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Report on

Phase 1 Desk Top Study

Land off Fullwood Drive,
Golcar,
Huddersfield, HD7 4JH

Chesham
Brighouse
Midlands
Sheffield
Teesside

For

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Revision	Change Overview	Reason for Change	Date

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DESK TOP STUDY REPORT

NG8480/FUL: Land off Fullwood Drive, Golcar, Huddersfield, HD7 4JH

1 INTRODUCTION

This report is required to accompany a Planning Applications for residential development of the above site.

1.1 Sources of Information

Information on the above site has been obtained from a full Envirocheck Report centred on the site, examination of all the currently available historic maps of the site, examination of the 1:50,000 British Geological Survey map of the area, Mining Report and a walkover survey.

2 THE SITE

The site is located 3 miles west of Huddersfield Town Centre. The site is sloping down towards the South being on the North slope of a vee shaped tributary valley which feeds the River Colne to the South,

2.1 Present Land Use/Walk Over Survey/Trees

A walk over survey was carried out on the 6th February 2014. Access to the site is from Fullwood Drive which is on the Western boundary close to the North of the site. The Southern boundary and Eastern boundary are dry stone walls being part of the original field shown on the 1854 map. The Western boundary has the end of the cul de sac to Fullwood Drive and then the side elevation and garden to the end property in Fullwood Drive, behind this property the area is open. This was part of a bigger field at one time. On the Northern boundary there are timber fences of various types belonging to back gardens of houses north of the site. Beyond the dry stone on the Southern boundary is the rear garden of a further house.

The site is at present overgrown, however, has been used until recently as allotment gardens. There are a number of trees on the site, though most of these are self-seeded. There are two large trees central to the site one of which is shown on the photograph below. It is also noted that there are two springs on the site one in the North East quadrant and one close to the Northern boundary. The one to the Northern boundary has a pipe that overflows into a stone trough set into the ground. Close to the Southern boundary there are hallow stalk reeds which are similar to those of knotweed however from the leaves found on the ground we do not consider these are knotweed. However this would have to be confirmed. This site slopes down towards the South and from the contours on the maps it would appear that the site may fall by as much 10m. Water is ponding on the surface in some areas suggesting that the soils are not particularly permeable and suspect that clay soils are present close to the surface. There were no indications of contamination on the site. It is possible that bonfires have been used to burn rubbish as is quite common on allotment sites which can give hot spots of hydrocarbons. It is also possible that on allotment gardens chemicals may have been used as weed killers or fertilisers.

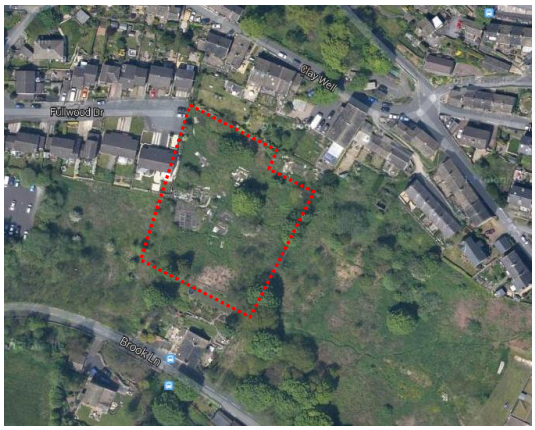

Fig 1: Site shown outlined in red

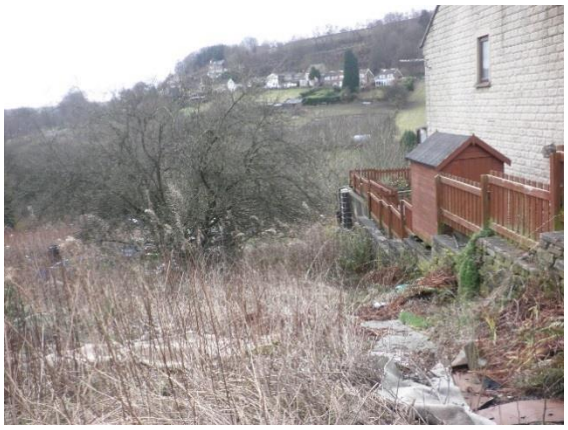
Fig 2: Photograph showing Western boundary close to Fullwood Drive


Fig 3: View Looking North (Site Rises)

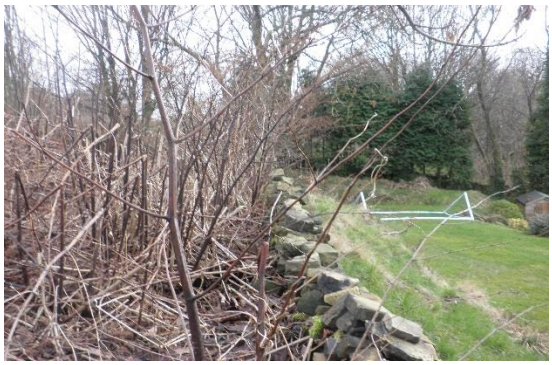
Fig 4: Southern Boundary (Gardens to the South)

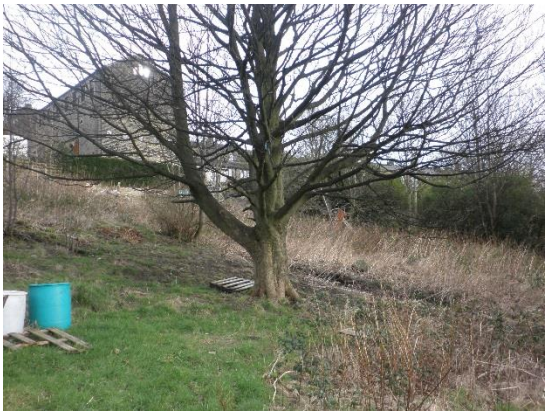
Fig 5: View in middle of site looking NE. Mature tree and second spring behind tree

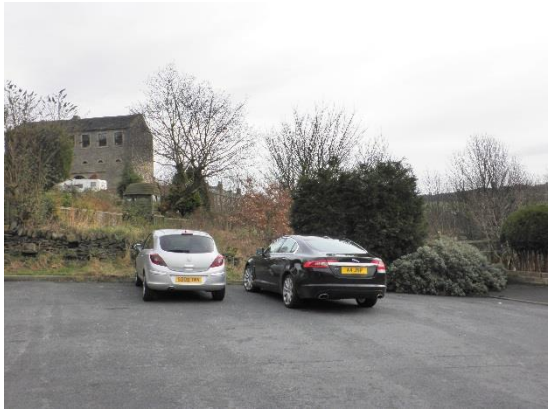
Fig 6 : Entrance to site off Fullwood Drive

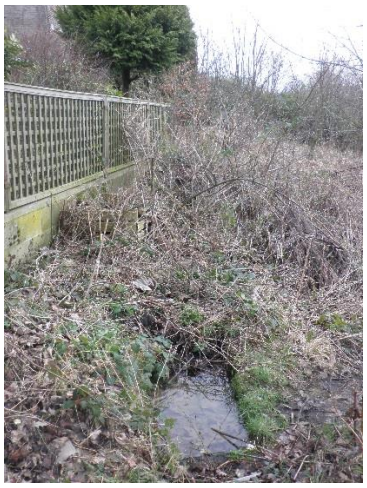

Fig 7: Northern Boundary (Showing spring and stone trough)

3 SITE HISTORY

Examination of the published Ordnance Survey maps of the area revealed the following:

Map		Features	
Year	**Scale**	**On Site**	**Off Site**
1854	1:10560	Field	Established village of Golcar is to the North and East of site. No industries are shown
1892	1:2500	Unchanged	Albion Woollen Mills 100m South, Victoria Woollen Mills 100m West and Manor Mill (Dry Saltery) 200m North West
1906	1:2500	Unchanged	Unchanged
1918	1:2500	Unchanged	Manor Mill now shown as disused.
1930	1:10560	Unchanged	Unchanged
1938	1:10560	Unchanged	Unchanged
1948	1:10560	Unchanged	Unchanged
1956	1:10560	Unchanged	Unchanged
1961	1:2500	Allotment gardens plus small green house.	Manor Mill now shown just as a mill.
1975	1:2500	Unchanged	Unchanged
1982	1:2500	Unchanged	Unchanged
1990	1:2500	Unchanged	Unchanged
1993	1:2500	Allotment gardens (no green house)	Unchanged
2014	1:2500	Unchanged	Unchanged

3.1 Site History Summary

The historic map study shows that the site has been used as allotment gardens from about 1960 to the present day. Before this time the site was a field. Off site, there are three mills which, due to the lie of the land, are not considered to influence the site.

4 GEOLOGY, HYDROLOGY AND HYDROGEOLOGY

4.1 Geology

Examination of the published geological map of the area indicated the underlying geology to be the Millstone Grit Series.

4.2 Mining History

A Mining Report for the area was obtained and this showed there are no previous coal workings under the site in the likely zone of physical influence on the surface.

The property is **not** situated within the boundary of a former opencast coal mining site, within 200m of a currently operating opencast coal mining site or 800m of the boundary of a future opencast coal mining site.

There is no knowledge of any shafts or adits within 20m of the site and no evidence of coal mining related subsidence claims in relation to the property in the past 10 years.

4.3 Hydrology /Hydrogeology

The Environment Agency ground water vulnerability map records the bedrocks in this area to be a Secondary A Aquifer.

The Environment Agency define a 'Secondary A Aquifer 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. These are generally aquifers formerly classified as minor aquifers.'

A worse case vulnerability classification (H) has been assumed until proven otherwise. These are soils which readily transmit liquid discharges because they are either shallow, or susceptible to rapid by-pass flow directly into the rock, gravel or groundwater.

The nearest surface water feature is 43m west of the site.

The nearest water abstraction licence is 668m to the west operated by the Birkby Group Ltd and is used for general industrial use.

4.4 Soil Chemistry

British Geological Survey (BGS) soil chemistry data sheets were obtained which present information on the topsoil concentration of five potentially harmful elements (PHEs) which under certain circumstances can pose a significant health risk to plants, animals and humans.

4.4.1 Arsenic

The estimated Arsenic values for the site are 15-25mg/kg. The recommended Soil Guideline Value (SGV) for residential end use is 32mg/kg. Soil chemical testing will determine the risk (if any) of Arsenic contamination.

4.4.2 Cadmium

The estimated Cadmium values for the site are 51.8mg/kg. The recommended Soil Guideline Value (SGV) for residential end use is 10mg/kg. Soil chemical testing will determine the risk (if any) of Cadmium contamination.

4.4.3 Chromium

The estimated Chromium values for the site are <20mg/kg. The recommended Soil Guideline Value (SGV) for residential end use is 200mg/kg. Soil chemical testing will determine the risk (if any) of Chromium contamination.

4.4.4 Lead

The estimated Lead values for the site are <150mg/kg. The recommended Soil Guideline Value (SGV) for residential end use is 450mg/kg. Soil chemical testing will determine the risk (if any) of Lead contamination.

4.4.5 Nickel

The estimated Nickel values for the site are 15-30mg/kg. The recommended Soil Guideline Value (SGV) for residential end use is 130mg/kg. Soil chemical testing will determine the risk (if any) of Nickel contamination.

5 INFORMATION HELD BY STATUTORY AUTHORITIES

This section details any relevant information held in the registers maintained by statutory bodies as identified in the Envirocheck Report.

5.1 Landfill Sites

There are no landfill sites within 2000m of the site.

5.2 Waste Management Facilities

There are no waste management facilities within 2000m of the site.

5.3 Contaminated Land Register Entries and Notices

The Envirocheck Report does not identify any Contaminated Land Register Entries and Notices within 2000m of the site.

5.4 Local Authority Pollution Prevention and Controls

There are no Local Authority Pollution Prevention and Controls within 1000m of the site.

5.5 Integrated Pollution Control (IPC) Authorisations

There are no Integrated Pollution Control (IPC) Authorisations within 1000m of the site.

5.6 Integrated Pollution Prevention and Control Permits (IPPC)

There are no Pollution Prevention and Control Permits (IPPC) within 1000m of the site.

5.7 Pollution Incidents

There is one pollution incident on site. The pollutant was surface water and is a Category 3 minor incident, the receiving water resulted in no pollution.

There have been 6 further minor incidents and 1 and Category 2 significant incident within 250m of the site. All these are downhill of the site and will not affect the site

5.8 Discharge Consents

There are discharge consents within 520m of the site. These are between 74 and 375m all these are to the River Colne and are all downhill of the site and would not affect the site.

5.9 Contemporary Trade Directory Entries

There are 4 contemporary trade directories within 250m of the site. These are between 160m to 220m there of which are inactive. One active at Victoria Mills 160m west of the site is shown as textile manufacturers

5.10 Fuel Sites

There are no fuel stations with 2000m of the site.

5.11 Radon

The site is situated in an area in which the British Geological Survey states that less than 1% of homes are above the action level. **No** Radon protection measures are necessary in the construction of new dwellings or extensions.

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5.12 Environmentally Sensitive Areas

5.12.1 Flooding

The agency and hydrological (flood) map shows that the site is not in an area that is affected by flooding from rivers or seas.

5.12.2 Nitrate Vulnerable Zones

The site is within a nitrate vulnerable zone. This would only be applicable to agricultural usage of the site.

6 ADDITIONAL INFORMATION

6.1 Services

These have not been examined as part of the Phase 1 report. Enquiries should be made to ensure that the site can be fully serviced and that there are no restrictions or easements across the site which would impede the proposed development.

6.2 Site Investigation

No intrusive investigations have been undertaken.

7 SUMMARY

From the walk over survey, historic map study and examination of information held by the statutory authorities, there are no pollution sources deemed to effect this site other that is used as allotments. There is a possibility of chemicals (on a small scale) being used by the gardeners.

8 UK CONTAMINATED LAND LEGISLATIVE FRAMEWORK

8.1 Legislation on Contaminated Land

This section provides a conceptual model and qualitative assessment of the potential risks posed to human health and environmental receptors from potential on-site and off-site sources of contamination. The assessment is presented as a 'source-pathway-receptor' model in accordance with Part IIA of the Environmental Protection Act 1990.

Part IIA of the Environment Protection Act, 1990, which was enacted by section 57 of the Environment Act 1995 and the associated Contaminated Land (England) Regulations (SI 2000/227) was introduced on 1 April 2000. It created a new statutory regime for the identification and remediation of land where contamination poses and unacceptable risk to human health and environment.

Part IIA provides a statutory definition of contaminated land:

'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 significant harm is being caused, or that there is a significant possibility of significant harm being caused, or that pollution of controlled waters is being or is likely to be caused'.

To determine whether land falls under the Part IIA definition of contaminated land the site should be evaluated in the context of a risk based framework. The assessment of contaminated land is typically a two-phase process which is initially based on a qualitative assessment of the likelihood of complete pollution linkages, with a quantitative element which seeks to determine the degree and the significance of the harm. Land is only defined as 'Contaminated Land' if a 'significant pollutant linkage' is present.

A pollutant linkage must comprise the following:

Source - a contaminant at a concentration capable of causing adverse health or environmental effects.

Receptor - there must be a human or environmental receptor present, which may be at risk of harm or impact from the source.

Pathway - there must be an exposure pathway through which the receptor comes into contact with the contamination source.

Each of these elements can exist independently but they create risk only when they are linked together, so that a particular contaminant affects a particular receptor through a particular pathway.

The responsible authority then needs to consider whether the identified pollution linkage:

- is resulting in significant harm being caused to the receptor in the pollutant linkage;
- presents a significant possibility of significant harm being caused to that receptor;
- is resulting in the pollution of controlled waters, which constitute the receptor; or is likely to result in such pollution.

If a pollutant linkage is demonstrated, then the Part IIA legislation provides powers for remedial action to be enforced by the Local Authority in whose area the contaminated land is situated.

9 CONCEPTUAL MODEL

9.1 General

This section uses information the sources noted in section 1.1 to provide a conceptual model and qualitative assessment of the potential risks posed to human health and environmental receptors from potential on-site and off-site sources of contamination. The assessment is presented as a 'source-pathway-receptor' model in accordance with Part IIA of the Environmental Protection Act 1990.

9.2 Potential On-site Sources of Contamination

Potential on-site sources of contamination are from the past use of the site for allotments however risk is considered **LOW**.

9.3 Potential Off-site Sources of Contamination

There are no potential off-site sources of contamination.

9.4 Receptors

The primary receptors, considered to be potentially at risk from any identified contamination are as follows:

Human Health

- Construction workers during the redevelopment phase.
- Residential end users.

Controlled Waters

- The nearest controlled surface water being 43m South/West.
- Groundwater stored within the Minor Aquifer underlying the site.

9.5 Pathways

Potential contaminant migration pathways considered relevant to the site are:

Human Health

- Ingestion of contamination soils and dust particles.
- Direct physical contact with near surface soils and contaminated dust particles.
- Inhalation of wind blown contaminated dust.
- Inhalation of vapours and gases, migrating vertically into the atmosphere.

Controlled Waters

- Contaminants in Made Ground impacting groundwater underlying the site via vertical leaching mechanisms.
- Contaminants in Made Ground impacting surface water downhill of the site via lateral leaching mechanisms.

9.6 Pollutant Linkages

A 'pollutant linkage' describes the relationship between a contaminant, a pathway and a receptor, a 'pollutant' being the contaminant in a pollutant linkage. A contaminant, pathway and receptor must all be present for a pollutant linkage to exist, which forms the basis for determination that a piece of land is Contaminated Land. Potential sources, pathways and receptors have been assessed to present below a list of potential significant pollutant linkages to be considered.

Potential Source-Pathway-Receptor Linkages for Human Health Risk Assessment

Source	Pathway	Receptor	Risk
Contaminated soils	Ingestion of soil	On site female child – 6yrs old	LOW
		On site construction worker	LOW
	Ingestion of household dust	On site female child – 6yrs old	LOW
	Ingestion of contaminated vegetables	On site female child – 6yrs old	LOW
	Ingestion of soil attached to vegetables	On site female child – 6yrs old	LOW
	Dermal contact	On site female child – 6yrs old	LOW
		On site construction worker	LOW
	Dermal contact with household dust	On site female child – 6yrs old	LOW
	Inhalation of fugitive soil dust	On site female child – 6yrs old	LOW
		On site construction worker	LOW
	Inhalation of fugitive household dust	On site female child – 6yrs old	LOW
	Inhalation of vapours in outdoor air	On site female child – 6yrs old	LOW
		On site construction worker	LOW

Source	Pathway	Receptor	Risk
	Inhalation of vapours in indoor air	On site female child – 6yrs old	LOW
	Direct contact	Services and Infrastructure	LOW
		On site female child – 6yrs old	LOW
		On site construction worker	LOW
Ground Gas and Mine Gas	Vertical and lateral Migration	End Users	NO
		Residential Housing	NO
		Services and Infrastructure	NO

Potential Source-Pathway-Receptor Linkages Controlled Water Risk Assessment

Source	Pathway	Receptor	Risk
Contaminated soils	Leaching Mechanisms	Groundwater stored in the Nearby watercourse.	LOW
Contaminated groundwater	Vertical migration	Groundwater stored in the Nearby watercourse.	LOW

The conceptual model has been refined and the plausible pollutant linkages evaluated against generic criteria in accordance with CLR 11 – 'Model Procedures for the Management of Land Contaminations'.

Sources are not considered to be present at the site and hence pollutant linkages are not active.

9.7 Risk

The risk in this case is expected to be **LOW.**

10 CONCLUSIONS OF THE DESK STUDY

- A review of the historic maps highlights the site has been used as allotments and before that open fields. There are no off site land uses that are considered to impact the site.
- Potential on sites sources of contamination are from the use of the site for allotments and the possibility of chemicals that may be been used as weed killers or fertilisers plus burning of garden waste.
- Potential off site contamination sources have not been identified.
- The soil chemistry data sheets show estimated natural values for Arsenic, Cadmium, Chromium, Lead and Nickel in the top soil to be below the recommended SGVs for residential end use.
- There are no landfill sites within 2000m from the site.
- The site overlies a Secondary A aquifer.
- The agency and hydrological (flood) map shows that the site is not in an area that is affected by flooding from rivers or seas.
- No radon protection measures are necessary
- Active pollutant linkages at the site are not considered to be present, however we recommend precautionary contamination testing across the site.

11 RECOMMENDATIONS

1. Trial pits will be required to determine the near surface soils and depth to a suitable foundation for the proposed structures. If the subsoils are granular in nature it may be necessary to investigate the site by boreholes to obtain SPT values for assessing the allowable bearing pressures.

2. Trial pits should be excavated at appropriate locations around the site and samples of soil taken for contamination testing. Samples should be taken from the near surface soils and testing should comprise of a full contaminations suite which will include CLEA Metal Suite plus Copper and Zinc, the Inorganic Suite, hydrocarbons (speciated PAH and carbon bonded TPH). In addition asbestos should be tested for.

3. Soils at proposed foundation level should be tested for sulphates and pH, in order to determine the concrete classes of buried concrete.

4. Any water encountered within the trial pits should be sampled and taken for contamination testing.

5. Should clay soils be encountered, then these should be tested for Plasticity Index and Moisture Content.

6. Provision should be made for locating existing services beneath the site during the intrusive investigations. The hand digging of the top metre should be considered.

7. During construction and reduced level dig, careful observation should be made to identify any signs that the soils could be contaminated in terms of appearance or odour. Should this be encountered, then the Engineer must be informed immediately.

8. Should any soils be imported on to site, then these should come from a supplier who can provide necessary testing certificates or the soils should be sampled and tested, to verify that the soils are suitable for their intended use.

9. Construction workers should be protected from exposure to contaminated soils with the provision of all necessary personal protective equipment.