

Phase 1 Desktop Study

Tom Nook Farm, Tottington, Bury, Lancashire, BL8 3QG

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Comments

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1. Executive Summary

1.1. General

1.1.1. This executive summary should be read in conjunction with the whole report to avoid omission of relevant and important information.

1.1.2. The Phase One assessed data for the site occupying Tom Nook Farm, Tottington, Bury, Lancashire BL8 3QG.

1.1.3. The development site is an existing farm accessed from the south side of Turton Road. The building proposed for conversion is located centrally within the farm complex, adjoining other agricultural buildings and situated between the existing farmhouse to the north and agricultural/storage buildings to the south. The proposal is for the conversion of the existing building into two new dwellings.

1.2. Geology

1.2.1. Geological maps indicate that the site is underlain by superficial deposits of Devensian Till which is a glaciogenic deposit of the Quaternary Period, one hundred and fifteen thousand years ago. The Devensian Till is recorded as Diamicton indicating that clays, silts, sands, gravels and boulders are likely to be present in the material.

1.2.2. Underlying the Devensian Till is the bedrock of the Pennine Lower Coal Measures. This was formed in the Carboniferous Period, three hundred and eighteen million years ago.

1.3. Site History and Contamination

1.3.1. Historical maps from 1850 show the history of the site as being chiefly associated with open agricultural land.

1.3.2. Further to the south, west and southeast of the site, the land has been associated with quarrying. The site is within a designated coal field, according to the Mining Remediation Authority.

1.3.3. It is likely that asbestos would have been used in the construction of the farm building since the 1970's.

1.3.4. It is also likely that residual amounts of pesticides and fertilizers along with fuel spillages may be present on site.

1.4. Site Contamination Risk Assessment Recommendations

1.4.1. Recommendations for an intrusive investigation include the following;

- Assessment of metalloid potential
- Assessment for presence of polycyclic aromatic hydrocarbons (PAH)
- Ground gas monitoring for the presence of hydrogen, methane and carbon dioxide
- Assessment for the presence of asbestos
- Assessment for the presence of pesticides and fertilisers

2. Introduction

2.1. This report has been prepared by CityStruct Ltd on the instruction of Mr & Mrs MacKenzie.

2.2. This report has been prepared generally in accordance with EA procedures given in Land Contamination: Risk Management (LCRM 2019) and to satisfy the requirements of Part C of the Building Regulations. Where appropriate it also takes account of the requirements for land quality management in the NHBC Standards and the National Planning Policy Framework (NPPF).

2.3. In undertaking the Phase One Desktop Study, a site reconnaissance was completed. The purpose of this was to obtain visual evidence of potential pollution linkages that may be present on site, or in the immediate vicinity, and thereby properly assess the pollution linkages and comply with the local authority planning policy.

2.4. In preparing the Phase One Desktop, a search by CityStruct Ltd was made which obtained Ordnance Survey (OS) maps using the Envirocheck database system. As well as obtaining historical and current OS maps, Envirocheck also provide information compiled from the following agencies: -

Environment Agency	Centre for Ecology and Hydrology
Ordnance Survey	Scottish Natural Heritage
Natural Resources Wales	Natural England
Public Health England	British Geological Survey (BGS)
Scottish Environment Protection Agency	Mining Remediation Authority

2.5. The conditions stated in the final appendix to this report were applied to these investigations, and the report is to be read and construed accordingly.

3. Site Location

3.1. The site is located at National Grid reference 375730,414040. It lies 450m west of the A5 and 2.13km northwest from the centre of Tottington.

3.2. The site is rectangular in shape and occupies an area of approximately 0.24Ha. The exact location is shown on the appended site location maps.

3.3. Summary details of the site boundaries and adjacent land use are:

Boundary	Boundary Construction	Adjacent Land Use	Proximal Land Use
North	Agricultural buildings	Agricultural	Agricultural
East	Access road / Hedgerow/Trees/ Watercourse	Agricultural	Agricultural
South	Agricultural buildings and Menage	Agricultural	Agricultural
West	Storage area / Agricultural	Agricultural	Agricultural

4. Environmental Setting

4.1. Geological maps indicate that the site is underlain by superficial deposits of the Devensian Till, which is a glaciogenic deposit formed during the Devensian Stage of the Quaternary Period, one hundred and fifteen thousand years ago. The Devensian Till is recorded as Diamicton indicating that clays, silts, sands, gravels and boulders are likely to be present in the material.

4.2. Underlying the Devensian Till is the bedrock of the Pennine Lower Coal Measures. This was formed during the Carboniferous Period in an environment dominated by climatic events including inundation by marine environments alternating with tropical or temperate forests.

4.3. According to data published by the Environment Agency, the bedrock is classified as a Secondary (A) Aquifer, and as a result the ground water in the bedrock will be considered as an environmental receptor for the purposes of the conceptual model.

4.4. With reference to data supplied by the Environment Agency (EA), the superficial deposits are recorded as having a low soil vulnerability. Soil vulnerability classifications group the many different soils of England and Wales into three classes (High, Intermediate, and Low leaching potential) and six sub classes. Each is based on physical and chemical properties of the soil that affect the downward passage of water and contaminants. These include texture, structure, soil-water regime, and the presence of distinctive layers such as raw peaty topsoil, rock, or gravel at shallow depth. On this basis, the EA classification indicates that spread of any pollutants entering the groundwater regime below the site is likely to be slow.

4.5. The nearest body of water is an unknown water course 7m to the southeast. There is no grading (GQA) for this watercourse.

4.6. The site is not recorded as being located within a groundwater protection zone. These zones have been established by Environment Agency for nearly 2000 groundwater sources used for public drinking water supply. Generally, if a site is not within one of these zones the risk of pollution released on the site affecting the public water supply is negligible or very small. Three zones are defined:

Zone I	- Inner	Where the travel time of water in the aquifer to the source is 50 days or less.
Zone II	- Outer	Either 25% of the source area or a 400-day travel time whichever is greater.
Zone III	- Total Catchment	The total area needed to support the abstraction from the protected source.

4.7. According to the Environment Agency Flood Data Map, the site is not recorded as being subject to flooding under extreme weather conditions and has, therefore, been categorised as being within Flood Zone 1. This is the lowest categorisation available and indicates that there is negligible risk of flooding occurring during extreme weather conditions.

4.8. The flooding zone categories are as follows:

Zone I	This zone comprises land as having less than 1:1000 annual probability of river flooding in any year.
Zone II	This zone comprises land as having between a 1:100 and 1:1000 annual probability of river flooding or between a 1:200 and 1:1000 annual probability of sea flooding.
Zone IIIA	This zone comprises land assessed as having a 1:100 or greater annual probability of river flooding or a 1:200 or greater annual probability of flooding from the sea in any year.
Zone IIIB	This zone comprises land where water has to flow and be stored in times of flood.

5. History of The Site

5.1. 1850 – 2026 Maps

5.1.1. 1850 to 1976: The early Ordnance Survey maps from this era reveal that the site was open agricultural land, with the village of Tottington to the east. The closest habitation was Holcombe Villa Farm which lay 196m to the northeast. Buildings had been constructed on the reservoir to the southeast of the site. There are no industrial operations within 1km of the site.

5.1.2. 1982 to 1987: This era shows significant development to the north of the site in Hawkshaw with the construction of a school.

5.1.3. 1999 to 2006: Maps from this period show that the site has been developed with further buildings to both the right-hand and left-hand side of the main property.

5.1.4. 2026: This map shows drainage has been installed at the front of the property and along the access road.

5.2 Site Reconnaissance Survey

5.2.1. The walkover survey was undertaken on Friday 24th July 2026. At the time of the survey, there were several structures on the site, and these were accessible.

5.2.2. These structures were accessed and the following was noted;

i.) Roofs with corrugated asbestos containing materials (ACMs).

ii.) Diesel tank for refuelling vehicles

5.2.3. Concurrent with agricultural practices there is the potential for residual pesticides and fertilisers to be present, although these were not noted during the site walk over survey.

5.2.4. The surrounding area was assessed using online resources, and this revealed that land use was identical to that shown on the most recent Ordnance Survey maps.

6. Site Sensitivity

6.1. A search for data has been made by the Landmark Information Group and supplied under licence to CityStruct. The data is targeted to find pathways by which contamination could spread to receptors (environmental, human and buildings) vulnerable to contamination, as well as the potential sources of contamination. The full data sheets are appended.

The following data types have been assessed for current active listings within 1000 metres of the site:

BGS Groundwater Flooding Susceptibility

Contaminated Land Register Entries and Notices

Discharge Consents
Prosecutions

Enforcement and Prohibition Notices
Integrated Pollution Controls
Integrated Pollution Prevention and Control
Local Authority Integrated Pollution Prevention and Control
Local Authority Pollution Prevention and Controls
Local Authority Pollution Prevention and Control Enforcements
Nearest Surface Water Feature

Pollution Incidents to Controlled Waters
Historical Prosecutions
Registered Radioactive Substances
Substantiated Pollution Incident Register

Water Abstractions

Water Industry Act Referrals.

Groundwater Vulnerability Map

Groundwater Vulnerability – Soluble Rock Risk

Groundwater Vulnerability – Local Information

Bedrock Aquifer Designations

Superficial Aquifer Designations

Source Protection Zones
Extreme Flooding from Rivers or Seas without Defences
Flooding from Rivers or Sea without Defences
Areas Benefiting from Flood Defences
Flood Water Storage Areas
Flood Defences

OS Water Network Lines

Water Framework Directive – Catchment

Water Framework Directive - Groundwater

Water Framework Directive – Surface Waters

6.2. Entries in the dataset for BGS groundwater flooding susceptibility relate to on site and up to 500m from site. These are concerned with the likelihood that groundwater, under certain conditions, has the potential to cause surface flooding and affect basements. However, conditions need to be extreme and there is no recorded flooding under similar circumstances in historic records. Consequently, there is a low risk of this occurring.

6.3. Discharge Consents

Search Radius	Description (current listings only)
On site	None listed
0 to 250m	1 listed
251 to 500m	8 listed
501 to 1000m	8 listed

6.4. The closest discharge consent is located over 162m northeast from the site and so end users of the site are unlikely to be at significant risk of significant harm as a result of the discharge contents. All consents discharge into water courses which do not flow past the site and so will not present a risk.

6.5. The nearest surface water feature is a ditch or unknown water course which flows northeast to southwest. There is no GQA grading for this water course.

6.6. There are seven entries in the data set for Pollution Incidents to Controlled Waters. The most significant one was in 1994 when slurry was released into a tributary of Kirklees Brook. Another occurred in 1997 and was recorded as a significant incident. However, given the passage of time since, there is unlikely to be a significant risk of harm to human health.

6.7. There are fourteen Water Abstractions listed as being between 1000m and 2000m from the site. None of these are considered to be at threat from development on the site.

6.8. The Bedrock Aquifer Designation is recorded as being a Secondary Aquifer (A). Whilst not supplying major volumes of water for public supply they do provide important base flow for rivers.

6.9. The following data types have been assessed for current active listings within 1000 metres of the site:

BGS Recorded Landfill Sites
Historical Landfill Sites
Integrated Pollution Control Registered Waste Sites
Licensed Waste Management Facilities (Landfill Boundaries)
Licensed Waste Management Facilities (Locations)
Local Authority Landfill Coverage
Local Authority Recorded Landfill Sites

Potentially Infilled Land (Non-Water)

Potentially Infilled Land (Water)

Registered Landfill Sites
Registered Waste Transfer Sites
Registered Waste Treatment or Disposal Sites

6.10. There is one entry in the Historical Landfill Sites dataset. The nearest is located on site and the waste deposited into this site was inert. The information in the data set is sparce, but the risk posed to human health is not significant. The inert waste is likely to have been deposited in relation to the 1990 planning permission where the access track and adjacent land may have been infilled. Soil contamination testing is recommended and can be carried out along with a ground gas risk assessment, with monitoring wells installed. Regular data recording should be carried out.

6.11. There is one entry in the Licensed Waste Management Facilities (Locations), but the licence was surrendered in 2006 with no evidence of any operation being carried out on the site since. Subsequently there is no significant risk to human health.

6.12. Entries in the dataset for Local Authority Landfill Coverage indicate that Bolton Metropolitan Borough Council and Blackburn with Darwen Unitary Council have supplied all available data on landfill coverage.

6.13. Entries in the dataset in the Potentially Infilled Land (Non-Water) / (Water) register indicate there are seventeen locations where unknown anthropogenic materials have been deposited, these are unlikely to pose a risk to vulnerable site receptors. However, in September 2022 there was a planning application to extend the agricultural bale storage area for the erection of a goat shelter. This would include the piping of a small ditch and the importation of approximately 256m3 of inert material to be imported. The plans were approved in December 2022, but to date, the shelter has not been constructed.

6.14. Within the Hazardous Substance dataset, the following entries have been assessed for active listings within 2000m of the site:

Control of Major Accident Hazards Sites (COMAH)
Explosive Sites
Notification of Installations Handling Hazardous Substances
Planning Hazardous Substance Consents
Planning Hazardous Substance Enforcements

6.15. No records held.

6.16. Records within the Geological dataset have been assessed for active listings in the following entries within 2000m of the site:

BGS 1:625,000 Solid Geology
BGS Estimated Soil Chemistry
BGS Recorded Mineral Sites
BGS Urban Soil Chemistry
BGS Urban Soil Chemistry Averages
CBSCB Brine Compensation Area
Coal Mining Affected Areas
Mining Instability
Man-Made Mining Cavities
Natural Cavities
Non-Coal Mining Areas of Great Britain
Potential for Collapsible Ground Stability Hazards
Potential for Compressible Ground Stability Hazards
Potential for Ground Dissolution Stability Hazards
Potential for Landslide Ground Stability Hazards
Potential for Running Sand Ground Stability Hazards
Potential for Shrinking or Swelling Clay Ground Stability Hazards
Radon Potential – Radon Affected Areas
Radon Potential – Radon Protection Measures

6.17. Entries in the BGS Solid Geology dataset indicate that the local lithology is the Pennine Lower Coal Measures and the South Wales Lower Coal Measures.

6.18. The BGS Measured Soil Chemistry for Arsenic, Cadmium, Chromium, Lead and Nickel are all below the values set out in the current guidance given by the LQM/CIEH (2015) S4ULs for Human Health Risk Assessment.

6.19. There are eleven BGS Recorded Mineral Sites within 1000m of the site, and these relate to the extraction of sandstone, which has now ceased. The closest one was located 333m south from the site and so it is unlikely to constitute a significant risk of significant harm to the end user of this site, or any environmental receptors on the site.

6.20. The site is in an area which may be affected by coal mining activity, it is recommended that a coal mining report is obtained from the Coal Authority.

6.21. In relation to paragraph 6.20. records of mining activity are inconclusive. However, in line with the Coal Mining Report CON29M, issued by The Coal Authority, the site falls within a coal field but not in a high-risk area. Due to this we do not consider a Coal Mining Risk Assessment is required.

6.22. All hazards relating to landslip or running sand are described as low or no hazard, and therefore unlikely to constitute a significant risk to the development of the site.

6.23. Radon data provided by Public Health England (UK Radon) indicates that 3% - 5% of properties within this area are estimated to be affected by radon. Consequently, basic radon protection measures are required for new dwellings.

6.24. Records within the Industrial Land Use dataset have been assessed for active entries within 1000m of the site for:

Contemporary Trade Directories Entries
Fuel Station Entries
Points of Interest – Commercial Services
Points of Interest – Education and Health
Points of Interest – Manufacturing and Production
Points of Interest – Public Infrastructure
Points of Interest – Recreational and Environmental
Gas Pipelines
Underground Electrical Cables

6.25. The following contemporary trade directory entries are applicable to the site:

On Site	0 Entries
0 – 250m	0 Entries
251 – 500m	2 Entries
501 – 1000m	5 Entries

6.26. There was no specific entry in the directory that would cause significant concern to the development of the site, since the entries are no different from those that might be encountered in any other rural environment.

6.27. Records within the Sensitive Land Use dataset have been assessed for active entries within 2000m of the site for:

Ancient Woodland

Areas of Adopted Green Belt

Areas of Unadopted Green Belt

Areas of Outstanding Nature Beauty

Environmentally Sensitive Areas

Forest Parks

Local Nature Reserves

Marine Nature Reserves

National Nature Reserves

National Parks

Nitrate Sensitive Areas

Nitrate Vulnerable Zones

Ramsar Sites

Sites of Special Scientific Interest

Special Areas of Conservation

Special Protection Areas

World Heritage Sites

6.28. Within the Areas of Adopted Green Belt data set an entry for an area on site is listed. With the provision that planning laws are adhered to there is no significant risk.

6.29. In the Mining and Ground Stability Datasheet there are references to mining excavations which took place in the 20th century. These are inconclusive and should be the subject of a Mining and Remediation Authority report.

6.30. Records within the Historical Building Plans Information dataset have been assessed for active entries within 1000m of the site for:

Areas Cleared Due to Enemy Action
Above Ground Fuel Tanks (100m)
Asbestos (100m)
Benzene/benzole/naptha/napthalene/kerosene (100m)
Electricity Generation (100m)
Electricity Sub-stations (100m)
Gas Industry (100m)
Gas Storage (100m)
Gas Use (100m)
Oil Industry (100m)
Oil Storage (100m)
Oil Use (100m)
Paint Based Oils (100m)
Paraffin (100m)
Petrol and Diesel Industry (100m)
Petrol and Diesel Storage (100m)
Petrol and Diesel Use (100m)
Potential Fuel Gas (100m)
Potential Fuel Oil (100m)
Potential Fuel Use (100m)
Potential Petrol and Diesel (100m)
Potential Tanks (100m)
Potentially Fuel-Related Tanks (100m)
Underground Fuel Tanks (100m)

6.31. No records

6.32. Records within the Historical Land Use Information Records dataset have been assessed for active entries within 1000m of the site for:

Former Marshes
Historical Flood Liabilities
Potentially Contaminative Industrial Uses (Past Land Use)
Potentially Infilled Land (Non-Water)
Potentially Infilled Land (Water)

6.33. The Historical Land Use dataset indicates that there are potentially contaminative industrial uses (past land use) and potentially infilled land (non-water) sites within 1000m of the site and these relate to quarrying, with related infrastructure. These have already been included in the desktop study and are not of concern as they are some distance beyond the boundaries of the proposed area of development, so will not constitute a significant risk to the development of the site.

6.34. Within the Historical Tanks and Energy Facilities dataset there are no entries within 1000 metres of the site for the following:

Electrical Sub-station Facilities

Electricity Industry Facilities

Gas Industry Facilities

Gas Monitoring Facilities

Miscellaneous Power Facilities

Oil Industry Facilities

Petroleum Storage Facilities

Potential Tanks

Tanks

6.35. No records.

6.36. The areas proposed for the gardens show they are on existing hardstanding, currently used for storage and parking. It is expected that these areas will require clean soil to be imported to site. It is therefore recommended that all imported soils are purchased from a supplier where the relevant soil testing has already been carried out prior to delivery to site. All imported soil should be supplied with supporting documentation for testing.

6.37. This report specifically excludes the identification of injurious and invasive weeds. Under the Weeds Act 1959, the Secretary of State may serve an enforcement notice on the occupier of land on which injurious weeds are growing, requiring the occupier to take action to prevent the spread of injurious weeds. The Weeds Act also specifies five injurious weeds which include Broad-leaved Dock and Curled Dock, Creeping, Spear or Field Thistle and Common Ragwort.

6.38. The Wildlife and Countryside Act 1981 provide advice on control on releasing non-native species of wildflowers into Great Britain. Under section 12(2) of the Act, it is an offence to plant or otherwise cause to grow in the wild any plants listed in schedule 9, part II. Commonly known plants that are included in this section are Japanese Knotweed and Giant Hogweed. CityStruct are not specialists in this field, so if they are suspected then specialist advice needs to be sought, but the presence of these plants on any site may have considerable effects on the cost and timescale in development.

7. Initial Conceptual Model

7.1. Introduction

The United Kingdom Government guidance on the assessment of contaminated land requires that risk to human health, to buildings and to the environment, be reviewed using a source-pathway-receptor linkage relationship. If each of these elements is present, the pollution linkage provides a potential risk to the identified receptors. The initial conceptual model of the site is therefore based on:

- Sources of contamination which may be present on, or may have an effect upon, the site:
- The possible exposure pathways which may exist between sources and receptors.
- The potential receptors which may be present on or adjacent to the site and their sensitivity.
- Redevelopment of the site for residential usage

The report also takes into account all the environmental, geological, hydrogeological and historical information gathered and recorded.

7.2. Potential Contamination Sources

The desktop data revealed that the land prior to circa 1850 had not been developed. The only real use of the land from 1970s onwards relates to the current property and structures that exist on the site. Having examined the site, undertaken a site reconnaissance survey, assessed the land use, the potential for contamination affecting the site is considered as follows:

7.3. Historical On-site Sources

The review of the desktop information and the walkover survey have revealed that there may be some concern regarding the 1990 infill referred to in point 6.10.

7.4. Current On-site Sources

The site reconnaissance survey and desktop data revealed that the current on-site sources are:

i.) Corrugated asbestos cement sheeting on the roofs of some of the structures on the site.

ii.) Presence of PAH from a diesel tank located in one of the structures.

iii.) Potential for elevated levels of radon gas emissions.

iv.) Potential for residual pesticides.

v.) Potential for residual fertilisers.

7.5. Historical Off-site Sources

The desktop data revealed that the only potentially contaminative industrial usage in the area relates to the historical coal mining and threat it poses to the proposed development.

7.6. Current Off-site Sources

The review of the desktop information and the walkover survey have revealed that there are no areas of potential concern that would restrict development on the site.

7.7. Potential Pathways

Possible pathways for the transportation of possible sources of contamination are:

Direct contact and associated dermal exposure, including ingestion and inhalation of soil particles (wind-blown dusts).

ii.) Direct contact between buried structures and the soil.

iii.) Ingestion of soil and dust attached to home grown produce.

iv.) Underground services may act as a pathway.

7.8. Receptors

Potential receptors are:

i.) 0 – 6-year-old female child

ii.) Properties on the site

iii.) Buried structures and services

iv.) Underlying secondary aquifer.

7.9. Source - Pathway - Receptor Linkages Risk Assessment

		Severity of Consequence			
		Severe	Medium	Mild	Minor
Probability of pollutant linkage	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

Table 1. Risk Matrix

Scenario	Source	Pathway	Receptor	Comments on potential pollution linkage	Risk?	Risk rating
Impact on health of future site users from contaminants within the shallow soils/made ground beneath the site	Potential contaminants from e.g. arsenic, lead, selenium and imported fill, polycyclic aromatic hydrocarbons (PAH) or asbestos	Dermal contact with soil or dusts, inhalation of vapours or dusts and ingestion of soils	End users of the site	Visual evidence noted during the site walk over survey and data from the BGS suggest potential for asbestos and for polycyclic aromatic hydrocarbons (PAH) to be present.	Proven	**High risk**
Impact on health of construction workers	Potential contaminants from e.g. arsenic, lead, selenium and imported fill, polycyclic aromatic hydrocarbons or asbestos	Dermal contact with soil or dusts, inhalation of vapours or dusts and ingestion of soils	Construction workers	Visual evidence noted during the site walk over survey and data from the BGS suggest potential for asbestos and polycyclic aromatic hydrocarbons to be present.	Proven	**High risk**
Migration and accumulation of dusts to off-site receptors	Potential contaminants in the soil/imported fill material inclusive of asbestos/PAH.	Inhalation of dusts and/or vapours	Neighbouring properties or persons	Installation of appropriate protection measures against dust, for example, will likely mitigate any risks to neighbouring properties and persons	Proven	**High risk**
Migration and accumulation of ground gases (e.g. radon)	Radon and coal gas emissions (hydrogen, methane, carbon dioxide) from the geology	Gas intrusion to habitable spaces	End users of the Site	Risk of infiltration to residences and inhalation and combustion	Potential	**Moderate risk**
Impact on ground water regime	Potentially contaminated soils	Pore-water in aquifer	End users of the site	The presence of ground water is unlikely at the surface	Unlikely	**Very low risk**

Table 2. Source pathway linkage assessment

8. Conclusions:

A Phase 1 Desktop Study has been undertaken to assess the potential for land contamination associated with the proposed conversion of the existing agricultural building into two residential dwellings.

The assessment comprised a review of historical mapping, environmental records, geological and hydrogeological information, together with a site walkover survey. The site has remained in agricultural use throughout the available historical record, with no evidence of historical industrial activities on the site that would give rise to significant contamination concerns.

Potential contamination sources associated with the existing agricultural use have been identified, including asbestos cement roofing materials, a diesel storage tank and the potential presence of residual pesticides and fertilisers. These are typical of agricultural sites and can be appropriately managed during redevelopment.

The site is also located within a coal mining affected area and an area where basic radon protection measures are recommended for new residential development.

The risk associated with coal gas emissions (hydrogen, methane, carbon dioxide) is considered a moderate risk and a ground gas assessment using monitoring wells is recommended. Regular data recording should be carried out.

These matters should be addressed as part of the detailed design and construction process where applicable.

Further considerations should be given to:

i.) The presence of polycyclic aromatic hydrocarbons from burning organic waste on the site, from suspected dumped soils/materials.

ii.) The BGS assessment of naturally occurring metalloids in excess of, or encroaching upon, LQM/CIEH (2015) S4ULs for Human Health Risk Assessment, specifically lead (Pb).

iii.) Lastly, testing for residual asbestos containing materials (ACMs) which have been photographed on site and are in current use as roofing materials.

Based on the information reviewed, potential contamination sources and associated pollutant linkages have been identified, particularly in relation to historical infilling, agricultural activities and ground gas. Further intrusive investigation, including targeted soil testing and ground gas monitoring, is recommended to establish the significance of these risks and determine whether remediation or protective measures are required.

Subject to satisfactory investigation findings and the implementation of any necessary mitigation measures, the site is considered potentially suitable for the proposed residential conversion from a contaminated land perspective.

Appendix I - Site Location Plan

Appendix II - Historical Maps

Appendix III - Site Sensitivity Maps

Appendix IV - Data Sheets

Appendix V

1. This report has been prepared and written specifically for the Client named in the introduction and is exclusively for his/her/their benefit. No reliance may be placed in the contents of this report by any third party except with the express agreement of the original Client and the written agreement of CityStruct. Such written agreement may require the payment of an additional fee.
2. The Executive Summary and Recommendations sections of this report only provide an overview of the guidance and should not be specifically relied upon in their own right but should be considered in relation to the whole report and the development described in this report.
3. This report has been prepared and written in the context of the proposals for the development of the site as stated by the Client and will not be valid in a differing context. Furthermore, new information, improved practices, or legislation may necessitate alterations to the report in whole or in part after its submission. Therefore, with any change in circumstances or after the expiry of one year from the date of this report, it should be referred to us for re-assessment.
4. The assessment and interpretation of contamination and associated risks are based upon the scope of the work described in the fee proposal and agreed with the client, the report may not be sufficient to fully address the contamination or allow a detailed remediation scheme to proceed without further investigation or analysis.
5. Any assessments made in this report are based on the ground conditions and as revealed by the test pits and boreholes together with the results of any field or laboratory testing undertaken and where appropriate other relevant data which may have been obtained for the site. The sources of such information are detailed in this report and while CityStruct use only such sources as are believed to be reliable, CityStruct will not be liable for the authenticity or reliability of information obtained from others.
6. Notwithstanding that factual reports from third parties concerning asbestos or mould of any kind may have been included for information purposes in this report, CityStruct will have no liability whatsoever for any claim or claims arising related to asbestos or mould of any kind.
7. There may also be special conditions appertaining to the site which were not revealed by the investigation, and which will not, therefore, have been taken into account in this report. Any assessments may be subject to amendment in the light of additional information becoming available.
8. Whilst an opinion may be expressed or implied in this report on possible configurations of strata between or beyond test pit or borehole locations, or on the possible presence of features based on either visual, verbal or published evidence, this is for guidance only and no liability can be accepted for the accuracy of such opinions.
9. Comments on groundwater conditions will have been based on observations made only at the time of the investigation unless otherwise stated. It should be noted, however, that groundwater levels vary due to seasonal and other effects.
10. This report is not a site categorisation, and hazards could occur which have not been detected.
11. Where data has been provided or is made available to CityStruct and this has been used in the report, it has been assumed that the information is correct. No responsibility can be accepted by CityStruct for inaccuracies within the data supplied.
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