



**IAN FARMER
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RAMSBOTTOM, BL0 9RD**

PRELIMINARY INVESTIGATION REPORT

Contract: 2230990

Date: March 2023

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PRELIMINARY INVESTIGATION REPORT

carried out at

ABBOTTS HALL, WOODHEY ROAD, RAMSBOTTOM, BL0 9RD

Prepared for

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Woodhey Road
Ramsbottom,
BL0 9RD**

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EXECUTIVE SUMMARY

On the instructions of Roman Summer Associates Ltd, town planning consultants, acting on the behalf of Mr D Abbott, a Preliminary Investigation in the form of a desk study and site reconnaissance has been carried out in order to assess the potential hazards on and adjacent to the site and prepare a risk assessment for further consideration.

It is understood that it is proposed to convert the current agricultural building to a residential dwelling; no further structural or landscaping changes are proposed.

The site is situated to the north-eastern periphery of Ramsbottom at Abbotts Hall, Woodhey Road, Bury, BL0 9RD and may be located by Grid Reference SD 78611 15266.

The earliest historical map of 1850 shows the site to lie within open farmland with mixed woodland. A path is seen to run though the site in a northwest southeast direction. The surrounding area is predominantly agricultural land interspersed with cotton mills and a chemical works. By 1968 to 1978 there appears to have been some clearing of the woods, refuse spoil is noted with and the course of the path has been moved to the north of the site. The current agricultural building is first noted on the 2016 map.

The site is expected to be underlain by superficial deposits of Glacial Till with bedrock of the Brooksbottoms Grit below.

From a geotechnical perspective, the presence of Made Ground as spoil or refuse may be both highly compressible and variable, potentially leading to excessive total and differential settlements. No evidence of this was observed during the walkover survey. As such, the risk is considered low. Should the Glacial Till have sand lenses a high groundwater table may cause subsidence due to running sand. It is considered the risk associated with this is very low.

The site has a gentle slope towards the southeast. Immediately south southeast of the site boundary there is a steep drop to the forest. This is not considered a risk to the development of the agricultural building.

Historical mapping indicates some levelling and spoil associated with the change in the direction of the path. The only building development appears to be the current building on site. The presence of buried structures such as services for the current building present a moderate risk.

Contamination may be present as there is the potential for oil/fuel and car workshop materials to have been spilled on site. The historical maps also indicate the presence of refuse spoil on site. The risk to end-users is considered to be low to moderate.

Gas may be emitted from the former refuse spoil. The risk to end users is considered to be moderate and further work is recommended.

There is considered to be a low risk due to chemical attack on construction materials emplaced within the Made Ground.

The site is located on a Secondary Aquifer and as such, any consequence of contamination to the water environment is considered to be medium but unlikely, the site does not lie within a source protection zone and therefore a low risk level has been assigned.

Should the proposed end-use for the development change, the above risks should be re-assessed.

It is recommended that further work be carried out in order to monitor ground gases in the vicinity of the existing agricultural buildings. This should involve the sinking of boreholes and the installation of monitoring standpipes. The work should also involve sampling and chemical testing of soil recovered from the boreholes.

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1.0 INTRODUCTION

1.1 General

- 1.1.1 On the instructions of Roman Summer Associates Ltd, town planning consultants, acting on the behalf of Mr D. Abbott, a Preliminary Investigation in the form of a desk study and site reconnaissance has been carried out in order to assess the potential hazards on and adjacent to the site and prepare a risk assessment for further consideration.
- 1.1.2 It is understood that it is proposed to convert the current agricultural building to a residential dwelling. It is also understood that no further structural or landscaping changes are proposed.
- 1.1.3 This report has been prepared for the sole use of the Client for the purpose described and no extended duty of care to any third party is implied or offered. Third parties using any information contained within this report do so at their own risk.
- 1.1.4 It is recommended that a copy of this report be submitted to the relevant authorities to enable them to carry out their own site assessment and provide any comments.
- 1.1.5 The comments given in this report and the opinions expressed herein are based on the information obtained from the desk study and site reconnaissance. No intrusive investigation has been carried out to confirm the actual ground or environmental conditions.
- 1.1.6 Any risks identified in this report are perceived risks based on information reviewed. Actual risks can only be assessed following a physical investigation of the site.
- 1.1.7 This report has been based, in part, on information supplied by others. The report has been prepared on the basis of that information being accurate.
- 1.1.8 The conclusions presented in this report are based on the guidance available at the time of preparation of the report. No liability can be accepted for the retrospective effects of any changes or amendments to legislation or guidance.
- 1.1.9 This Preliminary Investigation has been conducted in general accordance with CLR 3, ref. 8.1, CLR 11, ref 8.2, BS 10175, ref 8.3, and GPLC 1, ref 8.4.

2.0 SITE

2.1 Site Location

- 2.1.1 The site is situated to the north-eastern periphery of Ramsbottom at Abbotts Hall, Woodhey Road, Bury, BL0 9RD and may be located by Grid Reference SD 78611 15266. A site location plan and aerial photograph are included in Appendix 1, Figures A1.1 and A1.2.

2.2 Site Walkover and Description

- 2.2.1 A walkover survey of the site was conducted on 10th March 2023. The walkover was carried out in general accordance with CLR 2, ref. 8.5.
- 2.2.2 The site is accessed from the west along Woodhey Road and is an irregular rectangular area of 0.36 ha.
- 2.2.3 At the time of the walkover survey the site was occupied by a warehouse and the grounds included caravan storage, soil, gravel and occasional plastic stockpiles, fencing and metal storage cabins.
- 2.2.4 The site is generally flat and sloping gently towards the south-east. However immediately south southeast of the site there is a steep drop into a forest.
- 2.2.5 There was no evidence of landslips on or adjacent to the site or on similar ground nearby.
- 2.2.6 No water bodies were noted on site.
- 2.2.7 Trees and shrubs were noted to the south-west and north-west of the warehouse along the boundaries.
- 2.2.8 The ground was a combination of loose gravel and compacted gravel, soil and grass. Hardstanding appears to be compacted gravel with the exception of the concrete inside of the warehouse and the warehouse ramps leading into the warehouse. Standing water is noted to the east of the warehouse and in the caravan parking area.
- 2.2.9 The warehouse is constructed of breeze block and corrugated sheet metal on the upper walls and matching roof with a few windows. The build is in good condition. The interior of the warehouse has been divided in to three sections using a combination of breeze block, wood and plywood. The ground floor is utilised for the storage of cars (occupies half of the overall space) and an active car workshop. The first floor accessed via wooden steps and a lift and has been partially constructed into living space, comprising kitchen, two bathrooms, and other rooms.
- 2.2.10 Services are noted within the building, radiators (presumably oil heating), electricity and water. An oil tank is noted by the warehouse which showed no signs of spills or leaking and is believed to have been present for between 12-18 months.

- 2.2.11 There are no obvious sources of contamination, however there is an empty skip and two stockpiles of concrete gravel and one of soil and gravel with some plastic. Other detritus is noted over the site including a deflated dingy, random building equipment and materials.
- 2.2.12 The forest area to the southeast of the site is known to have been used for waste.
- 2.2.13 Photographs from the walkover survey are included within Appendix 2, Figures A2.1 to A2.15. A site plan is included in Appendix 1, Figure A1.3.

2.3 Historical Maps

2.3.1 A review of the history of the site has been conducted based on readily available historical maps. Details of the findings are provided in the table below. All maps are provided in Appendix 4.

Map, Date and Scale	Site Description	Regional Setting
Lancashire and Furness 1850-1851 1:10 560 1893 1:2,500	The site is within open farmland with mixed woodland. A path is seen to run though the site in a north-west south-east direction.	The surrounding area is predominantly open farmland with sporadic industries mostly comprising cotton mills. Woodley Chemical Works which is noted at 140 m to the south-west of the site. Cotton mills include New York Cotton Mill at 340 m to the west, a disused cotton mill at 300m to the south -east, the large cotton mill of Brooksbottom is noted at 670 m east. Gas works are noted at 430 m to the east. Residential housing is positioned linearly along the Bolton Road. A cemetery is recorded at 340 m to the north.
Lancashire and Furness 1930-1930 1:10,560 1929 1:2,500	The woodland cover has been reduced, there appears to have been some landscaping / moving of material to the centre of the site with spoil noted.	The Woodhey Works (Printing and Dyeing) remain active. Housing has increased to within 250 m. Holcombe Brook Mill is now present at 340 m to the north-west. Residential dwellings are noted at 54 m to the north-east of the site. A spring is noted at 40 m to the west of the site.
Lancashire and Furness 1938-1939 1:10,560 1937 1:2,500	No significant changes.	Significant increase of residential housing at 500 m to the south-west as Holcombe Brook village increases.
Through to 1956	No observable changes since 1938 map.	Some increase in residential dwellings.
Ordnance Survey Plan 1968-1969 1:10,000 1963 1:2,500	The spoil on the site is referred to as a refuse tip. The pathway remains running though the site. A reference to a water issue is made to the south-eastern edge of the site.	Woodhey Works have increased to include a refuse tip at 170 m to the south-west. A large housing estate is present at 125 m to the north.
Ordnance Survey Plan 1978 1:2,500	There is no reference to refuse and the track running though the site has altered direction now noted to traverse though the northern edge.	Woodhey Works have been dismantled.
Additional SIMS 1983-1989 1:1,250		A school has been built with playing fields extending to the road trackway leading on to the site.

Map, Date and Scale	Site Description	Regional Setting
2016 1:10,000	The large barn (approx. 30 m x 16 m) is now present on the site.	A building has been erected off site at 10 m from the access road. Housing has extended over the former Woodhey Works site.
Through to 2023	No observable changes.	No significant changes.

2.4 Summary

- 2.4.1 The 1850 map shows the site to lie within open farmland with mixed woodland. A path is seen to run though the site in a north-west south-east direction. The surrounding area is predominantly agricultural land interspersed with cotton mills and a chemical works.
- 2.4.2 By 1968 to 1978 there appears to have been some clearing of the woods, refuse spoil is noted and the direction of the path has been moved to the north of the site.
- 2.4.3 The current barn / agricultural building is first noted on the 2016 map.

3.0 SITE SETTING

3.1 Geological Setting

- 3.1.1 Details of the geology underlying the site have been obtained from the relevant geological map of the area, ref. 8.6.
- 3.1.2 The geological map indicates the site to be underlain by superficial deposits of Glacial Till of the Devensian, comprising of clay with varying components of silt, sand and gravel.
- 3.1.3 The superficial deposits are underlain by Brooksbottoms Grit, part of the Millstone Grit Group, a sandstone formed during the Carboniferous period.
- 3.1.4 Although not indicated as present on the site from the geological maps, there is the possibility that Made Ground may exist on the site as there is current development, a track way and a reference to a refuse tip on the historical maps.

3.2 Hydrogeological Setting

- 3.2.1 The hydrogeological records, provided by the Environment Agency, indicate that the site is situated on bedrock of a Secondary Aquifer - A and superficial strata of a Secondary Aquifer – Undifferentiated.
- 3.2.2 The Environment Agency has assigned the term Secondary Undifferentiated to aquifers where it has not been possible to attribute category A or B due to variable characteristics of the rock type.
- 3.2.3 The Environment Agency defines Secondary A aquifers as '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'.
- 3.2.4 The Envirocheck vulnerability map indicates the bedrock and the superficial strata to be of a medium vulnerability.
- 3.2.5 The site is not located within a groundwater source protection zone.
- 3.2.6 There are five groundwater abstraction wells within 1000 m of the site. the nearest is at 780 m north-east for general agricultural use.

3.3 Hydrological Setting

- 3.3.1 The nearest surface watercourse is an unnamed issue at the 5 m from the south-east of the site.
- 3.3.2 There is a pond at 140 m to the southwest.
- 3.3.3 The site is not situated within an area defined by the Environment Agency as being at risk of flooding from rivers or the sea.

- 3.3.4 The British Geological Survey Groundwater Flooding Susceptibility data indicates the site to be a limited potential for groundwater flooding to occur.
- 3.3.5 The available river quality classification for the Holcombe Beck at 200 m to the south is B. The main parameters for this classification are provided below:

GQA Grade	Environmental Quality	Chemical Parameters			Biological Parameters	
		DO (%)	BOD (mg/l)	Ammonia (mgN/l)	EQI for ASPT	EQI for no. of taxa
B	Good	70	4	0.6	0.90	0.70
Ref: Landmark Envirocheck						

- 3.3.6 There are two surface water abstractions within 1000 m of the site at 571 m for Greenleaf Enterprises Ltd and Binex Ltd, both utilised for textile industry.

3.4 Radon

- 3.4.1 The British Geological Survey, in conjunction with the Radiation Protection Division of the Health Protection Agency, ref. 8.7, indicates the site to lie within an area where there is a probability of <1% of present or future homes being above the action level of 200 Bq/m³. As such, the site is not classified as a Radon Affected Area.
- 3.4.2 As such, no radon protective measures are deemed necessary for the site. This is confirmed by the Building Research Establishment, Report BR211, ref 8.8.

3.5 Soil Geochemistry

- 3.5.1 The British Geological Survey data indicates the following concentrations of naturally occurring metals to be representative of background levels in natural soil underlying the site. The levels are based on those present in rural soils and are not necessarily representative of levels within Made Ground which may be encountered on site:

Element	Concentration (mg/kg)
Arsenic	15-25
Cadmium	<1.8
Chromium	60-90
Lead	<100
Nickel	15-30

4.0 ASSESSMENT OF GEOTECHNICAL RISK

4.1 Geological Constraints

- 4.1.1 The following are brief findings relating to factors identified during the research from the Envirocheck data that may have a potential impact upon the engineering of the proposed development.

Potential Hazard	Assessed Risk	Comment
BGS Recorded Mineral Sites	Very low	Closest at 749 m south for opencast sand.
Coal Mining / Mining Instability	Very low	Site is situated within a coal reporting area. Coal Authority Coal Mining Report is discussed in Section 4.2.
Other shallow mine workings	Very low	No other economic minerals are known to have been worked locally.
Collapsible Ground	Very low	Glacial till expected.
Compressible Ground	None	Glacial till expected.
Ground Dissolution	None	Sandstone strata is expected.
Landslide	Very low	The site is level with gently slope to the southeast.
Running Sand	Very low	Likelihood will relate to grading of sand strata below the water table.
Shrinking or Swelling Clay	Very low	Local clays anticipated to be of low plasticity
Unconsolidated Made Ground	Low	There is reference to spoil and refuse on site from historical maps. No evidence of subsidence or cracking of the existing building were observed during the walkover.
Bearing Pressure	Low	Glacial Till expected on site, however there may be Made Ground with potentially low bearing pressures. No evidence of subsidence or cracking of the existing building were observed during the walkover
Aggressive conditions for construction materials	Very low	High concentrations of sulphates and sulphides not expected.
Shallow or high groundwater table	Low	Site is within an area where spring and issues are noted. Groundwater may be shallow.

4.2 Coal Mining

- 4.2.1 The Coal Authority report, Appendix 5, states that the site is within an area that could be affected by future underground coal mining. However, this is not likely to take place.
- 4.2.2 The report does not identify any other areas of risk posed by coal mining. As such, the risk is considered to be very low.

4.3 Geotechnical Risk Assessment

- 4.3.1 An assessment of the main hazards associated with the site is detailed below. Unless stated otherwise, the presence of such hazards are based on information from the research or reconnaissance and have not been confirmed by an intrusive investigation.

- Soil Conditions

The presence of Made Ground as spoil of refuse may be both highly compressible and variable, potentially leading to excessive total and differential settlements.

Should the Glacial Till present have sand lenses a high groundwater table this may cause subsidence due to running sand.

No evidence of subsidence or cracking was observed during the walkover.

Based on the above, together with the understanding that there are no new structures proposed as part of the development, the risk is considered to be low.

- Topography

The Envirocheck data provided indicates only a very low risk of landslip subsidence. The site has a gentle slope towards the southeast. Immediately south south-east of the site boundary there is a steep drop to the forest. This is not considered a risk to the development of the present warehouse.

- Previous Use

Historical mapping indicates some levelling and spoil with the change in the direction of the path. The only building development appears to be the current building on site.

4.4 Conclusions of Geotechnical Risk Assessment

- 4.4.1 The research has identified evidence of potential hazards associated with underlying ground conditions, either natural or man-made. There are no new structures proposed as part of the development. Based on the above findings, no further work is required from a geotechnical perspective. Should the proposed end-use be revised, the above risk assessment should be re-examined.

5.0 ENVIRONMENTAL SEARCHES

5.1 Potential Sources of Contamination

5.1.1 A search was made of records held by the various regulatory authorities and other statutory bodies to determine the presence or otherwise of past and current activities on or within 500m of the site which have the potential to give rise to the presence on site of contaminants. The findings are given in the table below:

Activity	On Site	Off Site (distance / direction)	Detail
Contaminated Land Register Entries	None	None within 500 m	None
Discharge Consents	None	Two at up to 250 m	Closest at active is at 224 m south-east for Mr R Orton for sewage discharges.
Integrated and Local Authority Pollution Prevention and Controls	None	None within 500 m	None
Pollution Incidents to Controlled Waters	None	Four within 250 m, three within 251-500 m	All were category three minor incidents.
Prosecutions Relating to Authorised Processes or Controlled Waters	None	None within 500 m	None
Registered Radioactive Substances	None	None within 500 m	None
Substantiated Pollution Incident Register	None	None within 500 m	None
Water Abstractions	None	None within 500 m, seven within 201-1000 m	Closest at 571 m for surface water.
BGS Recorded Landfill Sites	None	None within 500 m	None
Historical Landfill Sites	None	One within 250 m, one within 251-500 m, three within 201-1000 m	Closest at 119 m south-west for Abbots of Bury Limited, waste included inert, industrial, commercial and special.
Licensed Waste Management Facilities	None	None within 500 m	None
Local Authority Recorded Landfill Sites	None	None within 500 m	None
Registered Landfill Sites	None	One within 500 m One within 201-1000 m	Closest at 201 m to the south-west for Abbots of Bury Ltd surrendered in 1977. Waste included asbestos, construction and demolition waste, mine and quarry waste, biodegradable waste, liquid slurry and paper/cardboard waste.

Activity	On Site	Off Site (distance / direction)	Detail
Registered Waste Transfer Sites	None	None within 1000 m	None
Registered Waste Treatment or Disposal Sites	None	None within 1000 m	None
Hazardous Substances	None	None within 1000 m	None
Explosive Sites	None	None within 1000 m	None
Contemporary Trade Entries	None	None within 1000 m	None
Fuel Station Entries	None	None within 500 m	None

5.2 Green Belt Areas

5.2.1 The site is an area of Adopted Green Belt land.

5.2.2 Green Belt Areas are generally areas that are designated as being under special consideration for development. Local Authorities may restrict the type of development, place particular planning constraints on proposed developments, or potentially restrict any development within a designated Green Belt area.

5.3 Designated Sites

5.3.1 A review of the MAGIC (MultiAgency Geographic Information for the Countryside) website, ref www.magic.gov.uk, was undertaken to assess whether there were any Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR) or Local Nature Reserves (LNR) which may be impacted by the development.

5.3.2 The enquiries indicated there is one LNR and three ancient woodland sites within 1 km of the site.

5.4 Nitrate Vulnerable Zone

5.4.1 The site is not located within an area designated as a nitrate vulnerable zone.

5.5 Contemporary Trade Entries

5.5.1 There are twelve contemporary trade entries located within 500 m of the site.

5.5.2 The closest is at 197 m to the west for Peel Pumps a sales and service repair centre. The sites that are currently active are not likely to have any significant potential impact on the site.

6.0 ASSESSMENT OF GEOENVIRONMENTAL RISK

6.1 General

- 6.1.1 The definition of ‘contaminated land’, along with the relevant details on legislation and guidance is set out in Appendix 3.
- 6.1.2 The assessment of potential risk has been based on the guidelines given in CIRIA report C552, ref 8.9. These guidelines are summarised in Appendix 3.
- 6.1.3 The assessment of environmental risk is aimed at identifying the possible risk, if any, arising from substances used or deposited on the site, or from any other sources of land contamination, based on the principles of the pollutant linkage.
- 6.1.4 The assessment is based on the proposed development end use, taking account of present and previous use. It is based only on a review of historical maps, desk based data and site reconnaissance; therefore it contains some elements of conjecture based on professional judgement. A comprehensive risk assessment can only be made following an intrusive investigation and testing regime.
- 6.1.5 The proposed development comprises the conversion of an agricultural building into a residential dwelling.

6.2 Potential Sources of Contamination Identified

- 6.2.1 The research has identified the following potential sources of contamination which may form part of a pollutant linkage:
 - Potential contamination associated with Made Ground due to historical map reference to refuse spoil and possible gas emissions.
 - Presently there is storage of oil fuel on site and the current use as a car workshop may have incurred former spills.

6.3 Potential Pathways Identified

- 6.3.1 The research has identified a number of potential pathways which are relevant to the potential sources of contamination identified above and may form part of a pollutant linkage.
- 6.3.2 Those identified are detailed within the Conceptual Site Model, along with the receptors relevant to the development on a site-specific basis.

6.4 Hazard Identification

- 6.4.1 The research has identified a number of potential sources and pathways which are considered ‘likely’ to be present which, taking into account the potential receptors identified, form potential pollutant linkages and have been used in the formulation of the Conceptual Site Model.

6.5 Hazard Assessment

6.5.1 An assessment of the main sources of contamination and the potential for unacceptable risk to receptors is detailed below. Unless stated otherwise, it is considered 'likely' that a potential source is present at this stage, in order to provide a preliminary estimation of the risk and therefore determine the need for further work.

- Human Health

There is the potential for oil / fuel and car workshop materials to have been spilled on site. In addition, the presence of a refuse pile as noted on the historical maps could pose a risk to end-users. As such, the risk is considered to be low to moderate.

Gas may be emitted from refuse on the eastern side of the site. The risk to end users is considered to be moderate.

- Construction Material

There is considered to be a low risk due to chemical attack on construction materials emplaced within the Made Ground.

- Controlled Waters

The site is located on a Secondary Aquifer and as such, any consequence of contamination to the water environment is considered to be medium but unlikely. In addition, the site does not lie within a source protection zone and therefore a low risk level has been assigned.

6.6 Conceptual Site Model

6.6.1 The research has therefore identified the following pollutant linkages that require further consideration and have been used to formulate the Conceptual Site Model.

Source	Potential Contaminants of Concern	Potential Pathways	Receptor Group	Risk
Made Ground	Heavy Metals PAHs TPH	Ingestion of contaminated soil by direct contact Ingestion of vegetables grown in contaminated soil	Humans • Site users • Construction workers Water Environment	Low to moderate Negligible ^{1,2}
		Entry of contaminants by skin or eye contact	• Groundwater Buildings, Materials and	Low

Source	Potential Contaminants of Concern	Potential Pathways	Receptor Group	Risk
		with contaminated soils or dust Inhalation of contaminated dust Inhalation or migration of toxic / explosives gases / vapours	Services - Concrete - Plastic pipes and services	Low Low
Ground Gases	Methane Carbon dioxide	Migration Ingression	Humans and buildings - Gas ingress into buildings - Site occupants	Moderate Moderate
¹ – Assumes that PPE is worn at all times ² – Pathway exists only during the construction period				

6.7 Conclusions of Geoenvironmental Risk Assessment

- 6.7.1 The research has identified evidence of potential sources of contamination on or which may impact on the site, with plausible pathways to the likely receptors, and therefore potential pollutant linkages have been suggested.
- 6.7.2 It is understood that the proposals for the site consist of a change of end-use only; no new structures or areas of landscaping are proposed. Should the proposal for the site change, the risks identified above should be re-assessed and, if necessary.
- 6.7.3 It is recommended that further work be carried out in order to monitor ground gases in the vicinity of the existing agricultural buildings. This should involve the sinking of boreholes and the installation of monitoring standpipes. The work should also involve sampling and chemical testing of soil recovered from the boreholes.

6.8 Consultation

- 6.8.1 During development, consultation may be required for a number of reasons with a number of regulatory Authorities. The following provides an indication as to the most likely Authorities with which consultation may be required:
- Local Authority.** There may be a planning condition regarding contamination and consultation will be required with a designated Contaminated Land Officer within the Environmental Health Department. The Local Authority is generally concerned with human health risks.

- **Environment Agency.** Where a site is within a groundwater protection zone or has been designated as a special site, the Environment Agency is likely to be involved to ensure that controlled waters are protected.
- **National House Building Council, NHBC.** Section 4.1 of the NHBC Standards, ref 8.10, requires land management to be addressed. For a new housing development to be approved by the NHBC, any contamination will require remediation accompanied by a validation report.

6.8.2 Based on the results of any consultation, there may be specific investigation and/or remediation requirements imposed by one or more of the Authorities.

7.0 RECOMMENDATIONS

7.1 Further Work

7.1.1 An intrusive investigation should be undertaken to address the issues raised in Chapter 4.0 and Chapter 6.0.

7.1.2 The following scope of works is suggested in order to collect the required data:

- The sinking of boreholes for the recovery of samples for geotechnical and chemical contamination analysis.
- The installation and monitoring of gas and groundwater monitoring standpipes.

7.2 Other Considerations

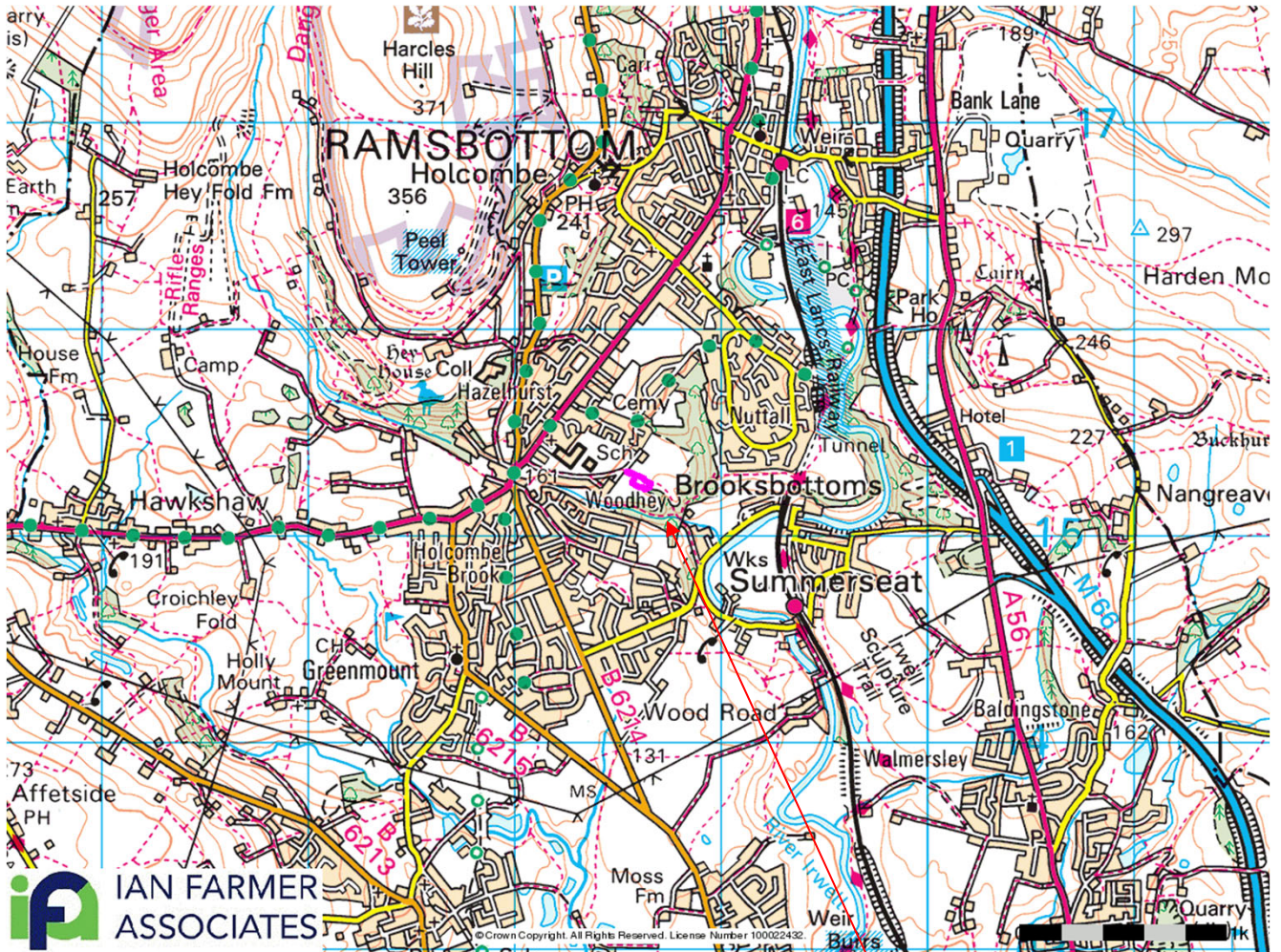
7.2.1 There are several other areas of research which are beyond the scope of this report. All or none of the following may be applicable to the site, either on the outcome of consultation with a regulatory body or as a result of the research for this Preliminary Investigation. They include:

- **Archaeology.** Should the site be situated on or within an area of archaeological sensitivity, the advisor to the relevant local authority should be consulted. The requirement for an archaeological report may be identified within a planning condition, if appropriate, for the site.
- **Ecology.** There may be a requirement for a detailed ecological report, dependant on the type or size of the development, or due to evidence identified during the site reconnaissance or desk study. This requirement may be identified within a planning condition or recommended within Section 7.0.
- **Unexploded Ordnance (UXO).** Preliminary on-line information provided by Zetica indicates the site to lie within a low area of risk. Areas of low potential for UXO may include rural greenfield sites, well away from any military installations; however this does not mean there is no risk in such areas. The risk increases within urban areas, particularly those with wartime installations and infrastructure (e.g. power stations, industrial centres). Clearly wartime military establishments and their close surroundings have to be classed as high risk. This requirement may be identified within a planning condition.

8.0 REFERENCES

- 8.1 CLR 3, '*Documentary research on industrial sites*', Report by RPS Consultants Ltd, DoE, 1994
- 8.2 CLR 11, '*Model Procedures for the Management of Land Contamination*' Report by Defra and the Environment Agency, 2004
- 8.3 BS 10175: 2011 '*Investigation of potentially contaminated sites. Code of practice*', British Standards Institute, 2011
- 8.4 GPLC1, '*Guiding principles for land contamination*', Environment Agency, 2010
- 8.5 CLR 2, '*Guidance on preliminary site inspection of contaminated land*', Report by Applied Environmental Research Centre Limited, DoE, 1994
- 8.6 British Geological Survey, Sheet No. 76, Rochdale, solid and drift edition, 1:50,000 scale, published 2008.
- 8.7 HPA-RPD-033, '*Indicative Atlas of Radon in England and Wales*', Health Protection Agency, 2007.
- 8.8 BR211, '*Radon: Protective measures for new dwellings*'. BRE, 2007
- 8.9 C552, '*Contaminated Land Risk Assessment, A Guide to Good Practice*', CIRIA, 2001
- 8.10 Standards, '*Land Quality – Managing Ground Conditions*', Chapter 4, NHBC, 2010
- 8.11 The Environmental Protection Act, Part IIA, Section 78, 1990
- 8.12 Environment Act 1995, Section 57, DoE, 1995
- 8.13 Water Environment and Water Services (Scotland) Act, 2003
- 8.14 Planning Policy Statement 23: Planning and Pollution Control, ODPM, 2004
- 8.15 Science Report SC050021/SR2, '*Human health toxicological assessment of contaminants in soil*'. Environment Agency, 2009
- 8.16 Science Report SC050021/SR3, '*Updated technical background to the CLEA model*'. Environment Agency, 2009

APPENDIX 1
DRAWINGS



THE SITE

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Site Location Plan

Scale: NTS

Figure A1.1





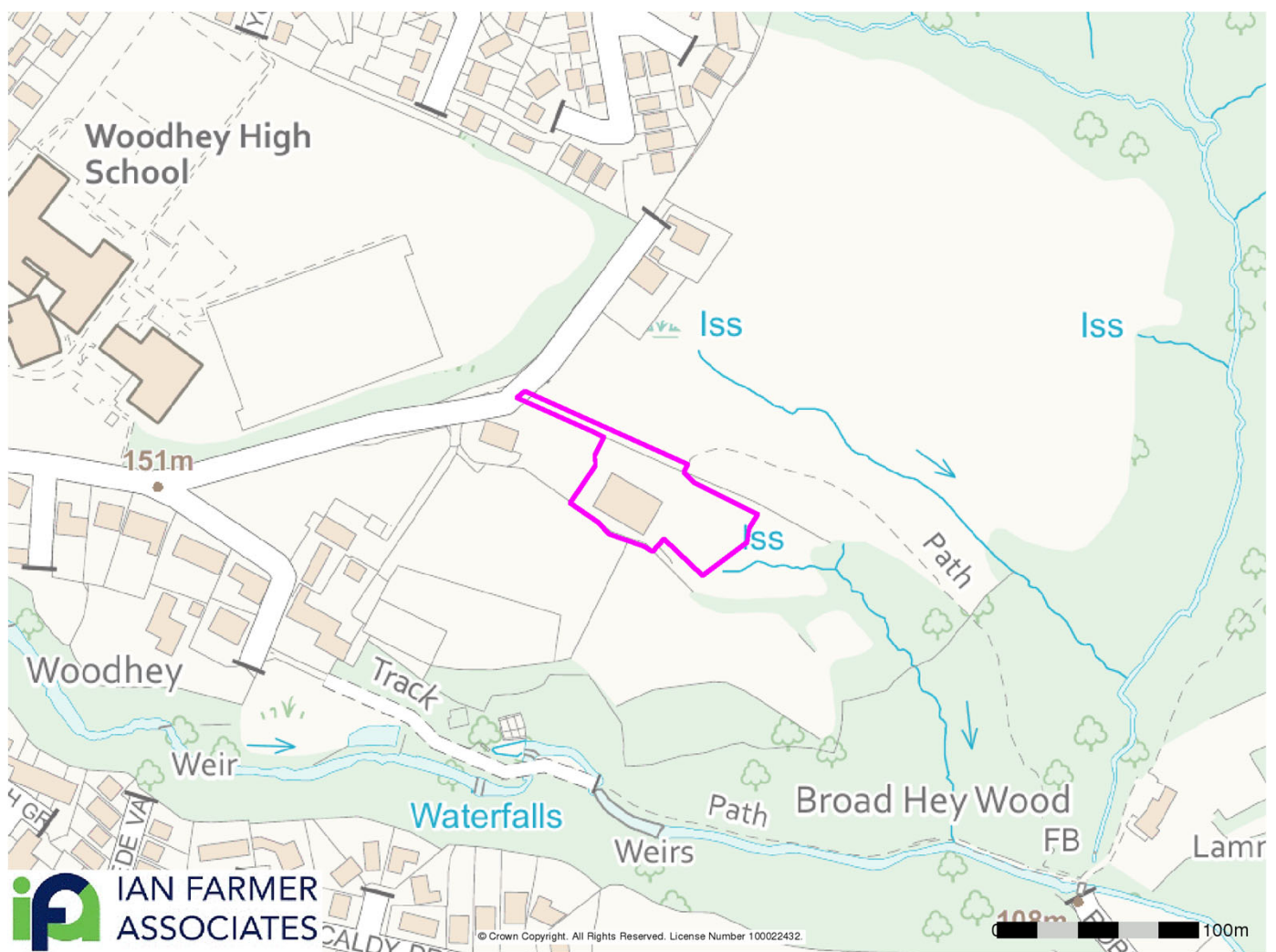
Contains Ordnance Survey data © Crown copyright and database right 2017

Aerial Photograph

Scale: NTS

Figure A1.2





Contains Ordnance Survey data © Crown copyright and database right 2017

Site Plan

Scale: NTS

Figure A1.3



APPENDIX 2
SITE WALKOVER PHOTOGRAPHS



Warehouse exterior

Site Location Plan

Scale: NTS

Figure A2.1





Car storage

Site Location Plan

Scale: NTS

Figure A2.2





Work shop

Site Location Plan

Scale: NTS

Figure A2.3





Work shop

Site Location Plan

Scale: NTS

Figure A2.4





First floor

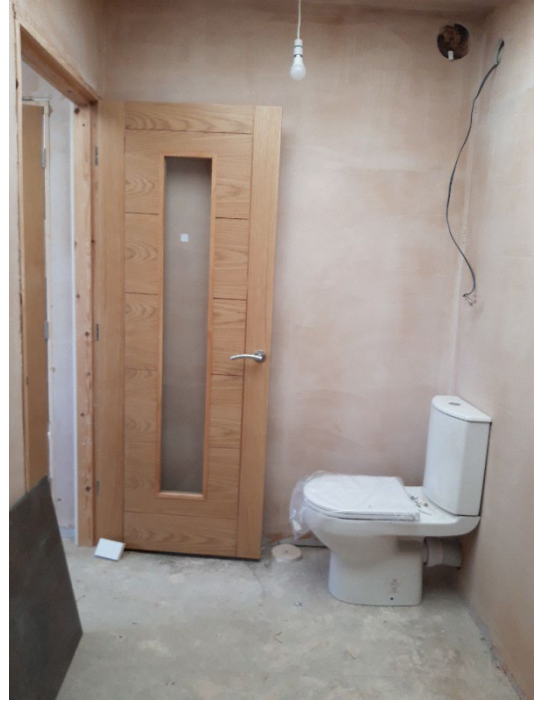
Site Location Plan

Scale: NTS

Figure A2.5



223099: Abbots Hall, Bury



First floor

Site Location Plan

Scale: NTS

Figure A2.6



223099: Abbots Hall, Bury



Entrance to site

Site Location Plan

Scale: NTS

Figure A2.7





Steel containers

Site Location Plan

Scale: NTS

Figure A2.8





Steel containers

Site Location Plan

Scale: NTS

Figure A2.9





Hardstanding outside warehouse

Site Location Plan

Scale: NTS

Figure A2.10





Outside eastern side of warehouse

Site Location Plan

Scale: NTS

Figure A2.11





North and north-east of warehouse

Site Location Plan

Scale: NTS

Figure A2.12





North and north-east of warehouse

Site Location Plan

Scale: NTS

Figure A2.13



223099: Abbots Hall, Bury



South east of warehouse

Site Location Plan

Scale: NTS

Figure A2.14





Oil tank

Site Location Plan

Scale: NTS

Figure A2.15



APPENDIX 3
ENVIRONMENTAL RISK

APPENDIX 3

ENVIRONMENTAL RISK ASSESSMENT

A3.1 STATUTORY FRAMEWORK AND DEFINITIONS

A3.1.1 The statutory definition of ‘contaminated land’ is defined in Part IIA of the Environmental Protection Act 1990, ref 8.11, which was inserted by Section 57 of the Environment Act 1995, ref 8.12, and came into force in England in 2000, as;

‘any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that:

(a) significant harm is being caused or there is a significant possibility of such harm being caused; or

(b) pollution of controlled waters is being, or is likely to be, caused’.

A3.1.2 In Scotland, this has been amended by the Water Environment and Water Services (Scotland) Act 2003, ref 8.13, to *‘significant pollution of the water environment is being caused or there is a significant possibility of such pollution being caused’.*

A3.1.3 The purpose of Part IIA was to help address the problems caused by historical contamination, with the voluntary remediation of such land encouraged without the use of the Act. The planning regime assists in this, with Planning Policy Statement 23: Planning and Pollution Control (PPS23), ref 8.14, published in 2004, setting out the minimum requirements for the remediation of land affected by contamination as *‘after carrying out the development and commencement of its use, the land should not be capable of being determined as contaminated land under Part IIA of the EPA 1990’.*

A3.1.4 The UK guidance on the assessment of contaminated has developed as a direct result of the introduction of these two Acts. The technical guidance supporting the legislation was originally summarised in a number of key documents collectively known as the Contaminated Land Reports (CLRs), a proposed series of twelve documents. Seven were originally published in March 1994, four more were published in April 2002, while the final guidance document, CLR 11 was published in 2004. CLR7 to 10 were withdrawn in 2008, with CLR 9 and 10 effectively replaced by the Environment Agency in the form of Science Reports SR2, ref 8.15 and SR3, ref 8.16.

A3.1.5 CLR11 remains valid and sets out the framework of the investigation process, with the overall approach one of risk management, with risk given the definition of *‘a combination of the probability or frequency, of occurrence of a defined hazard and the magnitude of the consequences of the occurrence’.* In establishing whether a site fulfils the statutory definition of ‘contaminated land’ it is necessary to identify whether the three essential elements of risk exist. These are defined as:

- A contaminant - a substance which is in, on or under the land and has the potential to cause harm or to cause pollution of controlled waters;
- A receptor - something which could be adversely affected by a contaminant, such as people, an ecological system, property or a water body; and
- A pathway – a route or means by which a receptor can be exposed to, or affected by, a contaminant.

A3.1.6 A *‘pollutant linkage’* may be defined as the link between a contaminant *‘source’* and a *‘receptor’* by means of a *‘pathway’*. There may be none, one or many pollutant linkages

existing on a site, which may utilise the same or different sources, pathways and receptors, which may change over the passage of time.

A3.1.7 Each pollutant linkage that exists in respect of the land in question must fulfil one or more of the following criteria:

- significant harm is being caused to the receptor in the pollutant linkage,
- there is a significant possibility of significant harm being caused to that receptor,
- there is (significant) pollution of controlled waters (the water environment) which constitute the receptor, or
- pollution of controlled waters is likely to be caused
- (there is a significant possibility of such pollution being caused).

A3.1.8 A pollutant linkage indicates that all three elements have been identified. The site can only be defined as ‘Contaminated Land’ under Part IIA if a pollutant linkage exists and the criteria above are met.

A3.1.9 The main potential receptors include:

- 1) Humans – current site occupants, construction workers, future site users and neighbouring site users.
- 2) Controlled Waters – surface water and groundwater resources
- 3) Property – including buildings, crops, livestock and pets
- 4) Ecological systems – including current/future site and neighbouring vegetation

A3.1.10 The main potential pathways to be considered include:

- a) Ingestion and/or inhalation.
- b) Uptake of contaminants via cultivated vegetables.
- c) Dermal contact
- d) Migration through permeable strata
- e) Drains or services
- f) Direct contact with building materials and services
- g) Fire and explosion

A3.2 ASSESSMENT METHODOLOGY

A3.2.1 The guidance proposes a four-stage assessment process for identifying potential pollutant linkages on a site. These stages are set out in the table below:

No.	Process	Description
1	Hazard Identification	Establishing contaminant sources, pathways and receptors (the conceptual model).
2	Hazard Assessment	Analysing the potential for unacceptable risks (what linkages may be present and what could be the effects?).
3	Risk Estimation	Trying to establish the magnitude and probability of the possible consequences (what degree of harm might result and to what receptors, and how likely is it).
4	Risk Evaluation	Deciding whether the risk is unacceptable.

A3.2.2 Stages 1 and 2 develop a '*conceptual model*' based upon information collated from desk based studies, and reconnaissance of the site (a walkover survey). The walkover survey should be conducted in general accordance with CLR 2. The formation of a conceptual model is an iterative process and as such, it should be updated and refined throughout each stage of the project to reflect any additional information obtained.

A3.2.3 The extent of the desk based research and enquiries to be conducted should be in general accordance with CLR 3. The information from these enquiries is presented in a preliminary investigation report with recommendations, if necessary, for further work based upon the conceptual model. In the absence of specific information on contamination anticipated to be encountered, specific DoE 'Industry Profiles' provide guidance on the nature of contaminants relating to a variety of industrial processes and should be used as the basis for determining which contaminants are more likely to be present on a site.

A3.2.4 If potential pollutant linkages are identified within the conceptual model, an intrusive ground investigation and report will be recommended. The investigation should be planned in general accordance with CLR 4, and BS10175. The number of exploratory holes and samples collected for analysis should be consistent with the size of the site and the level of risk envisaged. This will enable a generic quantitative risk assessment (GQRA) to be conducted, at which point the conceptual model can be updated and relevant pollutant linkages can be identified.

A3.2.5 A two-stage investigation may be more appropriate where time constraints are less of an issue. The first stage investigation may be conducted as an initial assessment for the presence of potential sources, with the second being more refined in order to delineate or further characterise any contamination or the physical properties of the site.

A3.3 RISK EVALUATION

A3.3.1 The risk evaluation is a qualitative method for interpreting the data from the hazard estimation stage. It involves the classification of the:

- magnitude of the potential 'consequence' (severity) of the risk occurring and:
- magnitude of the 'probability' (likelihood) of the risk occurring.

A3.3.2 These are defined in the following sections:

A3.4 CLASSIFICATION OF CONSEQUENCE

Classification	Definition	Examples
Severe	Short-term (acute) risk to human health likely to result in 'significant harm' as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution (note: Water Resources Act contains no scope for considering significance of pollution) of sensitive water resource. Catastrophic damage to buildings property. A short-term risk to a particular ecosystem, or organism forming part of such ecosystem (note: the definitions of ecological systems within the Draft Circular on Contaminated Land, DETR, 2000).	High Concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from site into controlled water. Explosion, causing building collapse can also equate to a short-term human health risk if buildings are occupied.
Medium	Chronic damage to Human Health ('significant harm' as defined in DETR, 2000). Pollution of sensitive water resources (note: Water Resources Act contains no scope for considering significance of pollution). A significant change in a particular ecosystem, or organism forming part of such ecosystem, (note: the definitions of ecological systems within Draft Circular on Contaminated Land, DETR, 2000).	Concentrations of a contaminant from site exceed the generic, or site-specific assessment criteria. Leaching of contaminants from a site to a major or minor aquifer. Death of a species within a designated nature reserve.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined in the <i>Draft Circular on Contaminated Land</i> , DETR 2000). Damage to sensitive buildings/structures/services or the environment.	Pollution of non-classified ground water. Damage to building rendering it unsafe to occupy (eg 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 and services.	The presence of contaminants at such concentrations that protective equipment is required during site works. The loss of plants in landscaping scheme. Discoloration of concrete

A3.4.1 In theory, both severe and medium classification can result in death. The differential is that severe relates to short term risk while medium relates to long-term risk. Therefore, the classification of severe requires urgent action while medium may require urgent action but usually long term action would be sufficient.

A3.5 CLASSIFICATION OF PROBABILITY

Classification	Definition
High likelihood	There is a pollution linkage and an event that 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
Likely	There is a pollution linkage and all the elements are present and 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 over the long term.
Low likelihood	There is a 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

A3.5.1 For the purposes of this preliminary investigation, any source of contamination that has been identified by professional judgement as potentially impacting on the site has been classified as being 'likely' to be present, unless proven otherwise by intrusive investigation.

A3.6 COMPARISON OF CONSEQUENCE AGAINST PROBABILITY

A3.6.1 These classifications are compared to indicate the risk presented by each pollutant linkage. Once the consequence and probability have been classified they can be used to produce a risk category as below:

		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

A3.6.2 The action required for the classified risks are as follows:

Very high risk	There is a high probability that severe harm could a risk to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required
High risk	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the longer term
Moderate risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term
Low risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very low risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

APPENDIX 4
ENVIROCHECK REPORT



For ease of identification, your site and buffer have been split into Slices, Segments and Quadrants. These are illustrated on the Index Map opposite and explained further below.

Each slice represents a 1:10,000 plot area (2.7km x 2.7km) for your site and buffer. A large site and buffer may be made up of several slices (represented by a red outline), that are referenced by letters of the alphabet, starting from the bottom left corner of the slice "grid". This grid does not relate to National Grid lines but is designed to give best fit over the site and buffer.

A segment represents a 1:2,500 plot area. Segments that have plot files associated with them are shown in dark green, others in light blue. These are numbered from the bottom left hand corner within each slice.

A quadrant is a quarter of a segment. These are labelled as NW, NE, SW, SE and are referenced in the datasheet to allow features to be quickly located on plots. Therefore a feature that has a quadrant reference of A7NW will be in Slice A, Segment 7 and the NW Quadrant.



Map data



Mr M Green, Ian Farmer Associates, 14-15 Rufford Court,
Hardwick Grange, Warrington, Cheshire, WA1 4RF

Order Number: 308118656_1_1
Customer Ref: 2230990
National Grid Reference: 378610, 415260
Site Area (Ha): 0.36
Search Buffer (m): 1000

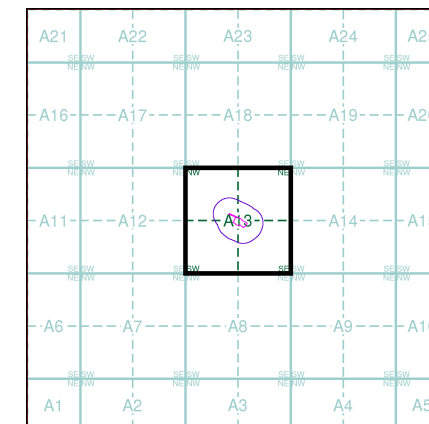
Full Terms and Conditions can be found on the following link:
<http://www.landmarkinfo.co.uk/Terms/Show/515>

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

General

- | | | | |
|-----------------------------|---------------------|----------------------------|--------|
| Specified Site | Specified Buffer(s) | Bearing Reference Point | Map ID |
| Several of Type at Location | Pylon | Overhead Transmission Line | |
- ### Agency and Hydrological
- | | |
|--|--|
| Contaminated Land Register Entry or Notice (Location) | BGS Recorded Landfill Site (Location) |
| Contaminated Land Register Entry or Notice | BGS Recorded Landfill Site |
| Discharge Consent | EA Historic Landfill (Buffered Point) |
| Enforcement or Prohibition Notice | EA Historic Landfill (Polygon) |
| Integrated Pollution Control | Integrated Pollution Control Registered Waste Site |
| Integrated Pollution Prevention Control | Licensed Waste Management Facility (Landfill Boundary) |
| Local Authority Integrated Pollution Prevention and Control | Licensed Waste Management Facility (Location) |
| Local Authority Pollution Prevention and Control | Local Authority Recorded Landfill Site (Location) |
| Local Authority Pollution Prevention and Control Enforcement | Local Authority Recorded Landfill Site |
| Pollution Incident to Controlled Waters | Potentially Infilled Land (Non-water) |
| Prosecution Relating to Authorised Processes | Potentially Infilled Land (Non-water) |
| Prosecution Relating to Controlled Waters | Potentially Infilled Land (Non-water) |
| Registered Radioactive Substance | Potentially Infilled Land (Water) |
| River Network or Water Feature | Potentially Infilled Land (Water) |
| River Quality Sampling Point | Potentially Infilled Land (Water) |
| Substantiated Pollution Incident Register | Registered Landfill Site |
| Water Abstraction | Registered Landfill Site (Location) |
| Water Industry Act Referral | Registered Landfill Site (Point Buffered to 100m) |
| | Registered Landfill Site (Point Buffered to 250m) |
| | Registered Waste Transfer Site (Location) |
| | Registered Waste Transfer Site |
| | Registered Waste Treatment or Disposal Site (Location) |
| | Registered Waste Treatment or Disposal Site |
- ### Hazardous Substances
- | | |
|--|----------------|
| COMAH Site | Explosive Site |
| NIHHS Site | |
| Planning Hazardous Substance Consent | |
| Planning Hazardous Substance Enforcement | |
- ### Geological
- | |
|---------------------------|
| BGS Recorded Mineral Site |
|---------------------------|

Site Sensitivity Map - Segment A13



Order Details

Order Number: 308118656_1_1
 Customer Ref: 2230990
 National Grid Reference: 378600, 415270
 Slice: A
 Site Area (Ha): 0.36
 Plot Buffer (m): 100

Site Details

Abbotts Hall, Woodhey Road, Ramsbottom, BURY, BL0 9RD

