTENTS

<u>1.0</u>	<u>QUALITY ASSURANCE</u>	<u>1</u>
<u>2.0</u>	<u>LIMITATIONS</u>	<u>1</u>
<u>3.0</u>	<u>INTRODUCTION</u>	<u>2</u>
<u>4.0</u>	<u>SCOPE</u>	<u>2</u>
<u>5.0</u>	<u>SITE DESCRIPTION</u>	<u>4</u>
<u>6.0</u>	<u>REGULATORY AUTHORITY AND OTHER ENVIRONMENTAL DATA</u>	<u>5</u>
6.1	HYDROLOGICAL	6
6.1.1	AQUIFER	6
6.1.2	ABSTRACTIONS AND PRIVATE WATER SUPPLIES	6
6.1.3	SOURCE PROTECTION ZONE	6
6.1.4	GROUNDWATER VULNERABILITY AND SOIL LEACHING POTENTIAL	6
6.1.5	POTENTIAL SURFACE WATER	7
6.1.6	DISCHARGE CONSENTS	7
6.2	PERMITTED PROCESSES	8
6.3	LIST 2 DANGEROUS SUBSTANCES	8
6.4	POLLUTION INCIDENTS	8
6.5	RADIOACTIVE SUBSTANCES REGISTRATIONS	8
6.6	WASTE	8
6.6.1	LICENSED WASTE MANAGEMENT FACILITIES (LOCATIONS)	8
6.6.2	LANDFILL SITES	8
6.7	HAZARDOUS SUBSTANCES	8
6.8	ECOLOGICAL RECEPTORS	9
6.9	SOILS AND GEOLOGY	9
6.9.1	SUPERFICIAL DEPOSITS	9
6.9.2	SUPERFICIAL DEPOSITS PERMEABILITY	9
6.9.3	BEDROCK DEPOSITS	9
6.9.4	BEDROCK PERMEABILITY	10
6.9.5	ARTIFICIAL GROUND	10
6.9.6	BGS ESTIMATED BACKGROUND SOIL CHEMISTRY	10
6.9.7	COAL MINING	10
6.9.8	SURFACE WORKINGS	11
6.9.9	RADON	11
6.10	AERIAL PHOTOGRAPHY	11
6.10.1	GOOGLE MAPS	11
6.10.2	GOOGLE EARTH	12
6.11	GOOGLE STREET VIEW	13
6.12	HISTORIC MAPPING	14
6.13	CURRENT LAND USE DATA	16

6.14	PETROL AND FUEL SITES	17
6.15	HISTORICAL PETROL AND FUEL SITE DATABASE	17
6.16	POTENTIAL CONTAMINATIVE LAND USES IDENTIFIED ON MAPPING	17
6.17	HISTORICAL TANK DATABASE	18
6.18	HISTORICAL ENERGY FACILITIES	18
6.19	HISTORICAL GARAGE DATABASE	18
<u>7.0</u>	<u>POLLUTANT LINKAGE ASSESSMENT</u>	<u>18</u>
7.1	SOURCES	19
	7.1.1 ONSITE	19
	7.1.2 OFFSITE	19
7.2	PATHWAYS	19
7.3	RECEPTORS	20
<u>8.0</u>	<u>CONCEPTUAL SITE MODEL</u>	<u>20</u>
8.1	PRELIMINARY CONCEPTUAL SITE MODEL	21
	8.1.1 SOIL CONTAMINATION	21
	8.1.2 HAZARDOUS GROUND GAS AND VAPOURS	21
<u>9.0</u>	<u>ENVIRONMENTAL RISK ASSESSMENT</u>	<u>24</u>
<u>10.0</u>	<u>SUMMARY OF RISKS</u>	<u>25</u>
	10.1.1 SOIL CONTAMINATION	25
	10.1.2 GROUND GASSES AND VAPOURS	25
<u>11.0</u>	<u>RECOMMENDATIONS</u>	<u>26</u>
<u>12.0</u>	<u>REFERENCES</u>	<u>27</u>
12.1	LEGISLATION AND REGULATIONS	27
	12.1.1 ACTS	27
	12.1.2 PLANNING REGULATIONS	27
	12.1.3 CONTAMINATED LAND REGULATIONS	27
12.2	STATUTORY GUIDANCE	27
12.3	BRITISH STANDARDS	28
12.4	NON STATUTORY TECHNICAL GUIDANCE	28
	12.4.1 ENVIRONMENT AGENCY	28
	12.4.2 CIRIA PUBLICATIONS	28
	12.4.3 CL:AIRE	28
<u>13.0</u>	<u>APPENDICES</u>	<u>29</u>

LIST OF APPENDICES

APPENDIX A	ENVIRONMENTAL SEARCH	29
APPENDIX B	HISTORICAL MAPPING	29
APPENDIX C	PROPOSED AND CURRENT SITE PLANS	30
APPENDIX D	SITE PHOTOS AND LOCATIONS	31
APPENDIX E	WATCHING BRIEF	38
APPENDIX F	DISCOVERY STRATEGY	40

LIST OF TABLES

TABLE 1.	SUMMARY OF SIGNIFICANT POLLUTION LINKAGES	22
TABLE 2.	RISK CLASSIFICATION MATRIX	23
TABLE 3.	CLASSIFICATION OF RISK	24

1.0 QUALITY ASSURANCE

Castledine Environmental 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 Ms. A. R. Bates to undertake a Phase 1 Desk study on land off Riverbank and Cradge Bank, Spalding PE11 3AA.

4.0 SCOPE

Castledine Environmental have prepared this report for the sole use and reliance of Ms. A. R. Bates and her appointees for the purpose of ensuring compliance with:

- Paragraph(s) 174, 179, 183 & 184 of the National Planning Policy Framework 2021
- Part C1 of the building regulations
- Condition No.5 of the South Holland District Council planning approval reference H16-0239-22
<https://planning.sholland.gov.uk/OcellaWeb/planningDetails?reference=H16-0239-22&from=planningSearch>

5. The development hereby permitted shall not be commenced until a scheme to deal with any contamination of land or pollution of controlled waters has been submitted to and approved in writing by the Local Planning Authority (LPA). The scheme shall include all of the following measures unless the LPA dispenses with any such requirement in writing:

- *A preliminary risk assessment (desk study) shall be carried out to identify and evaluate all potential sources of contamination and the impacts on land and/or controlled waters, relevant to the site. The desk-top study shall establish a 'conceptual site model' and identify all plausible pollutant linkages. Furthermore, the assessment shall set objectives for intrusive site investigation works/Quantitative Risk Assessment (or state if none required). A full copy of the desk-top study and a non-technical summary shall be submitted to the LPA without delay upon completion.*
- *If identified as being required following the completion of the desk-top study, an exploratory site investigation shall be carried out to characterise the nature and extent of any land contamination fully and effectively*

and/or pollution of controlled waters. It shall specifically include a risk assessment that adopts the Source-Pathway-Receptor principle, in order that any potential risks are adequately assessed taking into account the sites

- existing status and proposed end use. A full copy of the site investigation and findings shall be forwarded to the LPA without delay upon completion.*
- Thereafter, a written method statement detailing the remediation strategy for land contamination and/or pollution of controlled waters affecting the site and a timetable for their completion shall be submitted to and approved in writing by the LPA. This shall include details of the proposed verification plan including compliance criteria and monitoring details.*

No deviation shall be made from this scheme without the express written agreement of the LPA. If during redevelopment contamination not previously considered is identified, then the LPA shall be notified immediately and no further work shall be carried out until a method statement detailing a scheme for dealing with the suspected contamination has been submitted to and agreed in writing by the LPA.

Reason: To assess whether the site is polluted and to address any pollution to ensure a satisfactory development. This issue is integral to the development and therefore full details need to be finalised prior to the commencement of works. This Condition is imposed in accordance with Policy 30 of the South East Lincolnshire Local Plan, 2019.

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 preliminary risk assessment in accordance with BS10175:2011+A2:2017, CLR11 “Model Procedures for the Management of Land Contamination” and LCRM “Land Contamination Risk Management”.

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 Spalding at National Grid Reference: 524143,321166 and is approximately 0.09ha in area.

The site is an irregular rectangle in shape and is orientated east to west. The site is located in a predominantly residential area and is directly bounded by neighbouring dwellings and their gardens to the north and south, Cradge Bank roadside to the west and River Bank roadside to the east, with the River Welland located approximately 26m east of site.

The site interior comprises a series of buildings and exterior spaces for parking and storage. Access to site was provided via a large double gate leading west off River Bank, east of site. A brick-built, concrete floored and slate roofed workshop building was noted in the far north eastern corner of site, with the interior noted to be in use for the storage of a vehicle chassis, parts and equipment. South of the workshop is a sloped exterior area, leading west to the central area of site and bypassing a covered storage area on the western face of the workshop. Construction machinery such as cement mixers, gas bottles, pallets, sand and insulation were noted in the sloped area; and furniture, parts and a vehicle body were noted stored in the covered area. Moving west again from this area to the central area of site, a large pool-house for canine-hydrotherapy was noted,

along with a single-storey dwelling and small garden area. The pool-room is located inside and parallel with the northern boundary, the dwelling inside the southern boundary, with pedestrian access between the buildings and the small garden area on the eastern face of the dwelling. Both structures here were noted to be constructed of a mix of materials including metals and timber structuring and cladding and felt-roofing. The westernmost extent of site was accessed via the central pedestrian walkway and leads to an open, gravelled parking area, a second covered storage area (timber-constructed with metal corrugated roofing) and a metal shed on a concrete base, for the storage of motorcycles and associated parts and tools. A second double gate was noted on the westernmost boundary, leading east off Cradge Bank, west of site.

Potential sources of contamination noted on the walkover include the former workshop usage and vehicle storage, both in the workshop, adjacent to it, the parking area and in the metal shed in the west of site. Topographically, Cradge Bank to the west of site sits below the level of River Bank to the east, with a sloped ramp leading west off River Bank to the main site level, which is level with the roadside west of site.

Photos of the site are present in Appendix D

6.0 REGULATORY AUTHORITY AND OTHER ENVIRONMENTAL DATA

An environmental search listing historical and environmental factors likely to affect the property has been reviewed.

The most pertinent information is summarised in the following sections.

A copy is presented in Appendix A.

Additional geological and hydrological data was obtained from the British Geological Survey.

6.1 HYDROLOGICAL**6.1.1 AQUIFER****6.1.1.1 SUPERFICIAL GEOLOGY**

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

6.1.1.2 BEDROCK GEOLOGY

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

6.1.2 ABSTRACTIONS AND PRIVATE WATER SUPPLIES

None recorded within 250m of site.

6.1.3 SOURCE PROTECTION ZONE

Site is not in a source protection zone.

6.1.4 GROUNDWATER VULNERABILITY AND SOIL LEACHING POTENTIAL

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one-kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.

- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution.
They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

ID	Location	Summary	Soil / Surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, Unproductive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: Unproductive Aquifer type: Unproductive Thickness: >10m Patchiness value: >90% Recharge potential: Low	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Well connected fractures

6.1.5 POTENTIAL SURFACE WATER

The Groundsure report records the River Welland located 33m south east and 98m north east of site; the New River located 74m east and the Soke Dyke located 205m south. The Groundsure report also records unnamed, surface level watercourses located 114m east, 168m north, 196m and 210m east, 239m, south east and 242m south of site.

6.1.6 DISCHARGE CONSENTS

The Groundsure report records 3 No. historical discharge consents held 123m south and 216m west (2 No. records here). The record located 123m north related to unspecified effluents discharging into land and was revoked 01/08/1997; and the records located 216m west of site related to trade discharges / process effluents discharging into a tributary of the River Welland. The records were revoked on 08/05/1994 and 18/11/2021, respectively.

6.2 PERMITTED PROCESSES

The Groundsure report records 2 No. current Part B Permits located 128m north and 213m south west of site. The permits relate to the unloading of petrol into storage and the usage of bulk cements, respectively.

6.3 LIST 2 DANGEROUS SUBSTANCES

Discharges of substances identified on List II of European Directive E 2006/11/EC and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

The Groundsure holds 2 No. records of a List 2 Dangerous Substance Site, both of which are located 134m north. The records relate to Acco UK Ltd and Little London Service Station with the authorised substance described as 'pH' with no receiving water recorded.

6.4 POLLUTION INCIDENTS

None recorded within 250m of site.

6.5 RADIOACTIVE SUBSTANCES REGISTRATIONS

None recorded within 250m of site.

6.6 WASTE**6.6.1 LICENSED WASTE MANAGEMENT FACILITIES (LOCATIONS)**

None recorded within 250m of site.

6.6.2 LANDFILL SITES

None recorded within 250m of site.

6.7 HAZARDOUS SUBSTANCES

None recorded within 250m of site.

6.8 ECOLOGICAL RECEPTORS

The Groundsure report records the site as being located with the Vernatt's Drain surface waters nitrate vulnerable zone (NVZ) with an additional record of the NVZ being located 12m west; the Groundsure report also records the River Welland surface waters NVZ located 20m south east and 115m south of site.

6.9 SOILS AND GEOLOGY

"Contains British Geological Survey materials © NERC 2022" obtained from <http://www.bgs.ac.uk/data/mapViewers/home.html> under the [Open Government Licence](#)

6.9.1 SUPERFICIAL DEPOSITS

Both BGS geological mapping and the Groundsure report record superficial geological deposits of Tidal Flat Deposits on site, comprising a consolidated, soft, silty clay with layers of sand, gravels and peat.

6.9.2 SUPERFICIAL DEPOSITS PERMEABILITY

The Groundsure report records the site as being within an area where the maximum permeability of superficial deposits is recorded as 'low' and the minimum permeability as 'very low' and facilitated by intragranular flow mechanisms.

This is a qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

6.9.3 BEDROCK DEPOSITS

Both BGS geological mapping Groundsure report record bedrock geology of the Oxford Clay Formation underlying site, comprising a silicate-mudstone which is grey, generally smooth to slightly silty and with sporadic beds of argillaceous limestone nodules.

6.9.4 BEDROCK PERMEABILITY

The Groundsure report records the site as being within an area where the maximum permeability of bedrock geology is recorded as 'low' and the minimum permeability as 'very low' and facilitated by fracture flow mechanisms.

6.9.5 ARTIFICIAL GROUND

BGS geological mapping records no artificial deposits located on or within 250m of site.

6.9.6 BGS ESTIMATED BACKGROUND SOIL CHEMISTRY

The Groundsure report records BGS background soil chemistry for the site. This is estimated values providing the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km². In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km²; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

The Groundsure report records arsenic, lead & bioaccessible lead, cadmium, chromium and nickel at background concentrations of 15mg/kg, 100mg/kg & 60mg/kg, 1.8mg/kg, 60-90mg/kg and 15-30mg/kg, respectively.

Assuming a worst-case generic acceptance threshold (GAC) of 1% soil organic matter (SOM), none of the recordings are above the generic acceptance thresholds of 37mg/kg, 200mg/kg (both lead and bioaccessible lead), 11mg/kg, 910mg/kg and 180mg/kg, respectively.

6.9.7 COAL MINING

The site is not located in a coal mining reporting area.

6.9.8 SURFACE WORKINGS

ID	Distance [m]	Direction	Land Usage	Year of Mapping
A	129	NW	Ponds	1887
A	169	NW	Pond	1903
A	170	NW	Pond	1938
A	170	NW	Pond	1903
A	172	NW	Pond	1932
A	172	NW	Pond	1950
B	208	SE	Pond	1938
A	210	NW	Pond	1903
B	212	SE	Pond	1887

6.9.9 RADON

The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level. No radon protective measures are necessary as described in publication BR211:2015 by the Building Research Establishment.

6.10 AERIAL PHOTOGRAPHY

Aerial photography shows the following:

6.10.1 GOOGLE MAPS

The site is shown as occupied by the workshop in the north east of site, access immediately south of this leading west to the central area of site where a dwelling and pool-house is located, with the remainder of the west of site occupied by a parking area and bike-storage shed.

6.10.2 GOOGLE EARTH

13 No. images are held in the historic imagery dataset, as follows:

Date	Description
December 1999	The site is shown as occupied by a number of parked cars (at least 12 No.) in the western extent of site, with the eastern extent of site obscured by dense tree foliage. The workshop in the NE of site appears to be present at this time. The area south of site appears to be in use as a yard or small industrial area with storage of unknown materials scattered around the area. Areas to the north are residential and the River Welland is located approx.23m east of site.
December 2000	No discernible change on site nor site relevant change to the surrounding areas.
April 2004	The western extent of site now appears to have had a parking area constructed with a gravelled base, a number of the cars appear to have been removed but imagery is indistinct.
April 2005	The western parking area and covered storage building are now clearly shown and are occupied by a number of cars, with the central area of site also occupied by a large number of parked vehicles. The eastern extent of site remains heavily obscured by foliage.
March 2006	Imagery is indistinct; however, there appears to be no discernible change on site nor site relevant change to the surrounding areas.
December 2007	Foliage in the east of site has decreased and the workshop and storage area south of the building can be seen. The remainder of site remains occupied by vehicles. The area south of site is now shown as under-construction with a number of heaps and machines here, with the industrial building seen immediately SW of site (not present in the present-day) being shown as under demolition.
December 2010	No discernible change on site nor site relevant change to the surrounding areas.
April 2014	Imagery is indistinct; however, the number of vehicles kept on site appears to have decreased. The area south of site is now shown as open and vegetated.

Date	Description
August 2016	The site now resembles that seen in the present-day with addition of the pool-room and dwelling in the central area of site and numerous sheds and covered areas. A caravan and vehicle are parked in the east of site with further vehicles and unknown storages in the west and central extents of site. The area south of site is now shown as under-development once again with addition of a large house and associated landscaping and access works.
September 2018	The metal shed in the NW of site is now present (motorcycle storage), the amount of debris and storage around site has decreased along with the amount of vehicle storage. The area south of site is now shown as a completed residential development consisting of a large house and gardens. A new house build is now located approx.30m N of site.
September 2019	No discernible change on site nor site relevant change to the surrounding areas.
September 2021	No discernible change on site nor site relevant change to the surrounding areas.
March 2022	No discernible change on site nor site relevant change to the surrounding areas.

6.11 GOOGLE STREET VIEW

Google Street View imagery is dated July of 2022 and the site can be viewed from River Bank and facing west and Cradge Bank by facing east. The doubled gated site entrances can be seen, with the roofing of the structures inside the site also noted. The majority of site is obscured by the site boundaries; however, the rear (western) gate is open and the gravelled parking area can be seen, with a single vehicle parked here.

6.12 HISTORIC MAPPING

The following historic maps have been reviewed as part of this assessment, found in the appendices.

Map	Onsite	Offsite
OS County Series: 1887, 1:10,560	The site is shown as unoccupied field located between roadsides to the east and west.	The surrounding areas to site comprise open field to the north and south, roadsides to the east and west (as in the present-day) and the River Welland approx.23m east of site. Areas beyond 50m north of site are residential.
OS County Series: 1886-1889, 1:2,500	Higher resolution mapping shows the site to be split into a number of differing field plots.	A corn mill is located approx.51m SE of site beyond the River Welland. Small dwellings are located south of site along River Bank roadside.
OS County Series: 1903, 1:10,560	A structure is now marked in the NE of site, oriented east to west and parallel with the northern boundary here. This structure is likely the present-day workshop or the initial beginnings of the structure.	Nurseries are marked approx.235m SW of site.
OS County Series: 1904, 1:2,500	No discernible change on site.	The surrounding areas see little site relevant change.
OS County Series: 1931-32, 1:2,500	No discernible change on site.	Allotment gardens are now located approx.80m north of site. Glasshouses have been erected at the nursery approx.250m SW of site. Small-scale residential developments to the north of site.
OS County Series: 1938, 1:10,560	No discernible change on site.	The surrounding areas see little site relevant change.
Provisional: 1958-1959, 1:10,560	No discernible change on site.	The industrial building seen immediately SW of site on satellite imagery (removed circa.2007-2010) has now been erected. Allotments to the north of site have been removed in lieu of dwellings or small sheds are marked in the area, without allotments markings.

Map	Onsite	Offsite
National Grid: 1965, 1:2,500	Site building in the NE of site is now marked as a 'store'.	The building previously erected immediately SW of site is marked as a 'works'. An oil store is marked approx.30m SW of site with tanks beyond. A garage is now located approx.100m N of site with a substation adjacent. A large nursery with large glasshouses is located approx.170m NE of site beyond the River Welland, with a cold storage and packing factory immediately NE again of this feature. Areas to the west, SW and NW of site beyond immediately adjacent features largely comprise stores and works.
National Grid: 1965-1968, 1:2,500	No discernible change on site.	The surrounding areas see little site relevant change.
National Grid: 1968, 1:2,500	No discernible change on site.	The surrounding areas see little site relevant change.
Provisional: 1968-1971, 1:10,560	No discernible change on site.	The surrounding areas see little site relevant change.
National Grid: 1973-1977, 1:2,500	No discernible change on site.	The works immediately SW of site has been extended southwards slightly. Oil store and tank remain to SW of the structure. A transport depot is now located approx.35m W of site.
National Grid: 1979-1982, 1:10,000	No discernible change on site.	The depot to the west of site has been extended further west.
National Grid: 1986-1989, 1:2,500	No discernible change on site.	The surrounding areas see little site relevant change.
National Grid: 1988-1990, 1:2,500	No discernible change on site.	The surrounding areas see little site relevant change.
National Grid: 1987-1992, 1:10,000	No discernible change on site.	The surrounding areas see little site relevant change.

Map	Onsite	Offsite
National Grid: 1992-1995, 1:2,500	No discernible change on site.	The surrounding areas see little site relevant change.
National Grid: 2001, 1:10,000	No discernible change on site.	The surrounding areas see little site relevant change.
Landline: 2003, 1:1,250	Structure located in the NE of site is now marked as a 'garage'.	The works SW, oil store south of this and tanks approx.77m SW of site all remain marked on mapping. Garage to the north is now a BP forecourt.
National Grid: 2010, 1:10,000	No discernible change on site.	The surrounding areas see little site relevant change.
National Grid: 2022, 1:10,000	Site is now marked with the central dwelling and outbuildings in the west of site.	The surrounding areas see little site relevant change.

6.13 CURRENT LAND USE DATA

ID	Distance [m]	Direction	Company	Activity	Category
1	42	N	4 W D Services	Vehicle repair, testing and servicing	Repair and servicing
A	67	W	Rooke's Pet Services	Animal feeds, pet foods, hay and straw	Foodstuffs
A	81	SW	Tank	Tanks (generic)	Industrial features
A	85	W	E M S	Vehicle parts and accessories	Motoring
A	88	SW	Tank	Tanks (generic)	Industrial features
A	100	W	Business park	Business parks and industrial estates	Industrial features
B	109	N	Motor Repairs	Vehicle repair, testing and servicing	Repair and servicing
A	121	SW	Electricity substation	Electrical features	Infrastructure and facilities
B	126	NE	BP Car Wash	Vehicle cleaning services	Personal, consumer and other services

ID	Distance [m]	Direction	Company	Activity	Category
B	127	N	BP Service Station	Petrol and fuel stations	Road and rail
B	136	NE	Electricity substation	Electrical features	Infrastructure and facilities
D	146	N	Spalding Signs Ltd	Signs	Industrial products
C	160	S	Slipway	Moorings and unloading facilities	Water
2	163	NW	Electricity substation	Electrical features	Infrastructure and facilities
3	163	SW	Works	Unspecified works or factories	Industrial features
D	171	N	Crane	Travelling cranes and gantries	Industrial features
E	214	W	Hopper	Hoppers and silos	Farming
4	219	SW	Slipway	Moorings and unloading facilities	Water

6.14 PETROL AND FUEL SITES

The Groundsure report records an active BP petrol station located 149m north of site with no LPG stored on the site.

6.15 HISTORICAL PETROL AND FUEL SITE DATABASE

None recorded within 250m of site.

6.16 POTENTIAL CONTAMINATIVE LAND USES IDENTIFIED ON MAPPING

ID	Distance [m]	Direction	Use	Date
A	34	W	Unspecified depot	1990
A	34	W	Unspecified depot	1980
1	51	SE	Corn mill	1887
B	66	NW	Smithy	1903
B	72	N	Smithy	1903
E	172	NW	Sewage pumping station	1932
F	174	SW	Unspecified works	1980
F	174	SW	Unspecified works	1990

ID	Distance [m]	Direction	Use	Date
E	209	NW	Sewage pumping station	1938
G	222	E	Nursery	1990
G	222	E	Nursery	1980
3	235	SW	Nurseries	1903
4	249	SW	Boat house	1980

6.17 HISTORICAL TANK DATABASE

ID	Distance(m)	Direction	Use	Date
C	74	SW	Unspecified tank	1965-1988
C	77	SW	Unspecified tank	1995
C	79	SW	Unspecified tank	1972-1995
C	80	SW	Unspecified tank	1965-1988

6.18 HISTORICAL ENERGY FACILITIES

ID	Distance(m)	Direction	Use	Date
D	98	N	Electricity substation	1965-1988
D	101	N	Electricity substation	1965-1972
D	124	N	Electricity substation	1995
D	130	NE	Electricity substation	1967
2	170	NW	Electricity substation	1989-1992
F	208	SW	Electricity substation	1967
F	250	SW	Electricity substation	1989-1992

6.19 HISTORICAL GARAGE DATABASE

ID	Distance(m)	Direction	Use	Date
D	97	N	Garage	1972
D	108	N	Garage	1965-1988
D	118	N	Garage	1967

7.0 POLLUTANT LINKAGE ASSESSMENT

The risk posed by any contaminants in soil or groundwater will depend on the nature of the hazard, the probability of exposure, the pathway by which exposure occurs, and the likely effects on the receptors. A contaminant is defined as a substance that has the potential to cause harm, while a risk is considered to exist if such a substance is present in sufficient concentration to cause harm and a pathway exists for a receptor to be exposed to the substance.

The following sections discuss all the identified potential on and off-site sources, pathways and receptors in the context of the proposed development and plausible pollutant linkages which may represent a risk to identified receptors from the data gained from the desk study. At this stage the assessment is qualitative and aimed to determine all pollutant linkages, irrespective of significance or allowing for uncertainty.

Three impact potentials exist for any given site, these are:

- The site impacting upon itself;
- The site impacting on its surroundings; and
- The surroundings impacting on the site.

All three impacts need to be considered in a risk assessment.

7.1 SOURCES

The following potential sources of contamination have been identified.

7.1.1 ONSITE

- Development of the site with the workshop (circa.1903)
- Subsequently marked as 'store' (circa.1965 – unknown storage)
- Then marked as 'garage' (circa.2003)
- Noted on walkover to be in use as vehicle workshop (present-day)
- Multiple vehicles stored on site (circa.1999 to present-day)
- Light commercial and vehicle workshop use (circa.2003 onwards)

7.1.2 OFFSITE

- Industrial building / unspecified works (immediately SW, circa.1958-1959 and removed by circa.2007 – unknown usage and processes)
- Multiple unknown storages, debris and heaps in industrial area south of site (circa.1958 to circa.2007)
- Oil store (approx.30m SW, circa.1965 to present-day)
- Unspecified tanks (approx.70m SW, circa.1965 to present-day)

7.2 PATHWAYS

A pathway is defined as a mechanism or route by which a contaminant comes into contact with, or otherwise affects a receptor. Pathways by which the identified receptors may be impacted upon in the context of the proposed development are identified as follows:

- Ingestion
- Skin contact
- Inhalation
- Plant uptake
- Direct contact by buried structures and infrastructure
- Leaching of soluble contamination into groundwater
- Gas and vapour migration through soils

7.3 RECEPTORS

Receptors are defined as people, living organisms, ecological systems, controlled waters, atmosphere, structures and utilities that could be adversely affected by contaminant(s).

- Human Health
 - Current users of the site;
 - Future users of the site;
 - Users of neighbouring sites;
 - Construction workers; and
 - Services personnel working in trenches.
 - Construction Materials
- Buried concrete, which may be affected by high concentrations of sulphate and/or low pH, in the soils and groundwater underlying the site; and
- Buried water pipes.
- Controlled Waters
- Ecological Receptors
- Flora and fauna using the proposed development and adjacent

8.0 CONCEPTUAL SITE MODEL

The Conceptual Site Model (CSM) is a hypothesis of the nature and sources of contamination, potential receptors that may be the recipient of contamination arising from those sources and any pathways that may exist. It creates a plausible source-pathway-receptor pollutant linkage (hazard), set within the context of the ground and proposed end use of the site.

8.1 PRELIMINARY CONCEPTUAL SITE MODEL**8.1.1 SOIL CONTAMINATION**

The site is currently occupied by a number of buildings including a former store, workshop and garage; a pool-room for canine hydrotherapy; a dwelling structure and a number of outbuildings such as covered storage units and sheds, some in use for vehicle storage. Historically, the site has been occupied by the workshop unit since at least circa.1903, with the site usage following this comprising multiple vehicle storages, maintenance and other, unknown usages and storages. The historical development and usage of the site along with an adjacent industrial usage has the potential to have contaminated the site with various substances including:

- Made ground deposits (development and usage of site for industrial uses)
- Metals and metalloids (light industrial, vehicle storage & maintenance uses)
- Polycyclic aromatic hydrocarbons (PAH's) (fuels, oils, made ground, ashes)
- Petroleum hydrocarbons (fuels, oils, lubricant and vehicle storage)
- Asbestos (age of workshop unit – circa.1903 – subsequent additions to site)

8.1.2 HAZARDOUS GROUND GAS AND VAPOURS

No significant sources of potential ground gas generation have been identified and the site is located in an area where both superficial and bedrock geologies are predominantly low to very low in permeability, thus inhibiting migration of ground gases. Potential sources of onsite and immediately adjacent VOC's have been identified in the form of multiple vehicle storages over time and their maintenance along with associated tools and materials; and a nearby industrial area located immediately south to approximately 77m south west of site, with an oil store and tanks noted on historical mapping.

TABLE 1. SUMMARY OF SIGNIFICANT POLLUTION LINKAGES

Contaminant	Pathway	Receptor	Probability of Pollutant Linkage	Consequence	Risk	Possible Mitigation
Contaminated Soils (<i>dev. of & unknown workshop usage & store, multiple vehicle storages and maintenance, made ground, adj. industrial usage w/ tanks and oil store</i>)	Direct Ingestion & Direct Contact	Site Workers	Li	Md	M	Site workers to wear appropriate PPE for health and safety reasons, considered usage of PPE and adherence to relevant HSE guidance will mitigate this risk to low.
Contaminated Soils (<i>dev. of & unknown workshop usage & store, multiple vehicle storages and maintenance, made ground, adj. industrial usage w/ tanks and oil store</i>)	Inhalation of Dust	Site Workers	Li	Md	M	
Contaminated Soils (<i>dev. of & unknown workshop usage & store, multiple vehicle storages and maintenance, made ground, adj. industrial usage w/ tanks and oil store</i>)	Direct Ingestion & Direct Contact	Present & End Users & Neighbours	Li	Md	M	Potential sources of soil contamination identified in the form of development and usage of site for a workshop, subsequent garage and vehicle storages and maintenance, potential for made ground associated with onsite and adjacent light-industrial land usages; recommend a Phase 2 Intrusive Site Investigation be planned and carried out on site. Trial pitting or borehole formation should be carried out across to site, to assess ground conditions (i.e. natural or anthropogenic), their extent, nature and to facilitate the taking of environmental samples for lab analysis and provision should be made for usage of a photon-ionisation detector (PID) during the works, due to potential for hydrocarbon impact from site usages.
Contaminated Soils (<i>dev. of & unknown workshop usage & store, multiple vehicle storages and maintenance, made ground, adj. industrial usage w/ tanks and oil store</i>)	Inhalation of Dust	Present & End Users & Neighbours	Li	Md	M	
Contaminated Soils (<i>dev. of & unknown workshop usage & store, multiple vehicle storages and maintenance, made ground, adj. industrial usage w/ tanks and oil store</i>)	Direct Ingestion (<i>plant growth within impacted soils</i>)	Flora and Fauna (<i>contaminant uptake</i>)	Li	Md	M	
Contaminated Soils (<i>dev. of & unknown workshop usage & store, multiple vehicle storages and maintenance, made ground, adj. industrial usage w/ tanks and oil store</i>)	Vertical and lateral migration (<i>inhibited by low to very low permeability geologic formations</i>)	Controlled Waters (<i>no productive aquifer, site sits below river-level, no run-off to controlled waters</i>)	UI	Md	L	
Contaminated Soils (<i>dev. of & unknown workshop usage & store, multiple vehicle storages and maintenance, made ground, adj. industrial usage w/ tanks and oil store</i>)	Direct contact (<i>potable servicing piping with impacted soils</i>)	Services (<i>pipe degradation and leaching</i>)	Li	Md	M	
Ground Gases (Methane and CO ₂) (<i>no significant sources identified</i>)	Vertical and lateral migration (<i>inhibited by low to very low permeability geologic formations</i>)	End Users & Building Envelope	UI	Md	L	
Volatile and Semi-volatile Organic Compounds (<i>on site vehicle storage and maintenance, workshop usage, adj. industrial area with tanks and oil store</i>)	Vertical and lateral migration (<i>inhibited by low to very low permeability geologic formations</i>)	End Users & Building Envelope	Li	Md	M	Potential sources of vapour generation identified both on and adjacent to site; recommend this is investigated further as part of a Phase 2 Intrusive Site Investigation.
Radon	Vertical and lateral migration	End Users & Building Envelope	UI	Md	L	Site is not located in a Radon Affected Area.

KEY: Probability of pollutant linkage Hi = Highly likely, Li = Likely, Lw = Low Likelihood, UI = 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, 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 (VI)	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 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 further investigation inline with Section 11.0 is planned and carried out on site.

This report should be submitted to your Local Planning Authority for agreement to allow the Phase 2 intrusive testing to be undertaken.

10.0 SUMMARY OF RISKS**10.1.1 SOIL CONTAMINATION**

Historically, the site remained unoccupied field located between two access tracks from at least circa.1887 through until circa.1903 when the workshop unit seen in the present-day was erected in the north east of site. The site interior then changes little on historical mapping, other than the workshop unit being marked as a 'store', of which the storage was unknown. Historical mapping then shows the area immediately south and south west of site to be in use for an unknown industrial usage, with a nearby oil store and unspecified tanks noted just south of the feature. By circa.2003 the workshop unit is marked as a 'garage' and satellite imagery has shown the site as occupied by a large number of vehicles under maintenance from this date until circa.2014-2016. Following removal of the vehicles, the site has been in use for domestic purposes and canine hydrotherapy, with any vehicle maintenance taking place being small-scale. The historical development of the site with the workshop, store and subsequent garage and vehicle maintenance usage, along with the adjacent light-industrial area, are considered potential sources of soil contamination that should be investigated further as part of Phase 2 Intrusive Site Investigation..

10.1.2 GROUND GASSES AND VAPOURS

No significant sources of potential ground gas generation have been identified and the site is located in an area where both superficial and bedrock geologies are predominantly low to very low in permeability, thus inhibiting migration of ground gases. Potential sources of onsite and immediately adjacent VOC's have been identified in the form of multiple vehicle storages over time and their maintenance along with associated tools and materials; and a nearby industrial area located immediately south to approximately 77m south west of site, with an oil store and tanks noted on historical mapping. Whilst the risks from offsite VOC's are lesser than those on site, both potentials should be investigated further as part of Phase 2 Intrusive Site Investigation.

11.0 RECOMMENDATIONS

It is recommended that a Phase 2 Intrusive Site Investigation be planned and carried out on site. This should take the form of either or both trial pit and borehole formation across the site, to facilitate the assessment of ground conditions (i.e. made ground, natural or reworked natural deposits, their depth, extent and nature), and the taking of environmental samples for laboratory analysis. Provision should also be made for the use of a photon-ionisation detector (PID) during the site works, due to the potential for hydrocarbon impacted soils arising from the sites historical and contemporary usages. Should hydrocarbon contamination be identified, provision should be made to contact the local water supplier regarding barrier pipe specification, due to the potential for potable service pipe degradation from hydrocarbon impacted soils.

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

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

- [7] Department of Environment, Food and Rural Affairs. 2012. *Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance*. Department of Environment, Food and Rural Affairs
- [8] Communities and local Government, 2018: National Planning Policy Framework.

12.3 BRITISH STANDARDS

- [9] BS 5930:2015 Code of practice for site investigations
- [10] BS 10175:2011+A2:2017 Investigation of potentially contaminated sites - Code of practice
- [11] BS 8485:2015+A1:2019 BS 8485 - 2015 - Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings
- [12] BS 8576:2013 Guidance on investigations for ground gas. Permanent gases and Volatile Organic Compounds (VOCs)

12.4 NON STATUTORY TECHNICAL GUIDANCE**12.4.1 ENVIRONMENT AGENCY**

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

12.4.2 CIRIA PUBLICATIONS

- [14] 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
- [15] Mallett, H., Cox, L., Wilson, S. and ,Corban M... 2014, *C 735 Good practice on the testing and verification of protection systems for buildings against hazardous ground gases* London: Construction Industry Research and Information Association

12.4.3 CL:AIRE

- [16] Card G, Wilson S, Mortimer S. 2012. *A Pragmatic Approach to Ground Gas Risk Assessment. CL:AIRE Research Bulletin RB17.* CL:AIRE, London, UK. ISSN 2047- 6450 (Online)

13.0 APPENDICES

APPENDIX A ENVIRONMENTAL SEARCH

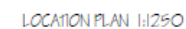
Separate Groundsure Report

APPENDIX B HISTORICAL MAPPING

Separate Map Packs (2 No. files)

Castledine Environmental

PROPOSED AND CURRENT SITE PLANS

[illegible]

APPENDIX D

SITE PHOTOS AND LOCATIONS



Site Walkover Photos

Photo No.1: Facing east showing the eastern site access which leads off River Bank with workshop unit to left of photo



Address: Land off Riverbank & Cradge Bank, Spalding

Client: Ms. A. R. Bates

Photo No.2: Facing west from the site access off River Bank showing construction materials storage and workshop (right)





Site Walkover Photos

Photo No.3: Facing east showing the large garage door of the workshop leading off River Bank east of site



Address: Land off Riverbank & Cradge Bank, Spalding

Client: Ms. A. R. Bates

Photo No.4: Facing west showing interior of the workshop, vehicle storage and miscellaneous tools and materials storage





Site Walkover Photos

Photo No.5: Facing west from just SW of the workshop showing further construction materials storage



Address: Land off Riverbank & Cradge Bank, Spalding

Client: Ms. A. R. Bates

Photo No.6: Facing NW showing a storage area on the western face of the workshop structure





Site Walkover Photos

Photo No.7: Small gardened area noted centrally on site, adj, to the southern boundary of stie



Address: Land off Riverbank & Cradge Bank, Spalding
Client: Ms. A. R. Bates

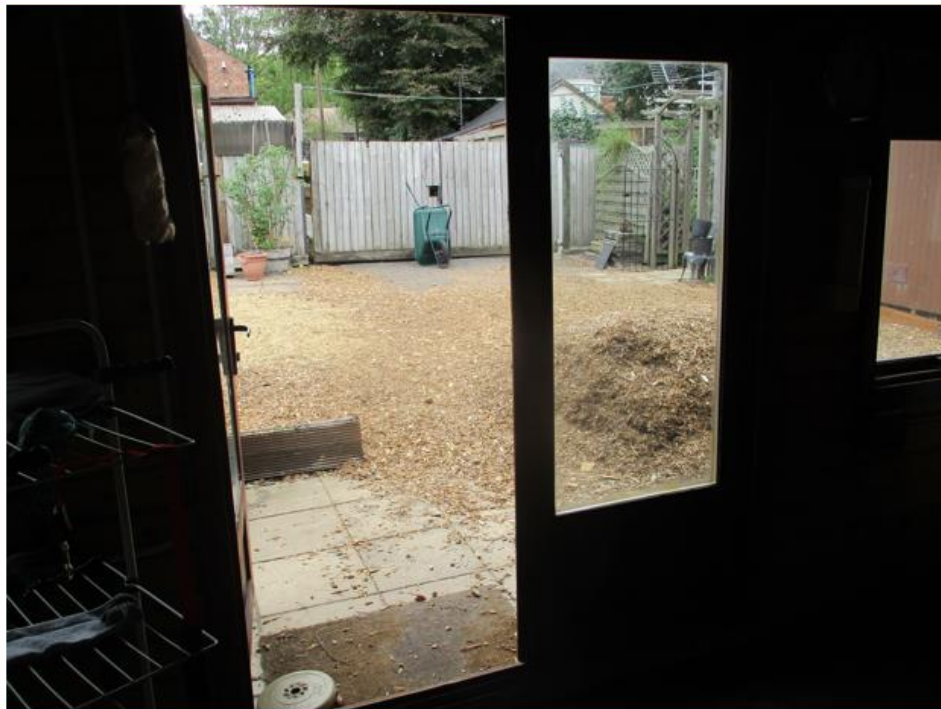
Photo No.8: Facing west from the eastern extent of the hydrotherapy structure with pool noted within





Site Walkover Photos

Photo No.9: Facing east from inside the eastern extent of the pool structure showing small, centrally located open area



Address: Land off Riverbank & Cradge Bank, Spalding

Client: Ms. A. R. Bates

Photo No.10: facing west in the western extent of site showing gated site access leading east off Cradge Bank



Site Walkover Photos

Photo No.11: Facing slightly SE in the western extent of site showing lean-to and vehicle storage (dwelling to rear of photo)



Address: Land off Riverbank & Cradge Bank, Spalding
Client: Ms. A. R. Bates

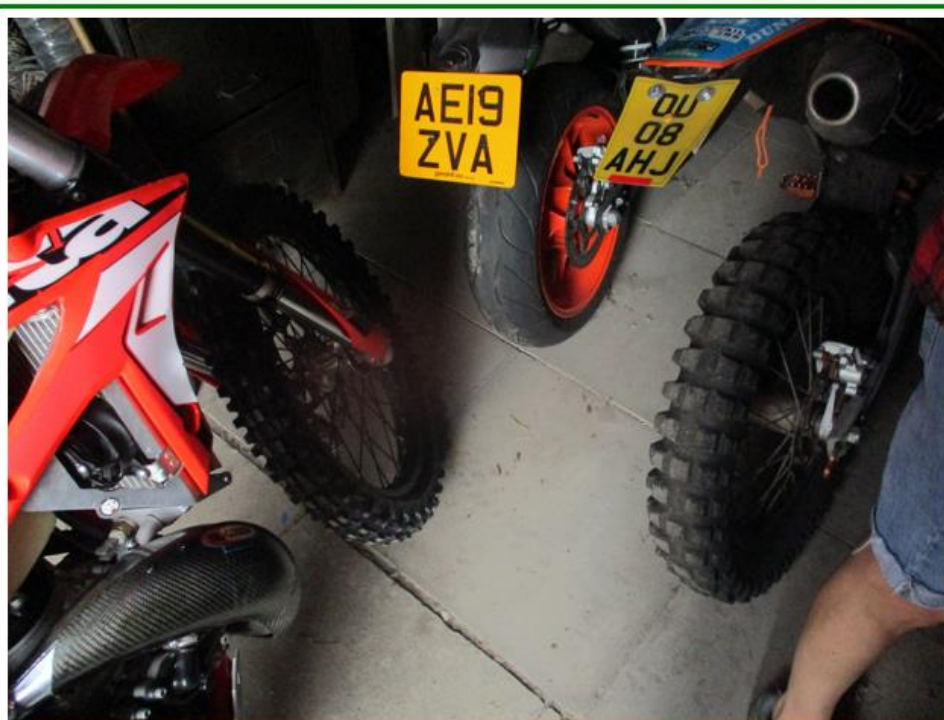
Photo No.12: Facing east from the western site access showing parking area, dwelling to rear of parking area





Site Walkover Photos

Photo No.13: Example shot of the interior of a bike-storage shed located in the NW corner of site (paving flooring)



Address: Land off Riverbank & Cradge Bank, Spalding

Client: Ms. A. R. Bates

Photo No.14: Gas bottle storage and small garden area noted on the eastern face of the dwelling on site



Castledine Environmental, 4 Wymeswold Road, Hoton, Loughborough, Leicestershire. LE12 5SN

Telephone: 01509 880399

Mobile: 07779 305682

kevin@castledineenvironmental.co.uk

APPENDIX E**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.

APPENDIX F

DISCOVERY STRATEGY

