



Phase I Geoenvironmental Assessment

Land at The Common

Little Blakenham

Ipswich

Suffolk IP8 4JX

Mr and Mrs J. Knott c/o Wincer Kievenaar Architects Ltd

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Title Phase I Geoenvironmental Assessment, The Common, Little Blakenham

Prepared for Mr and Mrs J. Knott
118 Belvedere Road,
Ipswich,
IP4 4AD

Wincer Kievenaar Architects Ltd
Market Place
Hadleigh
Ipswich
IP7 5DN

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Prepared by Green Earth Management Company Limited
Suite 3 Broomfield Park
Coggeshall Road
Earls Colne
Essex CO6 2JX

	Name	Signature	Date
Author:	D Macmorland	<i>D Macmorland</i>	23 rd June 2023
Reviewer:	C. Unsworth	<i>C Unsworth</i>	23 rd June 2023
Authorised by:	D. Robson	<i>D Robson</i>	23 rd June 2023

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY	
Project Details and Development Proposed	Green Earth Management Company (GEMCO) Ltd were commissioned by Wincer Kievenaar Architects Ltd on behalf of Mr and Mrs J. Knott (the Client) to undertake a Phase I Geoenvironmental Assessment at The Common, Little Blakenham, to support a planning application for a Class Q conversion of a barn into a dwelling.
Site Location	The Site was located to the east of Bramford Road (B1113), Little Blakenham, Ipswich, Suffolk IP8 4JX, British National Grid (BNG) reference 612161, 248781.
Site Walkover Description	The Site comprised a roughly T-shaped parcel consisting of a wood and metal barn/workshop plus a small area of hardstanding. The structure contained various materials and tools associated with a workshop, and the surrounding area contained various chemicals, materials (including ACMs), wastes and machinery.
Site History	Aside from the workshop built in c.1996, little development has occurred since the 1800s. The surrounding area has seen various residential and commercial developments, plus extraction and landfill sites.
Published Geology, Hydrogeology and Hydrology	<p>Superficial: Alluvium (Secondary 'A' Aquifer), with River Terrace Deposits nearby; Bedrock: Newhaven Chalk Formation (Principal Aquifer).</p> <ul style="list-style-type: none"> • The Site is within a Source Protection Zone (SPZ) III – Total Catchment. • Numerous surface waters are present in both the immediate surrounding area and wider area (ponds, rivers and lakes).
Environmental Database Searches	No environmental permits, pollution incidents and registers are noted within 1km which are likely to present a significant risk to the Site. Sand/gravel and chalk pits have been noted in the surrounding area along with landfill sites. The Site is within surface water and groundwater NVZs as well as an area of potentially naturally elevated levels of Arsenic, Chromium and Nickel.
Preliminary CSM and Risk Assessment Conclusions	<p>On/Off-Site: Site Use (Workshop) (PPL A), Agricultural Activities (PPL B), Construction & Demolition Activities (PPL C); and Off-Site: Quarrying/ Landfilling (PPL D) Commercial/ Light Industrial Sites (PPL E). Risks are generally considered Low, however Moderate/Low risks have been identified in relation to PPL A due to the materials encountered on- and off-site.</p>
Recommendations	<p>On the basis of the findings of Phase I Geoenvironmental Assessment it is considered that the Site would likely be suitable for the proposed residential end use, subject to the following recommendations (see Section 5.3 in full):</p> <ul style="list-style-type: none"> • Sampling and testing of near-surface soils and surface waters is recommended in order to assess the contamination conditions; • Testing/investigation is also recommended in any areas where hardstanding is to be removed, as well as in areas of proposed gardens/soft landscaping; • An HSG264 asbestos survey is recommended prior to the demolition/refurbishment of any building; • Concrete slabs and ground conditions may require assessment by a geotechnical/structural engineer for suitability for the proposed loads; and • A Discovery Strategy should be implemented during development works.
<p><i>This Executive Summary only provides a summary of the Site data and its assessment. It does not provide a definitive environmental analysis and is for guidance purposes only. It is recommended that the reader reviews the reporting its entirety and any material referenced therein.</i></p>	

ACRONYMS AND ABBREVIATIONS

Acronym / Abbreviation	Definition
ACM or PACM	Asbestos or Potentially Asbestos Containing Material
ADE	Average Daily Exposure
ASPT	Average Score Per Taxon
BOD	Biochemical Oxygen Demand
BGS	British Geological Survey
BH	Borehole
BS	British Standard
BTEX	Benzene, Toluene, Ethyl Benzene and Xylenes
CAT	Cable Avoidance Tool
CIRIA	Construction Industry Research and Information Association
CLEA	Contaminated Land Exposure Assessment
CLR	Contaminated Land Research Reports
Defra	Department of the Environment, Food and Rural Affairs (formerly the DoE and DETR)
DETR	Department of the Environment, Transport and the Regions (formerly the DoE and now Defra)
DO	Dissolved Oxygen
DoE	Department of the Environment (then DETR and later Defra)
DQRA	Detailed Quantitative Risk Assessment (Tier 2)
EA	Environment Agency
EPH	Extractable Petroleum Hydrocarbons
EQI	Environmental Quality Index
EQS	Environmental Quality Standards
FID	Flame Ionisation Detector
GAC	Generic Assessment Criteria
GC	Gas Chromatography
GEMCO	Green Earth Management Co Ltd
GQA	General Quality Assessment
GQRA	Generic quantitative risk assessment (Tier 1)
ha	Hectare
HCV	Health Criteria Value
HHRA	Human Health Risk Assessment
ICRCL	Interdepartmental Committee on the Redevelopment of Contaminated Land
ID	Index Dose
LEL	Lower Explosive Limit
LOD	Limit Of Detection
m	Metres
mAOD	Metres Above Ordnance Datum
mbgl	Metres Below Ground Level
MCERTS	Monitoring Certification Scheme
MDI	Mean Daily Intake
MTBE	Methyl Tertiary Butyl Ether
NGR	National Grid Reference
NHBC	National House Building Council

Acronym / Abbreviation	Definition
NRA	National Rivers Authority (now the Environment Agency)
PAH	Polyaromatic Hydrocarbon (a.k.a. polynuclear aromatic hydrocarbon)
pH	A measure of the acidity or basicity of an aqueous solution. Defined as the negative logarithm of the concentration of hydrogen ions in a substance
PID	Photo Ionisation Detector
PPE	Personal Protective Equipment
RBCA	Risk-Based Contamination Assessment
RMS	Remediation Method Statement
RQO	River Quality Objective
S4UL	Suitable for Use Level
SGV	Soil Guideline Value
SNIFFER	Scotland and Northern Ireland Forum for Environmental Research
SPT	Standard Penetration Test
SSTL	Site-Specific Target Level
SVOC	Semi Volatile Organic Compounds
QRA	Quantitative Risk Assessment
TDI	Tolerable Daily Intake
TDSI	Tolerable Daily Soil Intake
TP	Trial Pit
TPH	Total Petroleum Hydrocarbon
TPHCWG	Total Petroleum Hydrocarbon Criteria Working Group
TOX	CLR 9 Toxicological Reports
UKAS	United Kingdom Accreditation Service
USEPA	United States Environmental Protection Agency
UXO/UXB	Unexploded Ordnance/Bomb
VOC (TVOC)	Volatile Organic Compounds (Total VOC)
WHO	World Health Organisation
WQS	Water Quality Standards
WS	Window Sample

1. INTRODUCTION

1.1. Project Details and Development Proposal

Green Earth Management Company (GEMCO) Ltd were commissioned by Wincer Kievenaar Architects Ltd on behalf of Mr and Mrs J. Knott (the Client) to undertake a Phase I Geoenvironmental Assessment for a parcel of land at The Common, Little Blakenham, Ipswich, Suffolk (Figure 1).

The Phase I Geoenvironmental Assessment (the Report/the Assessment) was required to assess the suitability of the Site/support a planning application for a proposed residential redevelopment, comprising a Class-Q conversion of a barn situated within the Site area.

1.2. Objectives and Scope of Work

The objectives of this Geoenvironmental Assessment were to:

- Review the environmental setting of the Site and surrounding area in order to determine any potentially significant pollutant linkages relative to any sensitive receptors identified;
- Prepare a preliminary Conceptual Site Model (pCSM);
- Undertake an assessment of the potential risks to human health and the environment posed by the Site in its current state;
- Undertake all works in accordance with relevant statutory and local guidance as appropriate; and
- Produce a report for the Client, providing recommendations for further works if necessary.

The scope of work for the Geoenvironmental Assessment has included the following:

- A desk-based review of available information obtained from the Envirocheck report (R.1; included in Appendix 3), and other available sources of information;
- A site walkover survey;
- A Preliminary Risk Assessment (PRA) of contamination risks to human health and the environment; and provision of a preliminary Conceptual Site Model (pCSM), detailing potential pollutant linkages; and
- A summary of any recommended additional work based on the findings of the Assessment.

1.3. Methodology

The methodology of assessment applied in the production of this report is in accordance with the current industry standards and supplementary guidance as appropriate, including CLR 11/LCRM 2021, Model Procedures produced by DEFRA and the Environment Agency (EA, R.2), British Standard Code of Practice for Site Investigations BS5930:2015+A1:2020 (R.3), British Standard Code of Practice for Investigation of Potentially Contaminated Sites BS10175:2011+A2:2017 (R.4), and BS21365:2020 Conceptual Site Models for Potentially Contaminated Sites (R.5).

For the purposes of this report the word 'contamination' relates to the statutory definition of contaminated land under the Environmental Protection Act 1990 (R.6), unless otherwise stated.

A list of references used in the production of the report is included in Section 6.

1.4. Terms of Reference

This Phase I Geoenvironmental report desk study (herein referred to as the “Report” or “the Assessment”), has been prepared for Mr and Mrs J. Knott (herein referred to as the “Client”), for the purposes agreed and in general accordance with the terms and conditions set out in proposal reference ‘2240 230418 GEMCO WKP Quote Phi v1’ dated 18th April 2023 and the Agreement between Green Earth Management Co Ltd (the “Consultant”) and the Client.

Instruction to proceed was granted by email instruction on 2nd May 2023.

1.5. Report Limitations and Conditions

For the work, reliance has been placed on publicly and privately available data from the sources identified; the sources are not exhaustive, and further information relevant to the Site may be available from other sources. When using the information, it has been assumed it is correct. No attempt has been made to verify the information.

In addition to the above, GEMCO note that when investigating or developing land, it is important to recognise that sub-surface conditions may vary spatially and over time. Therefore, GEMCO cannot guarantee that conditions other than those discussed in the report do not occur elsewhere on the Site.

New information, revised practices, or changes in legislation may necessitate the re-interpretation of the report, completely or in part.

Further detail regarding report conditions is included as Appendix 1.

2. SITE DETAILS

2.1. Site Setting

The Site was situated to the east of Bramford Road (B1113) in Little Blakenham, Ipswich, Suffolk IP8 4JX, centred approximately on British National Grid (BNG) Reference 612159, 248777, as shown at Figure 1.

2.1.1. Site Description

GEMCO undertook a Site Walkover survey on the 4th May 2023 to inspect the Site and immediate surroundings. A selection of photographs taken during the visit are presented at Appendix 2, and the layout as encountered at the time, plus the locations of photos, are shown at Figure 3.

The Site was a small, roughly T-shaped parcel (area of c.0.03Ha) and, at the time of the walkover, comprised a barn surrounded by dense vegetation and trees with an area of hardstanding to the north and part of a pond to the northeast. The hardstanding area contained piles of materials including wood, plastics and metals as well as a van in poor condition.

The barn was used as a workshop and for the storage of materials, and contained various tools/electrical machinery (drills, saws etc.), gardening tools, various bottles and tins (including paint) and fabric items.

The barn was of wood and metal construction, with no visible Asbestos Containing Materials (ACMs). The roof was supported by numerous wood beams internally which were bolted into the concrete floor. The concrete slab the barn was situated on appeared to be in generally good condition, with no significant cracks visible, however the view was somewhat obscured by the contents within the barn.

2.1.2. Surrounding Area

The area immediately surrounding the Site was owned by the client (see Figure 2) and consisted of dense trees and vegetation with overgrown grass softstanding and several ponds. A boggy area was noted to the south. The following features were noted in close proximity to the Site;

- Several shed-like structures to the northeast and west and a bunker shed also noted further east. The structures to the northeast contained possible ACMs;
- Several (scrap) vehicles including vans, cars, a boat and an excavator, in various states of repair;
- One (1no.) tank, as well as a potential Underground Storage Tank (UST) slightly to the west;
- Various scrap materials including metal, wood, batteries, old tanks, and possible ACM sheets. It was understood that some of the ACM may have originated from the on-site barn/workshop structure. Some waste materials appeared to have fallen into one of the ponds/streams.

The surrounding area outside the ownership boundary consisted of residential dwellings to the west and northwest, agricultural land to the north, a fish farm and associated ponds to the east and a large lake belonging to Suffolk Water Park to the south. A train line was also noted c.250m east of the Site running north to south.

The wider area was semi-rural and consisted of agricultural land to the east and west with residential and industrial areas to the north and west, and commercial areas to the south including a water park and golf driving range/course. Little Blakenham was c.1.3km to the east and Ipswich c.6km to the northwest.

2.1.3. Topography

The topography of the Site was flat at c.12mAOD (from satellite data).

The surrounding area appeared to be higher to the east and west, giving the appearance of a small valley with the River Gipping at the centre at a low of 9mAOD, and sloping from the north to the south.

2.2. Geological Setting

British Geological Survey (BGS) online records and the Envirocheck report (Appendix 3) indicate the Site is underlain by superficial deposits of Alluvium (clay and silt). The bedrock is Newhaven Chalk Formation.

Undifferentiated River Terrace Deposits (sand and gravel, RTDU) are shown to be in close proximity to the south and west of the Site, however these are likely to have been mined. Excavation arisings were noted on-site during the walkover, which appeared to comprise granular soils consistent with RTDU.

One (1no.) BGS borehole record located c.250m east of the Site (BGS Ref: TM14NW619, R.7) in similar geology, encountered the following strata:

Lithology Description	Depth (mbgl)	SPT Blow Counts
Gravelly slightly clayey SAND	0.00 – 0.60	-
Gravelly slightly silty clayey SAND	0.60 – 1.70	N=4 (1.20m bgl)
Slightly gravelly slightly sandy SILT	1.70 – 2.50	N=3 (2.00m bgl)
PEAT	2.50 – 3.50	N=7 (3.00m bgl)
Sandy slightly clayey GRAVEL/sandy GRAVEL	3.50 – 5.00	N=15 (4.00m bgl); N=17 (5.00m bgl)

The borehole was terminated at 5.0m bgl due to blowing sand. Groundwater was struck at 4.0m bgl and rose to 3.8m bgl after 20 minutes.

2.2.1. Geological Hazards and Radon

On-site geological hazards from BGS records (locality shown on 1:50k scale ground stability maps at Appendix 3) are summarised at Table 2.2:

Geological Hazard	Hazard Potential
Collapsible Ground	No Hazard
Compressible Ground	Moderate
Ground Dissolution	Very Low
Ground Stability (Landslides)	Very Low
Running Sand	Low
Shrink-Swell Clay	Low

©NERC

With regards to Radon, the Site is in a lower probability radon area. No protective measures are necessary.

2.3. Hydrogeological Setting

The superficial Alluvium is classified as a Secondary 'A' aquifer. The Newhaven Chalk Formation bedrock is a Principal Aquifer. The groundwater vulnerability is High.

A Groundwater Vulnerability Soluble Rock Risk of Very Significant (High possibility) is also noted.

The Site is within a Source Protection Zone (SPZ) III – Total Catchment and a Drinking Water Protected Area (DWPA) but not within a Drinking Water Safeguard Zone (DWSZ).

2.4. Hydrological Setting

No surface water features are located within the Site boundary; however, the Site is surrounded by various surface waters in the immediate area, within the ownership boundary, as follows;

- One (1no.) medium-sized circular pond c.5m to the southeast;
- An elongated pond/series of ponds, or possibly a tributary of the River Gipping, just outside the site boundary (c.5m) to the northeast, which contained some scrap materials on the eastern side (see Appendix 2, Picture 16); and
- One pond c.20m to the south;

The above ponds all have various levels of green algae and vegetation within.

In the wider area, various streams/ditches/tributaries of the River Gipping were noted off Site to the east, as well as several square ponds, which may be for a possible fish farm of some description. The River Gipping is situated some 300m to the east of the Site and flows from north to south.

Suffolk Water Park and a golf course with several large lakes is located c.100m to the south.

2.4.1. Flooding

The EA Flood Map for Planning Service (R.8, Appendix 4) shows that the majority of the Site is within a Flood Zone 1 (low risk) however a small portion of the northeast of the site is within a medium-risk flood area (Flood Zone 2).

The Envirocheck report did not identify any significant flooding risk from either surface water or groundwater on-site, however a potential for groundwater flooding to occur at surface and of property situated below ground level is noted within 80m to the south and northwest, respectively.

2.5. Site History

The Site's history is reviewed to identify the past uses of the Site and surrounding area in order to evaluate any potential historical impact of the Site on the local geology, hydrogeology and hydrology, and whether such features (if present) warrant a more detailed assessment.

A summary of the site history derived from a review of historical mapping, satellite imagery, and other sources as appropriate is presented in Table 2.3:

Table 2.3. Summary of Site History.

Map Date	On/Off-Site	Description and Changes	Potential Contamination Sources
1882 (1:2,500); 1884 (1:10,560)	On-site	Site is an open parcel – possibly agricultural land. A stream is northeast of Site in similar position to present day. Vegetation and ditch/ stream are shown in the west of the Site.	Agricultural Activities
	Off-site	The site is surrounded by presumed agricultural fields, with some residential properties to the northwest (c.50m). Numerous ditches/streams are shown around the fields. Fields to the south of the site (20-100m) are shown as marshland. A railway line is shown c.250m east of Site running north to south. One (1no.) chalk pit c.800m west, one (1no.) chalk pit c.1km west, one (1no.) chalk pit c.750m east and one (1no.) chalk pit c.800m southeast. Bramford Works (chemical), brick works, lime kilns and mill c.1km southeast.	Agricultural Activities; Quarrying Activities; Construction & Demolition Activities; Industrial Activities; Railway.
1904 (1:2,500); 1905 (1:10,560)	On-site	Vegetation to west of Site no longer shown.	No additional sources
	Off-site	<i>No significant changes visible.</i>	No additional sources
1926 (1:2,500); 1927-1928 (1:10,560)	On-site	<i>No significant changes visible.</i>	No additional sources
	Off-site	Allotment gardens c.750m northeast.	Allotment Activities.
1945 ¹ (1:10,560)	On-site	<i>No significant changes visible.</i>	No additional sources
	Off-site	<i>No significant changes visible.</i>	No additional sources
1957-1958 (1:10,000)	On-site	<i>No significant changes visible.</i>	No additional sources
	Off-site	Bramford Chalk Pit c.800m southeast now disused along with some kilns.	No additional sources
1964-1965 (1:2,500)	On-site	<i>No significant changes visible.</i>	No additional sources
	Off-site	<i>No significant changes visible.</i>	No additional sources
1976-1988 (1:2,500); 1971-1977 (1:10,000)	On-site	<i>No significant changes visible.</i>	No additional sources
	Off-site	Road changes to north and northeast towards Claydon. Sand & Gravel Pit c.900m southeast.	Construction & Demolition Activities; Quarrying Activities.
1986-1989 (1:2,500); 1989 (1:10,000)	On-site	<i>No significant changes visible.</i>	No additional sources
	Off-site	Suffolk Water Park with large lake c.100m south. Sand & gravel pit c.200m southeast. Disused pit and workings c.900m southeast.	Construction & Demolition Activities; Quarrying Activities.
1994 (1:2,500)	On-site	Ditch/stream to west of the Site no longer shown (potentially infilled).	Infilling Activities.
	Off-site	<i>No significant changes visible.</i>	No additional sources

Table 2.3. Summary of Site History.

Map Date	On/Off-Site	Description and Changes	Potential Contamination Sources
1996 (1:2,500)	On-site	Structure similar to present day situated in south of Site.	Construction & Demolition Activities.
	Off-site	An area of the sand & gravel pit to the south of the Site has become part of the lake associated with Suffolk Water Park.	Quarrying Activities; Infilling Activities.
1999 ¹ ; 2000 (1:10,000)	On-site	<i>No significant changes visible.</i>	No additional sources
	Off-site	The sand and gravel pit has moved to c.600m south of the Site with the area between the pit and the Site primarily used by the large Lake along with several other lakes. The disused sand & gravel site c.900m southeast now used as a landfill site. Disused chalk pit c.750m southwest also now a landfill site.	Quarrying Activities; Landfilling Activities.
2006 (1:10,000)	On-site	<i>No significant changes visible.</i>	No additional sources
	Off-site	Twelve (12no.) ponds situated c.75m east of Site (presumed associated with present day fish farm). Construction of a warehouse c.800m northeast of Site.	Construction & Demolition Activities; Agricultural Activities (Fish farming).
2022 (1:10,000)	On-site	<i>No significant changes visible.</i>	No additional sources
	Off-site	Sand & gravel pit to south of Site now a golf course/driving range with large lakes. Further construction c.700m northeast and c.300m southwest (presumed present day nurseries).	Infilling Activities; Construction & Demolition Activities.

¹Aerial photograph(s).

3. ENVIRONMENTAL SEARCHES

3.1. Environmental Search Data

The following sections have been produced following a review of the Landmark Envirocheck environmental database search report (R.1; Appendix 3) with a search buffer of 1km, unless otherwise indicated.

3.2. Environmental Permits, Pollution Incidents and Registers

There are four (4no.) discharge consents (all for sewage) within 1km of the Site, of which the closest active consent is 404m north at Broomvale Developments Ltd with the receiving water stated as the River Gipping.

There are fifteen (15no.) water abstractions noted within 1km of the Site, of which two (2no.) were within 500m. The closest being 329m east at the River Gipping for spray irrigation. There are two (2no.) recorded pollution incidents to controlled waters within 1km of the Site, with the closest being 748m southeast involving urban runoff and identified as a Category 3 - minor incident.

Two (2no.) substantiated pollution incidents were identified with the closest 893m southwest and being registered in 2018. This provided a Category 2 (Significant Impact) to land but no impact to air or water. The pollutant was identified as inert materials and wastes (soils and clay).

No other significant permits, pollution incidents or registers were identified.

3.3. Mining, Landfilling, and Other Waste Sites

The Site is not in an area likely to be affected by coal mining - no coal mining hazard has been identified.

The wider area is known to have been subject to various chalk and sand & gravel extraction sites (opencast mines), and records of these sites are identified by the Envirocheck report between 300m-1km from the Site. In total, fourteen (14no.) BGS Recorded Mineral Sites were identified, where one (1no.) is active - Blood Hill Quarry 862m southwest of the Site. The closest identified was Broomvale Farm Pit, 319m north.

Various landfill sites are identified in the surrounding area, some of which correspond to the extraction sites noted above. The closest recorded landfill site is Blood Hill, some 610m west of the Site, which received domestic, commercial and industrial wastes. Nine (9no.) licensed waste management facilities are also identified, however the closest (Bramford Landfill) is 788m from the site to the southeast.

Other extraction sites nearby appear to have been converted into recreational lakes.

Fourteen (14no.) areas of potentially infilled land have also been identified by the Envirocheck within 1km of the Site. The closest of these is 321m north of the Site, dated 1928.

The 1:10k Site Sensitivity Map included with the Envirocheck report (Appendix 3) shows the location of the landfills/infilled land and extraction sites relative to the Site.

3.4. Current Industrial Land Use Data

There are five (5no.) active trade directory entries within 1km of the Site, however the closest (a car breakdown & recovery services) 840m to the southeast of the Site and therefore considered unlikely to affect the Site.

There are twenty-three (23no.) inactive trade directory entries within 1km of the Site. The closest being a Gum and Resin manufacturer and distributor located 367m north.

The next nearest entries are an electricity company, road haulage service and railway service all located 382m to the north. Commercial properties were noted under construction/recently constructed 350m to the southwest and 500m to the north during the Site visit.

There are no other inactive trade directory entries within 500m of the Site. The above are considered unlikely to affect the Site.

3.5. Environmentally Sensitive Areas

The Site is within Nitrate Vulnerable Zones (NVZ) for surface water (River Gipping NVZ) and groundwater (Sandlings and Chelmsford NVZ).

Estimated soil chemistry maps (Appendix 3) indicate that the Site is in an area with potentially naturally elevated levels of Arsenic (15-25mg/kg), Chromium (60-90mg/kg) and Nickel (15-30mg/kg).

3.6. Air Quality Management Areas

On the basis of data Air Quality Management Area (AQMA) maps available on the Defra website (R.9), the Site is not located within an AQMA.

3.7. Unexploded Ordnance/Bombs (UXO/UXB)

A preliminary UXO risk map, procured from Zetica UXO Ltd and presented at Appendix 5, indicates the Site is within an area of low risk from UXO.

3.8. Local Planning Authority Correspondence and Planning Records

The Local Planning Authority (LPA), Babergh and Mid Suffolk District Council were contacted in May 2023 regarding any historical contaminated land records which may be relevant to the proposed development.

In their response, presented at Appendix 6, the LPA stated that they hold no contaminated land records relevant to the Site, and the Site has not been declared as contaminated land.

The planning history of the Site and surrounding area has also been reviewed by GEMCO via a search of records held on the LPA planning portal.

No pertinent information with regards to environmental or contamination concerns were identified.

4. PRELIMINARY RISK ASSESSMENT AND CONCEPTUAL SITE MODEL

4.1. Introduction

In order to determine if land contamination is present, a tiered risk assessment process is adopted to provide a robust approach to the management of risks due to land contamination. The Risk Assessment process can be highly detailed and there are a range of factors that need to be considered in assessing risks. The adoption of a staged approach is in line with current industry legislation and guidance. There are principally three tiers applied as follows:

- Tier 1: Preliminary Risk Assessment (PRA) (generally qualitative);
- Tier 2: Generic Quantitative Risk Assessment (GQRA); and
- Tier 3: Detailed Quantitative Risk Assessment (DQRA).

The purpose of the current work is to undertake a Tier 1 Preliminary Risk Assessment.

Land is considered to be contaminated if significant plausible pollutant linkages (PPL), comprising a source, pathway, and receptor, are present. Source, pathway, and receptor can be defined as follows:

- **Source** (contaminant/pollutant) – “a substance [or range of chemically related substances] which is in or under the land and which has the potential to cause harm or pollution of controlled waters.”
- **Pathway** - One or more routes by which a receptor can be exposed to or affected by a contaminant.
- **Receptor** (target) – humans, living organisms, ecological systems, buildings, controlled waters.

Pollutant linkages are deemed significant if there is a significant potential of significant harm to a sensitive receptor being exposed to a specific contaminant(s) via an identified and active pathway.

4.2. Land Use Scenario

For the purposes of the risk assessment and production of the CSM the proposed land use scenario considered is residential with plant uptake in accordance with CLR 11/LCRM 2021, Model Procedures produced by DEFRA and the EA (R.2).

4.3. Potential Contamination Sources

The Site has seen very little development since the 1800s, when the Site was part of a field; the construction of the current building in c.1996 was the only significant change. The surrounding area was primarily agricultural, with a fish farm, various quarries/landfills, and commercial sites noted within 350-500m.

The above sources are noted due to their proximity and the migration potential of contaminants such as ground gas and organic (leachable) wastes. The migration potential may be limited by cohesive soils (alluvium) however the nearby borehole record and the presence of sand and gravel quarries suggests – plus visible arisings on-site - granular soils may be present (albeit the most significant deposits mined).

During the walkover, various workshop-related materials and equipment, plus vehicles fuel tanks and were noted on-Site and in the immediate surrounding area. Additionally, ACMs were noted within several structures (including on-site).

The potential contamination sources and contaminants identified are summarised below in Table 4.1:

Table 4.1. Potential Sources of Contamination.		
Potential Source	Plausible Potential Contaminants	Likelihood
On/Off-Site		
PPL A. Area use and Workshop-related Activities	Heavy metals, hydrocarbons (incl. TPH/PAHs, fuel, oil and grease); VOC/SVOC, paints/solvents, ground gas, asbestos	Likely
PPL B. Agricultural Activities (incl possible fish farm to east)	Heavy metals, hydrocarbons (incl. TPH/PAHs, fuel, oil and grease); VOC, organic/inorganic wastes, agrichemicals (herbicides and pesticides), pH, ground gas, asbestos.	Unlikely
PPL C. Construction & Demolition Activities	Hydrocarbons (incl. TPH/PAHs, fuel, oil and grease), inorganic compounds, asbestos, ground gas, VOC.	Likely
Off-Site		
PPL D. Quarrying and Landfilling Activities	Ground gas, organic and inorganic wastes, leachates.	Unlikely
PPL E. Commercial/ Light Industrial Sites	Heavy metals, hydrocarbons (incl. TPH/PAHs, fuel, oil and grease), VOC/SVOC, solvents, organic/inorganic wastes, pH, ground gas.	Unlikely

4.4. Potential Migration Pathways and Receptors

The following potential migration pathways have been identified with regard to the site setting, environmental conditions and the current development proposals (outlined at Section 1.1).

- Direct contact with soils; Ingestion of soil, or soil dust; Inhalation of dust or asbestos fibres;
- Leaching of contaminants; Infiltration to groundwater; Movement within the groundwater; Runoff to surface waters;
- Outdoor inhalation of ground gas and/or vapours;
- Ingress of vapours/gases into buildings; Indoor inhalation of vapours/gases, or explosion;
- Contact with building material/ services; Leaching of contaminants into service trenches; and
- Direct contact with soil/uptake by flora and fauna.

The following sensitive receptors have been identified:

- Human Health (Future Site Users, Site Neighbours/General Public, Construction Workers);
- Controlled Waters: Aquifers (Secondary 'A' and Principal), Off-site surface waters (rivers/lakes);
- Future Buildings, Building Materials and Buried Services;
- Ecological receptors.

4.5. Preliminary Conceptual Site Model

The potentially significant pollutant (source-pathway-receptor) linkages (PPL) that are applicable to the site are summarised in Table 4.2 below:

Table 4.2. Preliminary Conceptual Site Model.				
Source(s)	Pathway(s)	Receptor(s)	Risk ¹	Justification for Risk / Comment
On/Off-Site				
PPL A Area use and Workshop-related Activities (Heavy metals, hydrocarbons (incl. TPH/PAHs, fuel, oil and grease); VOC, ground gas, asbestos)	1. Direct contact with soils; Ingestion of soil, or soil dust; Inhalation of dust, or asbestos fibres	a. Future Site Users	PPL A-1-a Moderate/Low	Potential for spills/residues resulting from the use of the site as a workshop and storage of scrap materials - which includes metal, wood, old fuel tanks, paints/solvents and ACMs. Pathway potentially limited by hardstanding, which appeared to be in reasonable condition. Soil testing would be prudent around the Site, and if/where hardstanding is to be removed (e.g., gardens) and after any clearance works.
		b. Site Neighbours/ General Public	PPL A-1-b Low	As above however unlikely to affect site neighbours due to the distances involved and lack of pathway.
		c. Construction Workers	PPL A-1-c Very Low	Assuming appropriate PPE and standard working practices in place for construction workers.
	2. Leaching of contaminants; Infiltration to and movement within the groundwater; Runoff to surface waters	a. Principal/ Secondary 'A' Aquifers	PPL A-2-a Moderate/Low	Unlikely to be a significant source, however potential contaminants (e.g., hydrocarbons) would be mobile with a pathway to the aquifer (high vulnerability)
		b. Off-Site Surface Waters	PPL A-2-b Moderate/Low	Potential for mobile contaminants and close proximity to potentially sensitive surface water receptors. Some surface waters appear to have been contaminated by materials which have fallen in.
	3. Outdoor inhalation of ground gas and/or vapours	a. Future Site Users	PPL A-3-a Very Low	Limited potential for significant gas generating materials with potential to affect human health outdoors.
		b. Site Neighbours/ General Public	PPL A-3-b Very Low	As above, plus unlikely to affect site neighbours due to the distances involved.
		c. Construction Workers	PPL A-3-c Very Low	Assuming appropriate PPE and standard working practices in place for construction workers.

Table 4.2. Preliminary Conceptual Site Model.				
Source(s)	Pathway(s)	Receptor(s)	Risk ¹	Justification for Risk / Comment
	4. Ingress of vapours/ gases into buildings; Inhalation of vapours/ gases (indoor) or explosion	a. Future Site Users	PPL A-4-a Low	Potential for localised hydrocarbons. Migration into the structure will likely be limited by the concrete slab. Further assessment would be needed if the slab is removed from the building footprint.
		b. Site Neighbours/ General Public	PPL A-4-b Low	As above, however migration is likely limited, and no likely receptors in the immediate vicinity of the Site.
		c. Future Buildings	PPL A-4-c Low	As PPL A-4-a.
		d. Construction Workers	PPL A-4-d Very Low	As above, and assuming appropriate PPE and standard working practices.
	5. Contact with building materials/ services; Leaching into service trenches	a. Buried Services and Building Materials	PPL A-5-a Moderate/ Low	Potential for contaminative materials/hydrocarbon residues which may affect building/service materials.
	6. Direct contact with soils/ uptake by flora and fauna	a. Ecological Receptors	PPL A-6-a Low	Some potential (low) for residues which could affect plants, however no evidence and consequences are minor
PPL B Agricultural Activities (incl possible fish farm to east) (Heavy metals, hydrocarbons (incl. TPH/PAHs, fuel, oil and grease); VOC, organic/inorganic)	1. Direct contact with soils; Ingestion of soil, or soil dust; Inhalation of dust, or asbestos fibres	a. Future Site Users	PPL B-1-a Low	Likelihood of significant contamination is considered low, however potential for buried agricultural/organic wastes is noted.
		b. Site Neighbours/ General Public	PPL B-1-b Very Low	As above, however migration is likely limited, and no likely receptors in the immediate vicinity of the Site.
		c. Construction Workers	PPL B-1-c Very Low	Assuming appropriate PPE and standard working practices in place for construction workers.
	2. Leaching of contaminants; Infiltration to and movement within the groundwater; Runoff to surface waters	a. Principal/Secondary 'A' Aquifers	PPL B-2-a Low	Low likelihood of significant contamination.
		b. Off-Site Surface Waters	PPL B-2-b Low	Low likelihood of significant contamination, however proximity to ponds/possible tributaries of the River Gipping plus the fish farm are nearby to the east, and Suffolk Water Park (to the south) is noted.

Table 4.2. Preliminary Conceptual Site Model.				
Source(s)	Pathway(s)	Receptor(s)	Risk¹	Justification for Risk / Comment
wastes, agrichemicals (herbicides and pesticides), pH, ground gas, asbestos).	3. Outdoor inhalation of ground gas and/or vapours	a. Future Site Users	PPL B-3-a Very Low	Limited potential for significant quantities of gas generating materials with potential to affect human health outdoors.
		b. Site Neighbours/ General Public	PPL B-3-b Very Low	As above.
		c. Construction Workers	PPL B-3-c Very Low	As PPL A-3-a assuming appropriate PPE and standard working practices.
	4. Ingress of vapours/ gases into buildings; Inhalation of vapours/ gases (indoor) or explosion	a. Future Site Users	PPL B-4-a Low	Potential for organic wastes, plus localised hydrocarbons - however, migration likely limited due to the concrete slab and cohesive superficial soils. Further assessment would be needed if the slab is removed from the building footprint.
		b. Site Neighbours/ General Public	PPL B-4-b Very Low	As above, however migration is likely limited, and no likely receptors in the immediate vicinity of the Site.
		c. Future Buildings	PPL B-4-c Low	As PPL B-4-a.
		d. Construction Workers	PPL B-4-d Very Low	Assuming appropriate PPE and standard working practices in place for construction workers.
	5. Contact with building materials/ services; Leaching into service trenches	a. Buried Services and Building Materials	PPL B-5-a Low	Potential (albeit low) for contamination which could affect buried services. Sampling may be prudent to assess appropriate material selection for buried services.
	6. Direct contact with soils/ uptake by flora and fauna	a. Ecological Receptors	PPL B-6-a Very Low	Some potential (low) for residues which could affect plants, however no evidence and consequences are minor.
	PPL C	1. Direct contact with soils; Ingestion of soil, or soil dust;	a. Future Site Users	PPL C-1-a Low

Table 4.2. Preliminary Conceptual Site Model.				
Source(s)	Pathway(s)	Receptor(s)	Risk¹	Justification for Risk / Comment
Construction & Demolition Activities (including potential infilled ground) (Hydrocarbons (incl. TPH/PAHs, fuel, oil and grease), inorganic compounds, asbestos, ground gas, VOC).	Inhalation of dust, or asbestos fibres	b. Site Neighbours/ General Public	PPL C-1-b Very Low	Limited solubility of likely contaminants plus migration limited by hardstanding and cohesive soils. No likely receptor.
		c. Construction Workers	PPL C-1-c Very Low	Assuming appropriate PPE and standard working practices in place for construction workers.
	2. Leaching of contaminants; Infiltration to and movement within the groundwater; Runoff to surface waters	a. Principal/ Secondary 'A' Aquifers	PPL C-2-a Low	Generally unlikely and materials would be of limited solubility.
		b. Off-Site Surface Waters	PPL C-2-b Low	As above.
	3. Outdoor inhalation of ground gas and/or vapours	a. Future Site Users	PPL C-3-a Low	Limited potential for significant quantities of gas generating materials with potential to affect human health outdoors.
		b. Site Neighbours/ General Public	PPL C-3-b Low	As above.
		c. Construction Workers	PPL C-3-c Very Low	As above, assuming appropriate PPE and standard working practices in place for construction workers.
	4. Ingress of vapours/ gases into buildings; Inhalation of vapours/ gases (indoor) or explosion	a. Future Site Users	PPL C-4-a Low	Potential for infill materials but pathway likely broken by concrete slab. Further assessment would be needed if the slab is removed.
		b. Site Neighbours/ General Public	PPL C-4-b Very Low	As above, plus limited migration due to concrete hardstanding, and no likely receptors in the vicinity of the Site
		c. Future Buildings	PPL C-4-c Low	As PPL B-4-a.
		d. Construction Workers	PPL C-4-d Very Low	Assuming appropriate PPE and standard working practices in place for construction workers.
	5. Contact with building materials/ services; Leaching into services trenches	a. Buried Services and Building Materials	PPL C-5-a Low	Limited potential for contamination which would affect service and/or building materials.

Table 4.2. Preliminary Conceptual Site Model.				
Source(s)	Pathway(s)	Receptor(s)	Risk ¹	Justification for Risk / Comment
	6. Direct contact with soils/ uptake by flora and fauna	a. Ecological Receptors	PPL C-6-a Low	Limited potential for contamination/residues which could affect plants. No evidence of plant stress observed.
Off-Site				
PPL D Mining/Quarrying and Landfilling Activities (Ground gas, organic and inorganic wastes, leachates).	1. Direct contact with soils; Ingestion of soil, or soil dust; Inhalation of dust, or asbestos fibres	a. Future Site Users	PPL D-1-a Low	Low likelihood of significant contamination and migration to the Site.
		b. Construction Workers	PPL D-1-b Very Low	As above, assuming appropriate PPE and standard working practices in place for construction workers.
	2. Leaching of contaminants; Infiltration to and movement within the groundwater.	a. Principal/Secondary 'A' Aquifers	PPL D-2-a Low	Low likelihood of significant contamination and migration to the Site.
	3. Outdoor inhalation of ground gas and/or vapours	a. Future Site Users	PPL D-3-a Very Low	Limited potential for significant migration of any gas generation to the Site, nor in volumes which might affect humans outdoors.
		b. Construction Workers	PPL D-3-b Very Low	As above, assuming appropriate PPE and standard working practices in place for construction workers.
	4. Ingress of vapours/ gases into buildings; Inhalation of vapours/ gases (indoor) or explosion	a. Future Site Users	PPL D-4-a Low	Limited potential for gas migration to the Site due to distance (closest c.577m west) and pathway may be broken by Bramford Road.
		b. Future Buildings	PPL D-4-b Low	As PPL D-4-a.
		c. Construction Workers	PPL D-4-b Very Low	As above, assuming appropriate PPE and standard working practices in place for construction workers.
	5. Contact with building materials/ services; Leaching into services trenches.	a. Buried Services and Building Materials	PPL D-5-a Low	Limited potential for contamination which would affect service and/or building materials.

Table 4.2. Preliminary Conceptual Site Model.				
Source(s)	Pathway(s)	Receptor(s)	Risk ¹	Justification for Risk / Comment
	6. Direct contact with soils/ uptake by flora and fauna	a. Ecological Receptors	PPL D-6-a Low	Limited potential for contamination which would affect ecological receptors.
PPL E Commercial/ Light Industrial Sites (Heavy metals, hydrocarbons (incl. TPH/PAHs, fuel, oil and grease), VOC/SVOC, solvents, organic/inorganic wastes, pH, ground gas)	1. Direct contact with soils; Ingestion of soil, or soil dust; Inhalation of dust, or asbestos fibres	a. Future Site Users	PPL E-1-a Low	Potential for contamination up-gradient which would migrate towards the Site, however likelihood is considered very low.
		b. Construction Workers	PPL E-1-b Very Low	As above, assuming appropriate PPE and standard working practices in place for construction workers.
	2. Leaching of contaminants; Infiltration to and movement within the groundwater.	a. Principal/Secondary 'A' Aquifers	PPL E-2-a Low	Potential for contamination upstream/gradient which would migrate towards the Site, however likelihood is considered very low.
	3. Outdoor inhalation of ground gas and/or vapours	a. Future Site Users	PPL E-3-a Very Low	Limited potential for significant gas generation to affect the Site or humans outdoors.
		b. Construction Workers	PPL E-3-b Very Low	As above, assuming appropriate PPE and standard working practices in place for construction workers.
	4. Ingress of vapours/ gases into buildings; Inhalation of vapours/ gases (indoor) or explosion	a. Future Site Users	PPL E-4-a Very Low	Limited potential for significant migration of any gas generation to the Site.
		b. Future Buildings	PPL E-4-b Very Low	As PPL E-4-a.
		c. Construction Workers	PPL E-4-c Very Low	As above, assuming appropriate PPE and standard working practices in place for construction workers.
	5. Contact with building materials/ services; Leaching into services trenches	a. Buried Services and Building Materials	PPL E-5-a Very Low	Limited potential for contamination which would affect service and/or building materials.
	6. Direct contact with soils/ uptake by flora and fauna	a. Ecological Receptors	PPL E-6-a Very Low	Limited potential for contamination which would affect ecological receptors.

¹The risk rating given in the table above is based on classification of consequence and the probability of occurrence; further details are described in Appendix 1.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Summary of Site Walkover and Desk Study Information

The Site was a T-shaped area which comprised a barn/workshop with an area of hardstanding to the north. The barn was of wood and metal construction and situated on a concrete pad/slab. Inside, the structure contained various materials and tools associated with a workshop.

The Site was situated within a parcel of grass softstanding (same ownership boundary) with numerous trees, overgrown vegetation, and several ponds. Various waste materials (including ACMs), fuels, batteries and broken cars/vans were noted in close proximity to the Site. The Site/parcel was surrounded by agricultural land and sporadic residential dwellings, with commercial properties present in the wider area to the north and west and Suffolk Water Park to the south.

Aside from the workshop built in c.1996, little development has occurred since the 1800s. The surrounding area has seen various residential and commercial developments, plus extraction and landfill sites.

5.1.1. Geology, Hydrogeology and Hydrology

The Site is underlain by superficial deposits of Alluvium (clay and silt) which overlies Newhaven Chalk Formation bedrock. Superficial River Terrace Deposits are noted nearby. The Alluvium is a Secondary 'A' aquifer, whereas the Newhaven Chalk is a Principal Aquifer of high vulnerability. The Site is in a SPZ III.

Various surface waters are present partially on-site and in the surrounding parcel, which included ponds and possible tributaries of the River Gipping. In the wider area, several ponds were noted at a fish farm neighbouring to the east, plus lakes to the south at Suffolk Water Park. The Site is within a Flood Zone 2.

5.1.2. Environmental Searches

Various environmental permits, pollution incidents and registers are noted within 1km of the Site, however due to the distances involved, these are not considered likely to present a significant contamination risk. Sand/gravel and chalk pits have been noted in the surrounding area along with landfill sites.

The Site and surrounding areas are within surface water and groundwater NVZs. The Site is also in an area of potentially naturally elevated levels of Arsenic, Chromium and Nickel.

5.2. Summary of Preliminary Conceptual Site Model and Conclusions

Considering the above-mentioned records and site history, the Risk Assessment and preliminary Conceptual Site Model identified the following potential sources of contamination:

On/Off-Site: Site Use (Workshop) (PPL A), Agricultural Activities (PPL B), Construction & Demolition Activities (PPL C); and

Off-Site: Quarrying and Landfilling Activities (PPL D) and Commercial/ Light Industrial Sites (PPL E).

Moderate/Low risks have been identified in relation to the current/historical use of the Site (PPL A) due to the materials/wastes encountered. The primary potential receptors are human health, controlled waters and building/service materials. The risks from all other PPLs are considered to be Low. The risk ratings are based in part on the basis of the concrete hardstanding being retained.

5.3. Recommendations

On the basis of the findings of Phase I Geoenvironmental Assessment it is considered that the Site would likely be suitable for the proposed residential end use, subject to the following recommendations:

- Provided the concrete slab under the structure is to be retained, the risk to the proposed development is considered to be generally low as the hardstanding appears to be in reasonable condition and will likely break any potential migration route for contamination. Shallow sampling and testing of near-surface soils and surface waters is nonetheless recommended in the area surrounding the structure order to assess the contamination conditions due to the scrap materials/wastes encountered at the Site in potentially significant quantities;
- If the concrete is to be removed, or removed and replaced, then further assessment and Site Investigation (including soil sampling) may be prudent within the building footprint for contamination and geotechnical purposes prior to any new concrete being laid;
- It is also considered prudent to undertake sampling of soils where areas of garden/soft landscaping are to be created - to assess the contamination conditions and the suitability of soils with regards to human health and risks to buried service materials;
- The above testing is recommended following removal/clearance works of the various materials and wastes around the Site;
- An HSG 264 Refurbishment and Demolition Asbestos Survey is recommended prior to any demolition/construction works at the Site. Additionally, a suitably qualified demolition contractor must be used for the demolition/removal of any asbestos products;
- The concrete slabs (if retained) and ground conditions may require additional assessment by a geotechnical/structural engineer to ensure suitability for the proposed loads, noting the influence of nearby trees; and
- A Discovery Strategy (Section 5.4) should be established for the construction works in order to appropriately manage/contain contamination if it is encountered during the works.

5.4. Discovery Strategy

A Discovery Strategy should be in place during construction works to account for the possibility of currently unidentified, undiscovered or otherwise unexpected or exceptional contamination. This is considered reasonably likely given the site's history and condition.

Such strategy must include a watching brief for any evidence (visual or olfactory) of contamination, maintained throughout the development works. If evidence of unexpected materials is identified work in the vicinity of the suspected contamination should be halted, pending inspection and, if required, further investigation and sampling of any suspect materials by a representative of GEMCO or other qualified environmental consultant at the earliest possible convenience. The Local Authority should also be informed. Any remediation measures required should be agreed with and implemented to the satisfaction of the Local Authority and Building Warranty Provider.

5.5. Regulatory Liaison

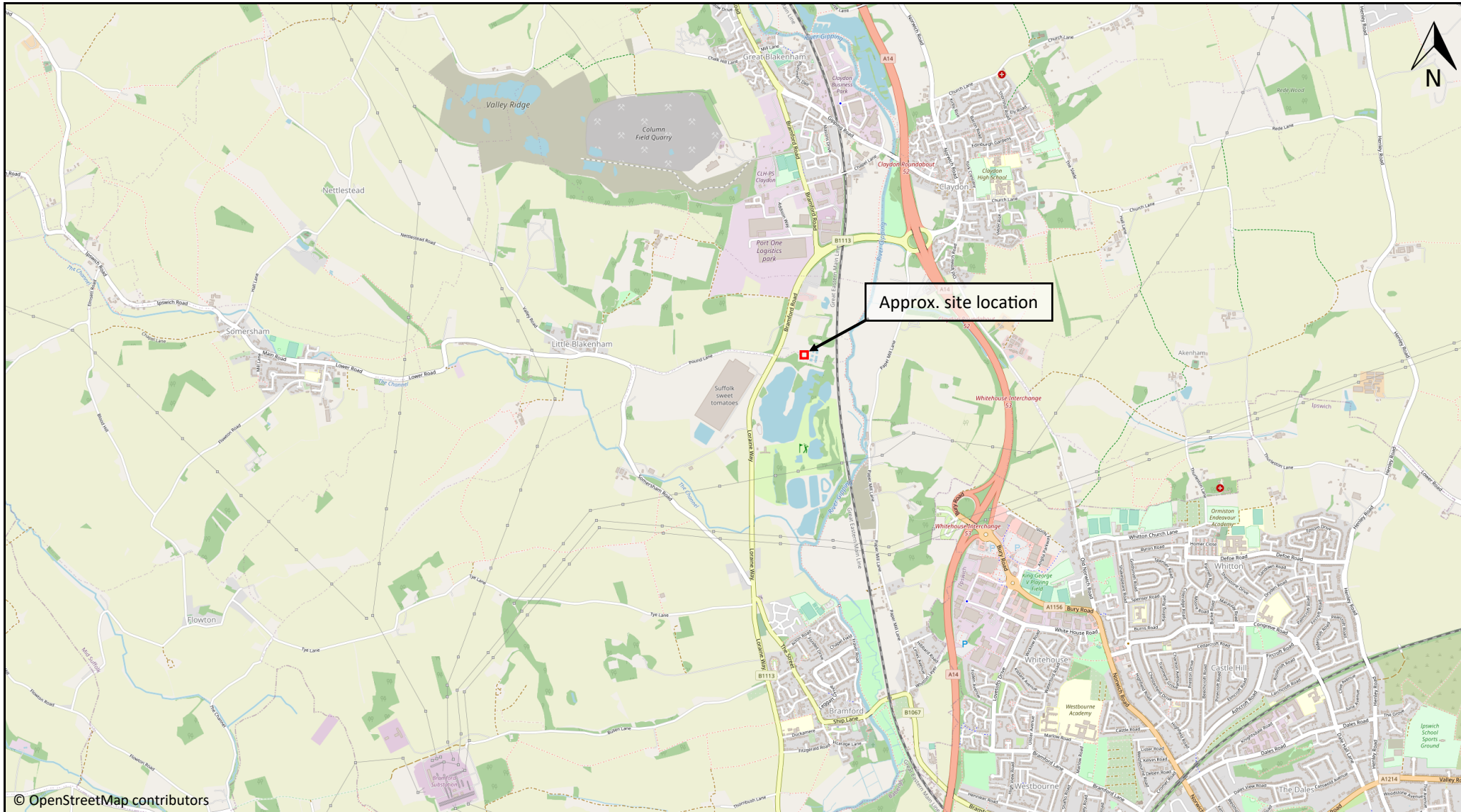
If a planning application is put forward concerning the Site, a copy of this report should be forwarded to the Local Planning Authority in support of the relevant planning application or discharge of the relevant planning conditions.

6. REFERENCES

- R.1. Landmark Envirocheck Report. Ref. 311608665_1_1, May 2023 (included as Appendix 3);
- R.2. Environment Agency (EA), Land Contamination Risk Management (LCRM), Published October 2020, Last updated April 2021;
- R.3. British Standard, Code of Practice for Site Investigations BS5930:2015+A1:2020;
- R.4. British Standard, Code of Practice for Investigation of Potentially Contaminated sites BS10175:2011+A2:2017;
- R.5. British Standards Publication BS EN ISO 21365:2020 Soil quality - Conceptual Site Models for Potentially Contaminated Sites;
- R.6. Environmental Protection Act 1990: Part IIA, Contaminated Land Statutory Guidance, April 2012;
- R.7. British Geological Society (BGS) Borehole records, reference Bramford WS2001, TM14NW619, https://webservices.bgs.ac.uk/GWBV/viewborehole?loca_id=202109221759102110;
- R.8. Environment Agency: Flood map for planning (2023) <https://flood-map-for-planning.service.gov.uk/>;
- R.9. Department of Environment, Food and Rural Affairs (DEFRA) Air Quality Management Area (AQMA) maps - <https://uk-air.defra.gov.uk/aqma/maps>.


Figure 1

Site Location Plan



© OpenStreetMap contributors

Site:	Land at The Common	Date:	Jun 2023
Address:	Bramford Road, Little Blakenham, Ipswich	Scale:	Not to Scale
Post Code:	IP8 4JX	Drawing:	Figure 1
Grid Ref:	612161, 248781	Drawn by:	DM
Title:	Site Location Plan	Checked by:	CU
Client:	Mr and Mrs Knott (c/o Wincer Kievenaar)	Project No:	2240 R01 Issue 1

Legend:
 Approx. Site Location / Boundary



 REMEDIATION SPECIALISTS

Green Earth Management Co Ltd
 Broomfield Park
 Coggeshall Road
 Essex CO6 2JX
 Tel: 01245 206129
www.gemcoltd.co.uk

Figure 2

Proposed Development Plan



Plan provided by Client (Ref. 5482_PA_02 PROPOSED BLOCK PLAN)


Site: Land at The Common	Date: Jun 2023	Legend: [Red dashed line] Approx. Site Boundary	 REMEDICATION SPECIALISTS Green Earth Management Co Ltd Broomfield Park Coggeshall Road Essex CO6 2JX Tel: 01245 206129 www.gemcoltd.co.uk
Address: Bramford Road, Little Blakenham, Ipswich	Scale: Not to Scale		
Post Code: IP8 4JX	Drawing: Figure 2		
Grid Ref: 612161, 248781	Drawn by: DM		
Title: Proposed Development Plan	Checked by: CU		
Client: Mr & Mrs Knott (c/o Wincer Kievenaar)	Project No: 2240 R01 Issue 1		

Figure 3

Site Layout Plan



= Appendix 2: Photocard number, approx. location and view orientation
Plan provided by Client (Ref. 5482 SU_03A Site Location Plan)



 REMEDIATION SPECIALISTS

 Green Earth Management Co Ltd

 Broomfield Park

 Coggeshall Road

 Essex CO6 2JX

 Tel: 01245 206129

 www.gemcoltd.co.uk

Appendix 1

Report Conditions

Geoenvironmental Site Investigation

This report is produced solely for the benefits of the named Client and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.

The report refers, within the limitations of the stated, to the condition of the Site at the time of the inspections. No warranty is given as to the possibility of the future changes of the Site.

The report is based on a visual site inspection, reference to accessible referenced historical records, the physical investigation as detailed, information supplied by those parties referenced in the text, and preliminary discussions with local and statutory authorities. Some of the opinions are based on unconfirmed data and information and are presented as the best that can be obtained without further extensive research. The test results available can only be regarded as a limited but likely representative sample assessed against current guidelines. The impact of our assessment on other aspects of the development requires evaluation by other involved parties.

GEMCO takes no responsibility for conditions that have not been revealed by the borings, or which occur below or between the borings. The possibility of the presence of contaminants, perhaps in higher concentrations, elsewhere on site cannot be discounted. Whilst every effort has been made to interpret the conditions between investigation locations, such information is only indicative and liability cannot be accepted for its accuracy.

Groundwater and ground gas readings taken are those pertaining to the period of the investigation only. It should be noted that groundwater levels may be subject to tidal, seasonal and diurnal changes, whilst ground gas emission rates are affected by atmospheric pressure and groundwater levels.

With reference to ground contamination, whilst the findings detailed within this report reflect our best assessment, because there are no exact UK definitions of these matters, being subject to risk analysis, we are unable to give categorical assurances that they will be accepted by authorities or funds without question as such bodies have unpublished, more stringent objectives. The report is prepared and written for the purposed uses stated in the report and should not be used in a different context without reference to GEMCO in time, improved practises or amended legislation may necessitate a re-assessment.

The report is limited to the geotechnical and environmental aspects specifically reported on and is necessarily restricted and no liability is accepted for any other aspect especially concerning gradual or sudden pollution incidents. The opinions expressed cannot be absolute due to the limitations of time and resources imposed by the agreed brief, the nature of the geology and possibility of unrecorded previous use and abuse of the Site and adjacent sites. The report concentrates on the Site as defined in the report and provides an opinion on surrounding sites. If migrating pollution or contamination (past or present) exists, further research will be required before the effects can be better determined.

Risk Assessment and Risk Rating

Classification of Consequence		
Classification	Definition	Examples
Severe	Short term (acute) risk to human health likely to result in 'significant harm;' as defined by the Environmental Protection Act 1990, Part IIA. Short term risk if pollution (note: Water Resources Act does not contain provision for consideration of the significance of pollution) of sensitive water resource. A short-term risk to a particular ecosystem, or organism forming part of such an ecosystem. (note: the definition of ecological systems with the DEFRA Contaminated Land Statutory Guidance 2012)	High concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from site to a controlled water. Explosion, causing building collapse (can also equate to short term human health risk if buildings are occupied).
Medium	Chronic damage to human health ('significant harm as defined DEFRA Contaminated Land Statutory Guidance 2012) Pollution of sensitive water resources. A significant change in a particular ecosystem, or organism forming part of such ecosystem. (note: the definition of ecological systems with the DEFRA Contaminated Land Statutory Guidance 2012)	Concentration of contaminant from the Site exceeds the generic or site-specific assessment criteria. Leaching of contaminants from a site to a principal or secondary aquifer. Death of species within a designated nature reserve.
Mild	Pollution of non-sensitive water resources. Significant damage to buildings, structures, and crops. ('Significant harm' as defined in DEFRA Contaminated Land Statutory Guidance 2012 and EPA 1990 Part IIA. Damage to sensitive buildings/structures or the environment.	Pollution of non-classified groundwater. Damage to building, rendering it unsafe to occupy (e.g. foundation damage resulting in instability).
Minor	Harm, although not necessarily significant harm, which may result in a financial loss or expenditure to resolve. Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc.). Easily repairable effects of damage to buildings/structures	The presence of contaminants at such concentration is that protective equipment is required during the Site works. The loss of plants in landscaping scheme. Discolouration of concrete.

Classification of Probability	
Classification	Definition
High Likelihood	There is a pollution linkage and an event which would either appear very likely in the short term and almost inevitable over the long term, or, there is evidence at the receptor of harm or pollution.
Likely	There is a pollution linkage and all the elements are present in the right place which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely to occur over the long term.
Low Likelihood	There is pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place and is less likely in the shorter term.
Unlikely	There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long term.

		Consequence			
		Severe	Medium	Mild	Minor
Probability	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate/ Low Risk
	Likely	High Risk	Moderate Risk	Moderate/ Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate/ Low Risk	Low Risk	Very Low Risk
	Unlikely	Moderate/ Low Risk	Low Risk	Very Low Risk	Very Low Risk

Risk classification framework taken from CIRIA C552, Section 6

Appendix 2

Site Photographs

Picture 01



Picture 02



Picture 03



Picture 04



Picture 05



Picture 06



Legend

- Pic 01:** View of access track from Bramford Road into the northwest of the parcel.
- Pic 02:** View towards the Site from the entrance, facing southeast.
- Pic 03:** Example of potential ACM sheeting used around the site as boarding.
- Pic 04:** Potential UST cover found to West of Site.
- Pic 05:** Small allotment-type area segregated by metal sheeting.
- Pic 06:** View of the Site, facing south from the north.

Site:
The Common, Little Blakenham

Title:
Appendix 2 - Site Photographs

Client:
Mr & Mrs Knott c/o WK Architects

Date: Jun 2023

Project No: 2240 R01

Issue: Issue 1

Page No: 1 of 3

Drawn by: DM

Checked by: CU



Green Earth Management Company Ltd
Suite 3, Broomfield Park,
Coggeshall Road,
Earls Colne,
Essex CO6 2JX
Tel: 01245 206 129
www.gemcoltd.co.uk