

**LAND OFF
COB KILN LANE
UNRMSTON
M41 9LB**

PHASE 1 DESK TOP STUDY

**Prepared for
EBR DESIGN & BUILD**

NOVEMBER 2020

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1.0 INTRODUCTION

Introduction

This report has been prepared in accordance with instructions given from Mr J. Renshaw. The brief was set out in our estimate, dated 30th October 2020 with amendments as the investigation proceeded and includes the following:

- Site history
- Environmental Data Search
- Conceptual ground model
- Provision of a Desk Study Report on the above

1.1 Site Location and Description

The site is located at land adjacent Cob Kiln Lane, Urmston, Manchester at National Grid Reference 376990 E,394171 N. The site is 1.1Ha in size.

The site is an irregular shaped.

The site is a former commercial livery stable, comprising mixed portal frame barns, breeze block outbuildings and a riding arena all with associated hardstanding infrastructure and a grassed paddock.

The topography of the site is generally flat. The site is bounded by agricultural land to the south, east and west with residential properties to the north.

Access to the site is via Meadow Road to the north

1.2 Proposed Development

We understand it is proposed to develop the site with the construction of a childrens day nursery with associated car parking and landscaped areas.

1.3 Purpose of the Desk Study

The purpose of the desk study is to obtain information on the history of the site and its environmental setting in order to produce a conceptual ground model and form a preliminary assessment of contamination sources, pathways and receptors relating to potential hazards that exist or will potentially occur on the site.

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2.1 Site History

The past history of the site has been interpreted from the study of old Ordnance Survey plans dating back to 1848.

TABLE 1 SURVEY PLANS

Date	Scale
1848	1:10056
1891	1:10056
1905	1:10056
1927	1:10056
1938	1:10056
1956	1:10056
1979	1:10000
2000	1:10000
2010	1:10000
2020	1:10000

the following is a summary of historical land use as detailed in the sitecheck data report.

1848

At the time of the 1848 survey the site had not been developed and was part of an open field. Surrounding areas are greenbelt land with no developments within 100m of the site.

1891 - 1894

At the time of the 1891 survey the site remained undeveloped with no significant changes to the surrounding areas locally, however, to the north, cheshire lines railway and some general development has taken place..

1905

By the time of the 1905 survey, the site remained undeveloped, there was continued residential development in the area to the north noted as Urmston.

1927

By the time of the 1927 survey, there were no changes directly on site. North of the site continues to be developed closing in on the development site. A sewage works is present to the south.

1938

Between 1938 & 1956 show no significant changes

1956

By the time of the 1956 there was further residential development within 750m of the site.

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1979

further residential development to the surrounding areas. Industrial development to the SE along with outbuildings now being shown directly on site.

2000

By the time of the 2000 survey, meadowgate farm is established. With sports / recreational grounds surrounding the site.

Present

The site is a former stables & livery.

Conclusion

The earliest historical plans available (1848) shows the site and much of the surrounding area to comprise open fields. The surrounding area has slowly transformed into a residential community which has replaced the open farm land. Current / past Industrial land use directly on the site suggests potential sources for contamination and poor ground conditions. However to the South is also found to be some industrial usage. There is a brook running west to east directly above the site to the North.

We would expect made ground considering the fact that the site has been developed over the years with the current property on the plot and the outbuildings. Areas of larger foundations are expected for the industrial shed type buildings.

Potential other sources of contamination in the local area include, the railway, motorway, other industrial works including sewage treatment works. However, It is unlikely that these will have any impact on the soils and groundwater to the site given their proximities to the site.

2.2 walk over survey

A survey was carried out on the 20th November 2020.

The survey found that the proposed site is within the site boundary of the current property at Meadowgate Farm.

2.3 Environmental Data Search

An environmental data search has been carried out using the "Groundsure" database Provided by Groundsure environmental insight Group which includes the records of the Environment Agency.

Full details are appended and a summary is as follows:

2.3.1 Landfill and Waste

Landfill Sites

According to the Environmental Data Search there are 1 Local authority Recorded Landfill Sites directly on site classified as Meadow Tip. within 250m to 500m of the site. There are 1 Waste Management Facilities licensed by the Environment Agency under Part II of Environmental Protection Act 1990. There are 1 BGS Recorded Landfill Sites within 250 metres of the site.

There are 1 Nr historical landfill sites within 250m of the site

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Waste Transfer (Incl. Scrapyards)

According to the Environmental Data Search there are no registered waste transfer site within 500m of the site.

Waste Treatment and Disposal

According to the Environmental Data Search there are no site licensed by the Environment Agency under Part II of Environmental Protection Act 1990 to treat, keep or dispose of controlled waste within 500m of the site.

2.3.3 Past/ Current Industrial Land Use

According to the Environmental Data Search there are 12 Nr current sites within 250m of industrial usage with potential for contamination linkages. 1 Nr petrol station.

There are also 9 historical land uses within 250m of the site.

In some cases, asbestos can also be found, if used for insulation, cladding or roofing materials.

There is 1 nr electrical sub station within 250m of the site.

Hydrology & hydrogeology

2.4.1 Flooding

The Environmental Data Search indicates that the site is risk of flooding or within 250 m of an area at risk of flooding from rivers or sea. Data indicates that the site is located within an area at risk of flooding or within 250 m of an area at risk of flooding from surface waters (i.e. pluvial – rainfall, sewers, drains etc.).

The site lies within an area that may be affected by flooding from groundwater at the surface.

A flood risk assessment is deemed necessary.

2.4.2 Abstractions and Discharges

The Environmental Data Search reveals there are no sites licensed to abstract water by the Environment Agency in accordance with the Water Resources Act 1991 within 250 metres of the site.

According to the Environmental Data Search there are no authorisations issued by the Environment Agency to discharge to the watercourse from non-IPC processes in accordance with the Water Resources Act 1991 within 250 metres of the site.

2.4.3 Groundwater vulnerability

superficial aquifer designation classed as Secondary A aquifer
bedrockaquifer designation classed as Principle Aquifer.

no licensed groundwater abstraction points within 1000 m of the site, no public drinking water abstractions within 2000m of the site and no Source Protection Zones (SPZ) within 2000m of the site.

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These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

The site is not within a source protection zone. There are no water abstractions within 500m.

nearest surface watercourse to the site is Old Eea Brook.
The EA General Quality Assessment for Old Eea Brook is Grade E.

The nearest surface water abstraction point is located approximately 600 m south east of the site.
There is one historical discharge consent within 250 m of the site, for Meadowgate Farm located to the north, revoked in 1991.

There are two pollution incidents to controlled waters within 250m of the site. The nearest is located 120 m to the west and is recorded as Category 2 – Significant Incident, involving kerosene fuel oil. The second is located 173 m to the north east and is recorded as Category 3 – Minor Incident, involving diesel.

Geological

Superficial

Alluvium - Clay, Silt, Sand And Gravel

Bedrock

Wilmslow sandstone formation of early Triassic Epoch, with nearest fault line approx 500m southwest.

There are 14 BGS borehole records within 250m of site.

2.5.1 Radon

The Radiation Protection Division of the Health Protection Agency (HPA), formerly the National Radiological Protection Board (NRPB), indicate that buildings constructed as part of the proposed development are unlikely to be affected by radon gas as <1% of homes within 250 metres of the site have radon gas levels above the action level of 200 Bequerels/ m3. Furthermore Building Regulations do not consider that protection measures are required.

2.5.2 Mining

According to the information from the Coal Authority the site is not within an identified mining area.

The property is not in the likely zone of influence of any present underground coal workings.

The property is not in an area for which the Coal Authority is determining whether to grant a licence to remove coal using underground methods.

The property is not in an area for which a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area that is likely to be affected at the surface from any planned future

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workings. However, reserves of coal exist in the local area which could be worked at some time in the future. No notice of the risk of the land being affected by subsidence has been given under section 46 of the Coal Mining Subsidence Act 1991.

There are no known coal mine entries within, or within 20 metres of, the boundary of the property.

The Authority is not aware of any evidence of damage arising due to geological faults or other lines of weakness that have been affected by coal mining.

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

The property is not within 800 metres of the boundary of an opencast site for which the Coal Authority is determining whether to grant a licence to remove coal by opencast methods. The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted. The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres, since 31st October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property. The Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

2.5.3 Ground movement

The property is in an area underlain by sands and gravels. deposits in this area are considered to be mainly of "low plasticity". This means it is unlikely that they will cause ground movement.

Running sand may be present.

2.5.3 Brine compensation area

the site is not located within the brine compensation area.

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2.6 Conceptual Ground Model

A conceptual ground model of a site and its environs uses available information to form a preliminary assessment of contamination sources, pathways and receptors, and the significance of hazards that exist or will potentially exist on the site. Its purpose is to identify the relationships between sources of contamination, pathways and receptors to allow exposure scenarios to be determined and thereby aid in the design of any intrusive investigation. It also forms the basis of the risk assessment.

Given the previous land use, the likelihood of potential contaminants under the site is high. It is likely potential sources of contamination would come from made ground and industrial usage within the site and adjacent site.

We have produced a preliminary conceptual ground model based upon the available information, as follows:

Potential Source	Nature of Hazard	Contaminants associated with source	Receptor	Pathway	Probability	Consequence	Risk
Known landfill	Methane Carbon dioxide Landfill gases	Migration through variably permeable strata Migration through culverts inhalation	End users Site operatives	Ingestion of soil Ingestion of dust Dermal contact Inhalation of dust Inhalation of vapours Vertical and lateral movement of mobile contaminants to surface water and groundwater	high	Severe	high
On site made ground	Contaminants in made ground	Gen. Contaminants Arsenic Cadmium Chromium Lead mercury Nickel Selenium Boron Copper Zinc Cyanide Sulphide Sulphate Ph Phenols Polynuclear aromatic Hydrocarbons	End users Site operatives	Ingestion of soil Ingestion of dust Dermal contact Inhalation of dust Inhalation of vapours Vertical and lateral movement of	high	severe	high

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Substation	Contaminants in made ground	(PAH) Petroleums Hydrocarbons (TPH) PCB's Oils Solvents asbestos	Vegetation Controlled waters Structures & services End users Site operatives Vegetation	mobile contaminants to surface water and groundwater Uptake via contaminated groundwater Direct contact	high low	severe medium	high low
Allotments / gardens	Use of / spillage of / leachate of pesticides	pesticides	End users Site operatives Vegetation Controlled waters	Ingestion of soil Ingestion of dust Dermal contact Inhalation of dust Inhalation of vapours Vertical and lateral movement of mobile contaminants to surface water and groundwater	low	mild	low
mining	Ground gases subsidence	Methane Carbon dioxide	End users Site operatives Structure & services	Inhalation of gas	Low low	Mild mild	Low low
Asbestos in insulation and roofing materials	asbestos	Asbestos fibres	End users Site operatives	Inhalation of fibres	low	low	low
Historic railway	Contaminants in made ground & leachates	Hydrocarbons, oils	End users Site		Low	mild	low

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summary

harm to humans

given the nature of the proposed development, the pollutant linkage is likely to be significant. There is likely to be made ground to the site containing contaminants.

The substation although within 250m the site, is not considered to have a significant pollutant linkage.

An assessment of the upper soils is recommended as there are grassed areas surrounding the structure.

Potential pathways

The following potential pathways have been identified:

Ingestion and inhalation of site generated dust.
Ingestion of vegetables produced on site. Dermal contact with contaminated materials.
Inhalation, suffocation, and potential of explosion from hazardous ground gasses from offsite sources.

Leaching of contaminants present in any made ground beneath the site into underlying soils, nearby surface waters and groundwater beneath the site.

Potential Receptors

The following potential receptors have been identified:

Site end users and construction workers could be at risk from exposure to contaminated soils/materials at the site via ingestion, direct contact, and inhalation of contaminated dust/vapours. Members of the public off-site could also be at risk from inhalation of contaminated dust.

End users of the site could be at risk from hazardous concentrations of ground gases via inhalation.

Aquifer and drinking water beneath the site could be at risk from potential leachable and/or mobile contaminants at the site.

Nearby surface water courses could be at risk from potential leachable and/or mobile contaminants at the site.

Other ecosystems could also be at risk from potential contamination at the site. Any effluent 'aggressive' groundwater leaching contaminating substances from the made ground across the site has the potential to attack below ground structures and services.

Potential for harm to humans is considered to be moderate to high.

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Damage to buildings

There is evidence to suggest poor ground conditions which may allow ground gases to be present beneath the site, suggesting pollutant linkages are likely to be significant. There is insufficient data at this stage to form any recommendations as to a suitable foundation solution.

A full phase 2 site investigation is underway with results to be collated and this report updated in due course.

8 nr WS boreholes and 6 nr trial pits are to be carried out with samples taken for a full CLEA suite of analysis along with geotechnical testing.

Monitoring of gases should also be carried out along with groundwater monitoring.

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Review of historical data and maps indicate that it is likely that there be significant amount of made ground beneath the site.

Potential contaminants from historic and current land use include, railway, general industrial usage, landfill (refuse tip).

The potential for landfill gases to affect the site and its users are high.

From the conceptual ground model given in section 2.6 we would recommend the following investigations:-

Historically, the site was undeveloped farmland until the 1930s where development of the immediate site commenced.

Potential contamination sources affecting the site were identified as heavy metals, PAHs, sulphate, asbestos, pesticides, hydrocarbons and gas (carbon dioxide and methane).

These contaminants may pose a risk to site users (via ingestion, dermal contact, inhalation pathways and explosion), controlled waters (via migration through permeable strata and preferential pathways), buildings and structures (direct contact and explosion), water pipes (direct contact) and flora (root uptake).

A Phase 2 intrusive survey should be carried out across the site to investigate the identified potential pollutant linkages further. AGSD recommend this can be undertaken and results incorporated into this report. The scope of this Phase 2 survey has been determined as noted above.

Phase 2 Site Investigation

In order to address the potential pollutant linkages, a site investigation is recommended. The site investigation should be carried in accordance with relevant guidance documents (including BS101758 and BS59309).

The investigation should include trial at a sampling density of 1 sample per 25-50m square centres for an 'exploratory investigation' and 1 sample per 10-25m square centres for a 'detailed investigation'. In addition, targeted sampling locations should be undertaken in areas of concern (e.g. above ground diesel tanks, interceptor).

Soil samples should be collected from the trial pits and tested for contaminants of concern based on the preliminary conceptual model and field observations (PID tests and visual / olfactory evidence).

gas monitoring is to be undertaken

8 British Standard (2017). "Investigation of Potentially Contaminated Sites – Code of Practice". BS10175:2017.

9 British Standard (2015). "Code of Practice for Ground Investigations". BS5930:2015.

It should be noted that boreholes and / or trial pits may also be utilised to provide appropriate geotechnical information on sub-surface conditions. This investigation, in conjunction with appropriate geotechnical testing, will identify and characterise any contaminants encountered. Information from this investigation can then be used to provide a more detailed assessment of the identified pollutant linkages, provide appropriate foundation solutions and, if necessary, identify appropriate remedial measures to ensure that the site is made suitable for its proposed end use.

Asbestos

we would advise that a Pre-Demolition and Refurbishment Asbestos Survey is undertaken prior to demolition by a professional contractor.

Should these investigations uncover potentially contaminated soil or significant made ground deposits then a remediation strategy may need to be considered pending the outcome of testing of

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the made ground material. The development should be monitored by a suitably qualified person should any potentially contaminated soils be found.

The evaluation provided do not preclude the existence of contamination, which could not reasonably have been identified during this stage of investigation.

Should you require further assistance please contact the undersigned.

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AGSD
REPORT No. AGSD 004

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ENVIRONMENTAL DATA SEARCH REPORT

HISTORICAL MAPS