



**EARTH ENVIRONMENTAL
& GEOTECHNICAL**

GeoEnvironmental Desk Study

Meadowcroft Farm

Bury

August 2020

On behalf of

Thomas England Ltd

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**MEADOWCROFT FARM
BURY
PHASE I GEOENVIRONMENTAL DESK STUDY
FOR
THOMAS ENGLAND LTD**

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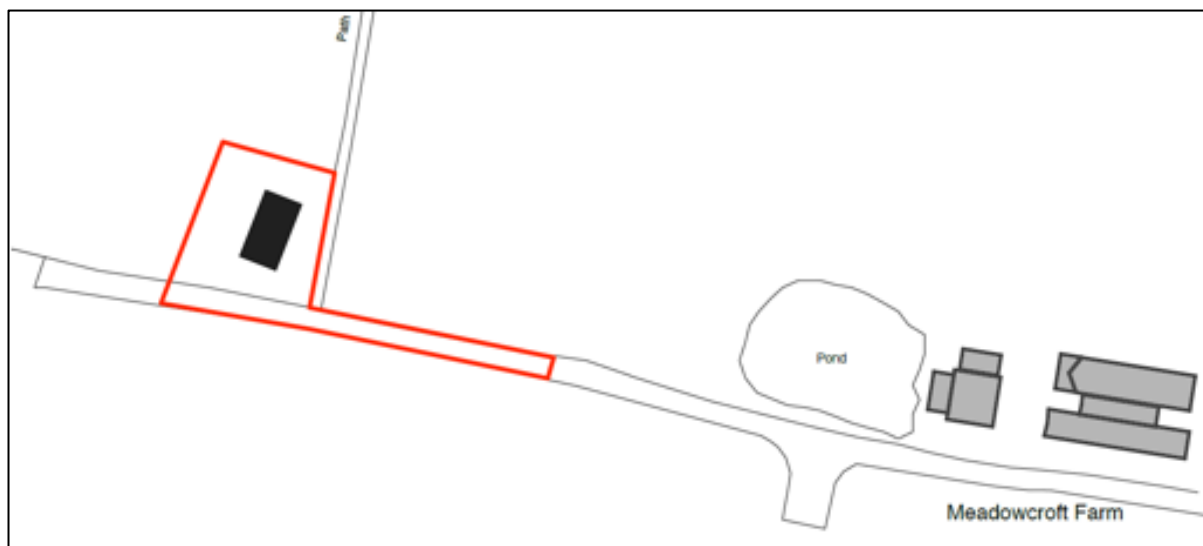
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1.0 INTRODUCTION

Appointment

- 1.1 Earth Environmental & Geotechnical Ltd has been commissioned by Scott Hughes Design on behalf of Thomas England Ltd (the Client) to undertake a Phase I GeoEnvironmental Desk Study for the proposed development on land associated with Meadowcroft Farm, Bury.
- 1.2 It is understood that the Client wishes to extend the existing access lane to the site and then provide parking spaces to the east of the site, and a garden to the west of the site. The building on site will remain.
- 1.3 Site access will be from the south of the site, down a track to the west of Lowercroft Road.
- 1.4 A proposed development plan for the site is shown in Figure 1 below.

Figure 1 Proposed Development Plan



Objective

- 1.5 The purpose of the Desk Study is to collate available geological and environmental data for the site (and its environment) and provide a preliminary geotechnical and geo-environmental appraisal, with a site-specific conceptual model. This enables a preliminary assessment of geo-environmental risks to be undertaken and, if necessary, provides information for the design of a Phase 2 Ground Investigation.

Scope

- 1.6 The Phase I Environmental Desk Study comprises a review of the following information sources, some of which was provided by the client.

- British Geological Survey online maps.
- Google Earth imagery.
- Environment Agency online mapping data.
- Historical Ordnance Survey maps.
- The site and surrounding areas environmental, geological and mining data presented in the site specific GroundSure Reports (Appendix 1).

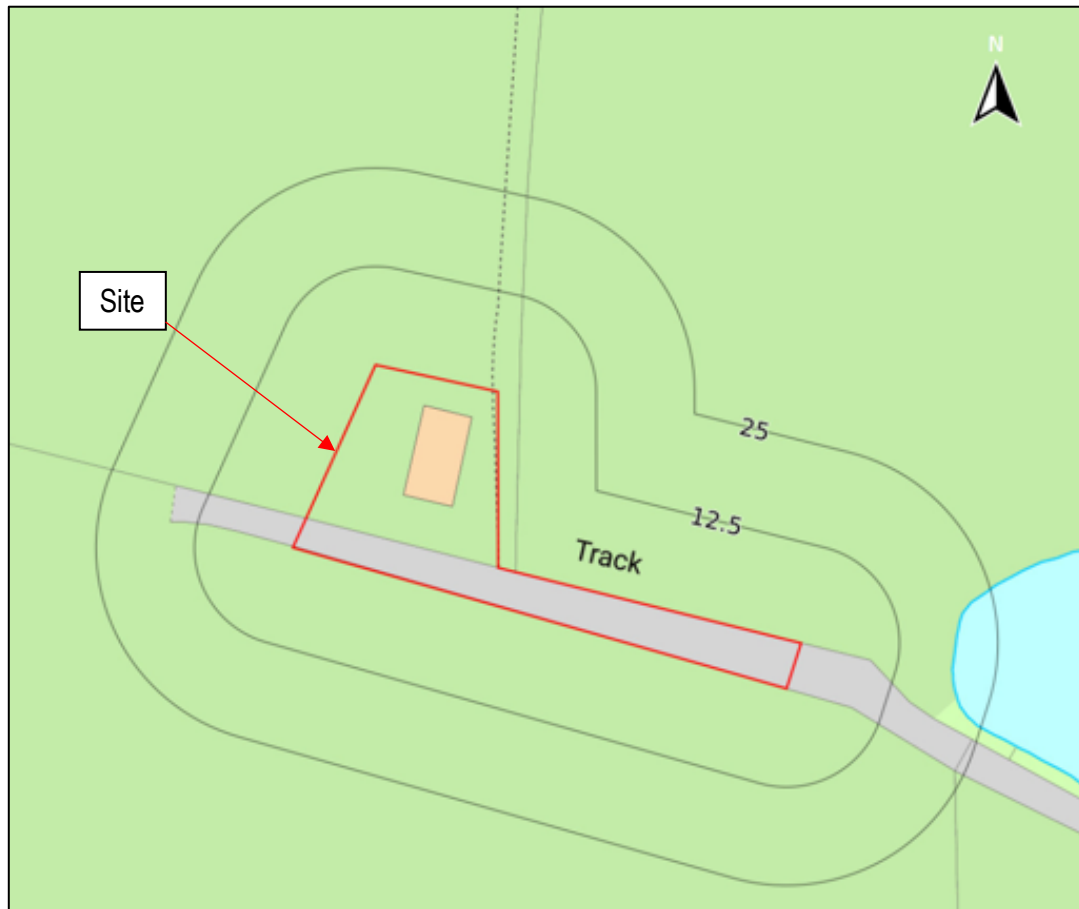
2.0 SITE LOCATION AND DESCRIPTION

- 2.1 The site is located west of Meadowcroft Farm, Bury approximately 3.66km west of Bury town centre. The approximate National Grid Reference for the site is SD 76851 11354 (X: 376851, Y: 411354) with the closest postcode being BL8 3PD.
- 2.2 The site is a near square shaped parcel of land with current access via a track south of the site, off Lowercroft Road to the east. The maximum dimensions of the proposed site are 28m north to south and 57m east to west. The site occupies an area of approximately 0.08ha.
- 2.3 The surrounding area comprises predominantly fields with number of farm buildings surrounding the site with large ponds to the south. An area of residential dwellings is located east of the site.
- 2.4 A location plan is shown below as Figure 2, together with the OS Master Map as Figure 3 (overleaf).

Figure 2 Site Location Plan



Figure 3 OS Master Map Site Plan



Site Utility Services

- 2.5 Site service plans have not been obtained for the site on behalf of the client. The status of all services should be checked prior to any development (including site investigation) commencing.

3.0 ENVIRONMENTAL SETTING

- 3.1 The geology of the site is covered by British Geological Survey (BGS) online data and the site specific GroundSure Enviro+Geo Insight report (Appendix 1).
- 3.2 Environmental conditions are covered by Environment Agency (EA) and British Geological Survey (BGS) online data, and the site specific GroundSure Enviro+Geo Insight report (Appendix 1).

Geology

- 3.3 The BGS states that the site is not underlain by artificial deposits although worked ground (void) is shown 12m to the south.
- 3.4 The site is not underlain by superficial deposits however, Devensian Till underlies the land 121m south of the site.
- 3.5 The bedrock geology beneath the site is shown as the Pennine Lower Coal Measures Formation, consisting of mudstone, siltstone, coal seams and sandstone.
- 3.6 There are 4 recorded linear features within 500m of the site boundary. The closest record refers to an inferred coal seam located 85m south of the site.
- 3.7 There are no records of landslips within 500m of the site boundary.
- 3.8 There is 1 borehole record identified within 250m of the site. The closest record is located 211m east of the site (GR: 377100 411400) at High Crompton Farm. However, no details are available due to confidentiality.
- 3.9 The site is in an area where the hazards rating is low with regard to landslides, very low with regard to shrink swell clays and collapsible deposits and negligible with regard to running sands, soluble rocks and compressible deposits,

Ground Workings

- 3.10 There are 43 records of historical surface ground workings identified within 250m of the site boundary. The closest record refers to a pond located 15m east of the site, dated 1851. Other records in the vicinity refer to ponds, reservoirs, refuse heaps, a water body, unspecified ground workings, unspecified quarries and unspecified pits.
- 3.11 According to the BGS, there are 2 records of British Pits within 500m of the site. The closest record refers to a surface mineral working (178m north east) at Lower Bently Hall, quarrying sandstone. Activity has now ceased.

Mining and Other Underground Workings

- 3.12 The site lies within the specified search distance (1km) of an identified coal mining area. However, the site is not located in a Development High Risk Area.
- 3.13 There are no records for non-coal mining areas located within 1km of the site.

- 3.14 There are no areas of brine extraction, gypsum extraction, tin mining or clay mining within 1km of the site.
- 3.15 There are no records for non-coal cavities or natural cavities identified within 1km of the site.
- 3.16 There are no records for historical underground working features identified within 1km of the site.

Radon Potential

- 3.17 The property is not located in a Radon Affected Area, as less than 1% of the properties are above the Action Level. Therefore, no radon protection measures are required.

Hydrogeology and Hydrology

- 3.18 The superficial deposits of Devensian Till located 121m south of the site are classified by the British Geological Survey (BGS) as a Secondary Undifferentiated Aquifer. The BGS states the following:

Secondary Undifferentiated Aquifer *'Assigned where it is not possible to attribute either category A or B to a rock type. In general, these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.'*

- 3.19 The Pennine Lower Coal Measures Formation is classified by the British Geological Survey (BGS) as a Secondary A Aquifer with a fracture flow type and high to low permeability. The BGS gives the following summary:

Secondary A Aquifer *'Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.'*

- 3.20 The groundwater vulnerability and soil leaching potential of the site has been classified as a medium vulnerability with a low leaching potential. The BGS states:

'Medium vulnerability- Intermediate between high and low vulnerability.'

- 3.21 There are 18 groundwater abstraction licence records within 2km of the site. The closest record refers to a historical borehole located 777m northwest of the site.
- 3.22 There are no potable water abstraction licence records within 2km of the site.
- 3.23 There are no records of Source Protection Zones (or within a confined aquifer) within 500m of the site.
- 3.24 There are 5 water network entries within 250m of the site. The closest record refers to a reservoir located 141m south of the site.
- 3.25 There are 4 surface water features identified within 250m of the site.

Landfill and Waste Management Activity

- 3.26 There are no records for current Environment Agency/Natural Resource Wales landfill records within 500m of the site.
- 3.27 There are no records of BGS/DoE non-operational landfill sites within 500m of the study site.
- 3.28 There are no records of historical waste sites from the Local Authority and Historical Mapping Records within 500m of the site.
- 3.29 There are 31 records of a waste treatment, transfer or disposal site within 500m of the study site. The closest record refers to a disposing of waste exemption site located 295m to the northeast of the site. The site is described as deposit of waste from dredging of inland waters, agricultural waste only.

Industrial Land Use Information

- 3.30 There are 56 records of potentially contaminative historical land uses identified within 500m of the site, the closest record refers to a refuse heap located 89m north of the site, dated 1890. Other records in the vicinity refer to an unspecified old shaft, unspecified ground workings, unspecified quarries, refuse heaps, sandstone quarries, bleach works, unspecified pits, butts and disused butts, a rifle range, a smithy, hospitals, infectious diseases hospitals and small pox hospitals.
- 3.31 There are no records of current potentially contaminative land uses identified within 250m of the site.
- 3.32 There are 11 records of historical tanks identified within 500m of the site. The closest record refers to tanks located 266m northeast of the site, dated 1992.
- 3.33 There are no records of historical energy features identified within 500m of the site.
- 3.34 There are no records of current or recent petrol stations within 500m of the site.
- 3.35 There are no records of historical petrol or fuel sites within 500m of the site.
- 3.36 There are no records of historical garages within 500m of the site.
- 3.37 There are no National Grid high voltage underground electricity transmission cables within 500m of the site.
- 3.38 There are no National Grid high-pressure gas transmission pipelines within 500m of the site.
- 3.39 There are no historical railway or tunnel features identified within 250m of the site.
- 3.40 There are no historical railway lines identified within 250m of the site.
- 3.41 There are no current active railway line records identified within 250m of the site.
- 3.42 There are no underground railway lines or tunnels identified within 250m of the site.

3.43 The site is not within 5km of the route of the High Speed 2 rail project.

3.44 The site is not within 500m of the route of the Crossrail 1 rail project.

Environmental Permits, Incidents and Registers

3.45 The Groundsure Report includes records of environmental permits, incidents and registers within 500m of the site, which are summarised in Table 1 overleaf.

Table 1: Environmental Permits, Incidents and Registers within 500m of the Site

Permit/Incident/Register	Number
Historical Licensed Industrial Activities (IPC)	0
Part A (1) and IPPC Authorised Activities	0
Pollutant Release to Surface Waters (Red List)	0
List 1 Dangerous Substances Inventory Sites	0
List 2 Dangerous Substances Inventory Sites	0
Part A (2) and Part B Activities and Enforcements	0
Category 3 or 4 Radioactive Substance Authorisations	0
Licensed Discharge Consents	0
Planning Hazardous Substance Consents and Enforcements	0
Dangerous or Hazardous (COMAH and NIHHS) Sites	0
Sites Determined as Contaminated Land under Part 2A EPA 1990	0
Regulated Explosive Sites	0
Pollutant Release to Public Sewer	0
Substantiated Pollution Incidents (Category 1 and 2)	2
Pollution Inventory Substances, Wastes and Radioactive Wastes	0

3.46 There are 2 records of Substantiated Pollution Incidents (Category 1 and 2) within 500m of the site. The closest record refers to specific waste materials released 232m to the southeast of the site in 2003. The pollutant was a category 4 (No impact) impact on water and air, and category 3 (Minor) on land.

Environmentally Sensitive Sites

3.47 There is 1 record of a Local Nature Reserve (LNR) within 2km of the site. This record refers to Kirklees Valley located 1807m northeast of the site.

3.48 There are 3 records of Green Belt land within 2km of the site. The closest record refers to Liverpool and Manchester Green Belt, Bury, located on-site.

3.49 There are no other records of Environmentally Sensitive sites withing 2km of the site.

Ecology

- 3.50 An ecological assessment of the site falls outside the brief of this report. Where considered necessary, advice should be sought from an ecological specialist in this respect.
- 3.51 However, there is 1 record of Agricultural Land Classification within 250m of the site. On-site the land is classified as Grade 4 Agricultural Land and described as '*Poor quality agricultural land.*'

Archaeology

- 3.52 An archaeological assessment falls outside the brief of this report. Where considered necessary, advice should be sought from an archaeological specialist in this respect.
- 3.53 There are no records of Listed Buildings, World Heritage or Scheduled Ancient Monuments within 250m of the site.

Potential Flood Risks

- 3.54 Detailed assessment of flood risks is outside the scope of this report. However, the site does not lie within 50m of an Environment Agency Zone 2 or Zone 3 floodplain.
- 3.55 There is no risk of flooding from rivers and sea (RoFRaS) within 50m of the site.
- 3.56 There are no records of flood defences located within 250m of the site.
- 3.57 There are no records of areas benefitting from flood defences within 250m of the site.
- 3.58 There are no records of areas used for flood storage within 250m of the site.
- 3.59 The highest risk of surface water flooding occurring on-site is negligible. The highest risk of surface water flooding within 50m of the site is also negligible.
- 3.60 The highest risk of groundwater flooding occurring on-site is negligible.

Previous Site Investigations

- 3.61 Planning permission has been submitted (reference: 65778) to Bury council for the prior approval for the change of use from agricultural building to dwelling house, located on site.
- 3.62 Planning permission was approved in 2019 (reference: 64308) by Bury council for the conversion and extension of existing detached dwelling into 2 no. semi-detached dwellings, located at Meadowcroft Farm, east of the site. Earth Environmental and Geotechnical carried out a Phase I Desk Study for this Site in May 2019.
- 3.63 An outline Geo-Environmental Desk Study (Phase I) Report has previously been prepared for the Meadowcroft Farm east of the site by Scott Hughes Design (Reference: 63382) in October 2018. The report concluded a low overall risk to end users as no sources of possible contamination were identified.

4.0 SITE HISTORY

- 4.1 The historical development of the site has been determined by reference historical plans and Google Earth imagery. The reviewed historical plans comprise only readily available records and may be limited; however, the information available to date indicates that additional searches are unlikely to add to our understanding of the site. The earliest available historical mapping covering the site dates back to 1850.
- 4.2 The site history is summarised in Table 2, below, followed by selected extracts from maps and aerial photographs.

Table 2: Summary of Site History

Date	On-Site History	Surrounding Land Use History
1850 1:10,560	The site comprises vacant fields	A footpath runs adjacent to the eastern boundary of the site. Vacant fields immediately surround the rest of the site. The remnants of a Roman Road are located 10m east of the site. A pond is located 30m east of the site. Meadow Croft is located 40m east of the site. A sandstone quarry is located 100m northeast of the site. A well is located 100m south of the site. Lower Bently Hall is located 200m north of the site. Bently Hall and associated (small) sandstone quarry are located 250m northwest of the site. High Crompton is located 250m northeast of the site. A well is located 300m northeast of the site. A smith is located 550m east of the site. A reservoir is located 650m southeast of the site. Cockey Moor Nursery is located 650m south of the site.
1894 1:10,560	A single building is located in the centre of the site.	2 large reservoirs are located 100m and 220m south of the site. A rifle range is located 700m southeast of the site Lower Croft mill is located 700m southeast of the site 2 cotton mills are located 700m northeast of the site.
1911 1:10,560	No significant change.	Sandstone quarry now old quarry to the northeast. Butts located between and around 2 large reservoirs to the south. An infectious diseases hospital is located 500m south of the site.

Date	On-Site History	Surrounding Land Use History
1931, 1947 1:10,560	No significant change.	Butts now disused Hospital is now a smallpox hospital Rifle range now disused
2000 Aerial Photograph	No significant change.	A large housing estate is located 400m east of the site.
2017 Aerial Photograph	No significant change.	No significant change.
2019 Aerial Photograph	No significant change.	No significant change.

Figure 4 OS Map Extract 1850

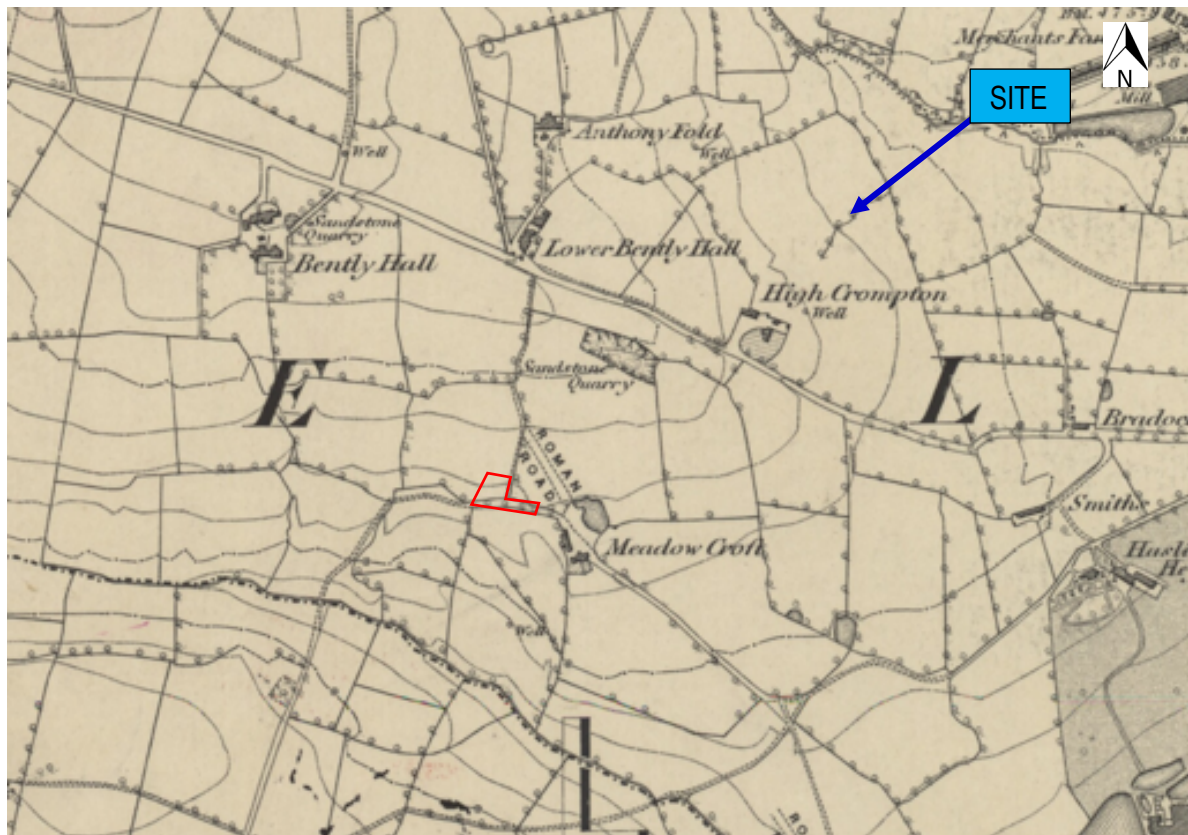
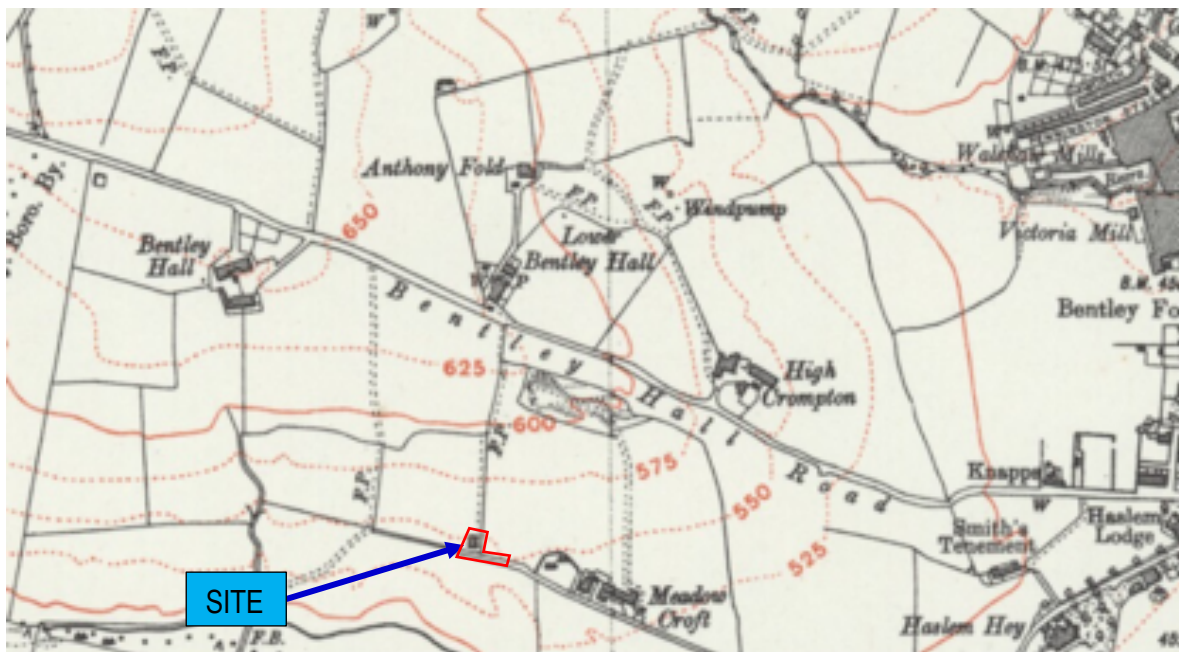


Figure 5 OS Map Extract 1911



SITE

Figure 6 OS Map Extract 1947



SITE

Figure 7 Aerial Photograph 2000



Figure 8 Aerial Photograph 2018



5.0 PRELIMINARY CONTAMINATION RISK ASSESSMENT

Introduction

- 5.1 The following paragraphs outline a Preliminary Risk Assessment (PRA) for the site based on the above desk study information as defined by DEFRA and the EA Model Procedures for the Management of Land Contamination, CLR11⁽²⁰⁰⁴⁾.
- 5.2 Table 5 provides a Preliminary Conceptual Model (PCM) which considers the source-pathway-receptor linkages present alongside the likelihood, severity and risk level as defined within Table 3 and Table 4 below. The assessment of probability, a modified risk table, and certain consequence definitions are based on CIRIA C552 and CLR11.
- 5.3 Table 5 considers whether a pollution linkage is potentially present and provides a preliminary qualitative assessment of risk based on the information currently available. Where a possible linkage is identified, it does not necessarily mean that a significant risk exists but indicates that further information is required through appropriate site investigation to substantiate the conceptual model.
- 5.4 The PCM/PRA is based on a proposed residential end use.

Table 3: Consequence, Probability and Risk

Probability	Consequence,	Risk
High Likelihood- There is a pollution linkage and an event either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution	Very High – acute risk to the human health likely to result in significant harm. Risk of severe or irreversible effect on ground/surface water quality. Catastrophic damage to buildings / property.	Very High – there is a high potential that the source-pathway-receptor scenarios may give rise to harm to human health or the environment and remedial action is likely to be required.
Likely – there is a pollution linkage and all the elements are present, which means that it is probable an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.	High – Severe or irreversible effect on human health. Temporary severe or irreversible effect on ground/surface water quality. Reduction of water quality rendering groundwater or surface water unfit to drink and/or substantial adverse impact on groundwater dependant environmental receptors.	High – it is likely that the source-pathway-receptor scenarios may give rise to an impact on human health or the environment, which may require remediation and/or control measures to mitigate risks
Low likelihood– there is a pollutant linkage and circumstances are possible for 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	Moderate – Long term or short-term moderate effect on human health. Moderate effect on ground/surface water quality, reversible with time. Reduced reliability of a supply at a groundwater or surface water abstraction source	Moderate – it is possible that the source-pathway-receptor scenarios may give rise to an impact on human health or the environment, however it is either relatively unlikely that such are would be severe, or if any harm were to occur it is more likely that harm would be mild.
Unlikely – there is a pollution linkage, but circumstances are such that it is doubtful that an event would occur even in the very long term.	Low – Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc.) Slight effect on ground/surface water quality, reversible with time. Marginal reduced reliability of a supply at a groundwater or surface water abstraction source.	Low – it is possible that harm could arise at the source, however it is likely that this would at worst be mild.
		Very Low – it is unlikely that the source-pathway-receptor scenarios will give rise to an impact on human health or the environment.

Table 4: Estimation of Level of Risk by Comparison of Consequence and Probability

		Consequence			
		High	Moderate	Low	Very low
Probability	High Likelihood	Very High	High risk	Moderate risk	Moderate to low risk
	Likely	High risk	Moderate risk	Moderate to low risk	Low risk
	Low Likelihood	Moderate risk	Moderate to low risk	Low risk	Very low risk
	Unlikely	Moderate to low risk	Low risk	Very low risk	Very low risk

Potential Sources

- 5.5 Historically the site comprised vacant fields until 1894 when a single building was constructed in the centre of the site. The site has remained the same until the present day.
- 5.6 There is a general lack of potential contamination sources on the site or in the local area.

Potential Receptors

- 5.7 The following receptors have been considered for the construction and operational stages of the proposed redevelopment.
- Current site users;
 - Adjacent land users;
 - Future land users;
 - Construction workers during site development works;
 - Surface water and Groundwater within the underlying aquifer

Potential Pathways

- 5.8 The following pathways have been considered for the construction and operational stages of the proposed redevelopment.
- Dermal contact, ingestion, inhalation pathways of potentially contaminated soils;
 - Downward vertical migration of leachate to surface waters and shallow groundwater;
 - Vertical or lateral migration of ground gas.

• Table 5: Preliminary Conceptual Model

Source	Pathway	Receptor	Probability	Consequence	Risk	Comment
Potential soil contamination from historic land-use	Dermal contact, ingestion and inhalation of soils dust	Current Site Users	Unlikely	Moderate	Low	The site is currently agricultural land, with one building on site. The risk is therefore considered to be LOW .
		Adjacent land users	Unlikely	Moderate	Low	Agricultural fields predominantly surround the site with a large housing estate located 400m east. Usual dust control measures should be implemented as part of good site working practices during construction to reduce dust generation. Therefore, the risk is considered LOW .
		Future land users	Low Likelihood	Moderate	Moderate to Low	The proposed development consists of a conversion of the building on site and the construction of a car parking area and a garden. The risk to future site users via direct exposure is considered to be MODERATE to LOW . This assessment is based on the potential for contamination to be present beneath the site.
		Construction Workers	Low Likelihood	Moderate	Moderate to Low	Construction workers may be exposed to potentially contaminated soils during construction works, however exposure duration will be short-term only. The risk to construction workers is considered MODERATE to LOW . Appropriate health and safety measures (in line with CDM and other relevant health and safety guidance) will reduce the risk to LOW .
	Downward vertical migration of leachate to groundwater	Groundwater within the Underlying Aquifer	Low Likelihood	Moderate	Moderate to Low	There are no underlying superficial soils. The bedrock is classified as a Secondary A Aquifer with a fracture flow type and a low to high permeability. There are 18 abstraction licences within 2km. The risk to groundwater is therefore considered LOW .
	Lateral migration in surface waters	Surface water	Low Likelihood	Moderate	Moderate to Low	There are 4 record of surface water feature within 250m of the site and 1 surface body catchment located at the site. Therefore, the perceived risk to surface waters is considered to be LOW .
	Vertical or lateral migration of ground gas	Current Site Users	Unlikely	Moderate	Low	The site is currently agricultural land, with one building on site. Within 500m of the site are 8 records of artificial and made ground, but this is not anticipated to be found on site. The risk to current site users from ground gas is therefore considered LOW .
		Future land users	Low Likelihood	Moderate	Low	The proposed development consists of a conversion of the building on site and the construction of a car parking area and a garden. The radon potential is considered LOW as <1% of the properties are affected by radon gas and as such should not require radon protective measures.

Source	Pathway	Receptor	Probability	Consequence	Risk	Comment
Asbestos Containing Material (ACM)		Current Site Users	Low Likelihood	Moderate	Low	The site is currently agricultural land, with one building on site. Asbestos may be present in small areas of the site associated with former works/ present structures. Asbestos is only harmful when disturbed. The risk to current site users is considered to be LOW .
		Adjacent land users	Low Likelihood	Moderate	Low	Agricultural fields predominantly surround the site with a large housing estate located 400m east. Asbestos may be present in small areas of the site associated with former structures, albeit unlikely. Disturbance of soil during the construction phase may allow fibres to become airborne. Dust control measures (dampening down) should be implemented as part of good site working practices. Therefore, the risk is considered LOW .
		Future land users	Low Likelihood	Moderate	Moderate to Low	The proposed development consists of a conversion of the building on site and the construction of a car parking area and a garden. The risk is therefore considered LOW .
		Construction Workers	Low Likelihood	Moderate	Low	The risk is considered LOW .

6.0 CONCLUSIONS & RECOMMENDATIONS

Conclusions

- 6.1 The site was historically vacant agricultural fields until 1894 when a single building was constructed in the centre of the site. The site has remained the same until the present day.
- 6.2 The proposed development includes the conversion of the building located on-site and the construction a car parking area with a garden.
- 6.3 The site is not underlain by superficial deposits. The solid geology is shown as the Pennine Lower Coal Measures Formation, consisting of mudstone, siltstone and sandstone (Secondary A Aquifer). The site is not located within a Coal Authority Development High Risk Area.
- 6.4 The property is not located in a Radon Affected Area, as less than 1% of the properties are above the Action Level.
- 6.5 Given the potential contaminative land uses, the overall risk from soil contamination to end users and construction workers is concluded to be **LOW**.
- 6.6 The risk to controlled waters is concluded to **LOW** based on the underlying superficial soils.
- 6.7 The risk from ground gas to end users and construction workers is considered to be **MODERATE** to **LOW** given the anticipated of Made Ground.
- 6.8 The site is not located within a Zone 2 or Zone 3 floodplain. The highest risk of groundwater flooding is **negligible**.

Recommendations

- 6.9 There is no need for any further site investigation or remedial measures.

APPENDIX 1

GROUNDSURE REPORT

APPENDIX 2

REPORT LIMITATIONS

LIMITATIONS

This contract was completed by Earth Environmental & Geotechnical Ltd on the basis of a defined programme and scope of works and terms and conditions agreed with the client. This report was compiled with all reasonable skill, and care, bearing in mind the project objectives, the agreed scope of works, the prevailing site conditions, the budget and staff resources allocated to the project.

Other than that, expressly contained in the above paragraph, Earth Environmental & Geotechnical Ltd provides no other representation or warranty whether express or implied, is made in relation to the services. Unless otherwise agreed this report has been prepared exclusively for the use and reliance of the client in accordance with generally accepted consulting practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon, or transferred to, by any other party without the written agreement of a Director of Earth Environmental & Geotechnical Ltd.

If a third party relies on this report, it does so wholly at its own and sole risk and Earth Environmental & Geotechnical Ltd disclaims any liability to such parties.

It is Earth Environmental & Geotechnical Ltd understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was an important factor in determining the scope and level of the services. Should the purpose for which the report is used, or the proposed use of the site change, this report will no longer be valid and any further use of, or reliance upon the report in those circumstances by the client without Earth Environmental & Geotechnical Ltd review and advice shall be at the client's sole and own risk.

The report was written in 2020 and should be read in light of any subsequent changes in legislation, statutory requirements and industry best practices. Ground conditions can also change over time and further investigations or assessment should be made if there is any significant delay in acting on the findings of this report. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of Earth Environmental & Geotechnical Ltd. In the absence of such written advice of Earth Environmental & Geotechnical Ltd, reliance on the report in the future shall be at the client's own and sole risk. Should Earth Environmental & Geotechnical Ltd be requested to review the report in the future, Earth Environmental & Geotechnical Ltd shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between Earth Environmental & Geotechnical Ltd and the client.

The observations and conclusions described in this report are based solely upon the services that were provided pursuant to the agreement between the client and Earth Environmental & Geotechnical Ltd. Earth Environmental & Geotechnical Ltd has not performed any observations, investigations, studies or testing not specifically set out or mentioned within this report.

Earth Environmental & Geotechnical Ltd is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, Earth Environmental & Geotechnical Ltd did not seek to evaluate the presence on or off the site of electromagnetic fields, lead paint, radon gas or other radioactive materials.

The services are based upon Earth Environmental & Geotechnical Ltd observations of existing physical conditions at the site gained from a walkover survey of the site together with Earth Environmental & Geotechnical Ltd interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The findings and recommendations contained in this report are based in part upon information provided by third parties, and whilst Earth Environmental & Geotechnical Ltd have no reason to doubt the accuracy and that it has been provided in full from those it was requested from, the items relied on have not been verified.

No responsibility can be accepted for errors within third party items presented in this report. Further Earth Environmental & Geotechnical Ltd was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the services. Earth Environmental & Geotechnical Ltd is not liable for any inaccurate information, misrepresentation of data or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to Earth Environmental & Geotechnical Ltd and including the doing of any independent investigation of the information provided to Earth Environmental & Geotechnical Ltd save as otherwise provided in the terms of the contract between the client and Earth Environmental & Geotechnical Ltd.

Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions can also be variable and as investigation excavations only allow examination of the ground at discrete locations. The potential exists for ground conditions to be encountered which are different to those considered in this report. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition, chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and Earth Environmental & Geotechnical Ltd] based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

The groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The normal speed of investigation usually does not permit the recording of an equilibrium water level for any one water strike. Moreover, groundwater levels are subject to seasonal variation or changes in local drainage conditions and higher groundwater levels may occur at other times of the year than were recorded during this investigation.

Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan but is (are) used to present the general relative locations of features on, and surrounding, the site.