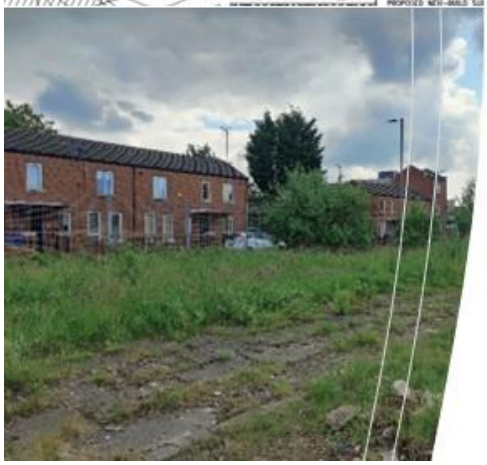

EARTH ENVIRONMENTAL & GEOTECHNICAL

Phase 1 GeoEnvironmental Desk Study

Hulme Primary

Manchester

November 2024

On behalf of

electricity north west
Bringing energy to your door

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PHASE I GEOENVIRONMENTAL DESK STUDY

HULME PRIMARY

MANCHESTER

FOR

ELECTRICITY NORTH WEST LTD

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Report No. A6339/24/FDS **November 2024**

Report Title:	**Hulme Primary, Manchester** **Phase I GeoEnvironmental Desk Study**
Report Reference:	**A6339/24/FDS**
Client:	**Electricity North West Ltd**
Issue Date:	**28th November 2024**
Drafted By:	**T Pudifoot**
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EARTH ENVIRONMENTAL & GEOTECHNICAL

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1.0 INTRODUCTION

Appointment

1.1 Earth Environmental & Geotechnical Ltd has been commissioned by Electricity North West Ltd (the Client) to undertake a Phase I GeoEnvironmental Desk Study as part of a planning submission for a proposed development at the land between Birchall Way and Upper Medlock Street, Hulme, Manchester.

Existing Planning Applications

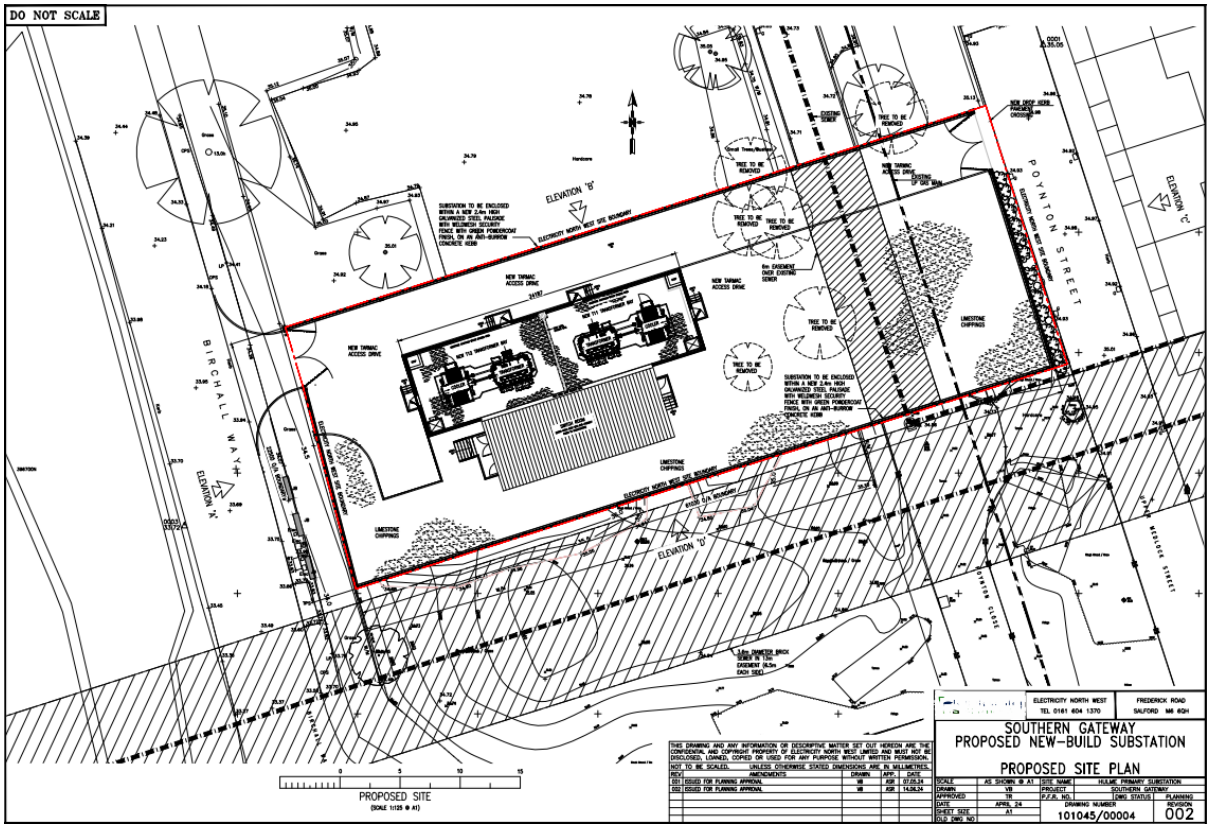
1.2 It is understood that a planning application has been submitted to Manchester City Council.

1.3 Planning reference 140484/FO/2024 has been submitted for the erection of a substation including switchouse, transformers and compounds as well as a new security fence and access.

1.4 It is understood that the decision has been approved for the proposed development on 24/10/2024.

1.5 A proposed development plan for the site is shown in Figure 1 below.

Figure 1 Proposed Development Plan



Objective

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

Scope

1.7 The Phase I Environmental Desk Study comprises of a site reconnaissance visit and a review of the following information sources, some of which was provided by the client.

- British Geological Survey online maps.
- Google Earth imagery.
- Environment Agency online mapping data.
- Historical Ordnance Survey maps.
- The site and surrounding areas environmental, geological, and mining data presented in the site specific GroundSure Reports (Appendix 1).
- Coal Authority Interactive Viewer.
- Manchester City Council planning search.

2.0 SITE LOCATION AND DESCRIPTION

2.1 The site is located at the Land between Birchall Way and Upper Medlock Street, Hulme, Manchester approximately 1km south of St Peters Square, Manchester city centre.

2.2 The approximate National Grid Reference for the centre of the site is SJ 83900 96694 (X: 383900, Y: 396694), with the closest postcode being M15 6PL.

2.3 The maximum dimensions of the site are approximately 23m north to south, and 62m west to east. The site occupies an area of approximately 0.14 hectares.

2.4 The site is a rectangular shaped parcel of land with access via Upper Medlock Street to the east of the site.

2.5 The site is a vacant plot of disused land comprising overgrown vegetation in the western site section. No buildings are present on site.

2.6 The site is surrounded by further disused land to the north, residential properties to the east and a private carpark to the south. Birchall Way and Upper Medlock Street are located directly west and east respectively.

2.7 A location plan is shown below as Figure 2, together with a recent site photograph as Figure 3 (overleaf).

Figure 2 Site Location Plan

Figure 3 Site Photograph

Site Utility Services

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

3.0 ENVIRONMENTAL SETTING

3.1 The geology of the site is covered by British Geological Survey (BGS) online data and the site specific GroundSure Enviro+Geo Insight report (Appendix 1).

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

Geology

3.3 The BGS states that the site is not underlain by artificial deposits, however it is recorded that Undivided Worked Ground is located 12m southwest.

3.4 The site is recorded to be underlain by superficial deposits of Glaciofluvial Sheet Deposits, which typically comprise sands and gravels. Devensian Till superficial deposits which typically comprise Diamicton, commonly known as Boulder Clay, is located 12m southwest of the site.

3.5 The solid geology beneath the site is shown to be the Triassic Chester Pebble Beds Formation, comprising sandstone.

3.6 There are no records of linear features within 500m of the site boundary.

3.7 There are no records of landslips within 500m of the site boundary.

3.8 There are 14no. borehole records identified within 250m of the site. The nearest record refers to a borehole located 40m southwest of the site, BGS reference: SJ89NW21. The borehole terminated at a depth of 12.5m bgl and recorded the following geological log description:

- MADE GROUND to a depth of 0.31m bgl, underlain by:
- GRAVEL and CLAY to a depth of 2.74m bgl, underlain by:
- GRAVEL to a depth of 3.85m bgl, underlain by:
- Stiff brown CLAY to a depth of 8.53m bgl, underlain by:
- BOULDER CLAY to a depth of 12.04m, bgl, underlain by:
- Red SANDSTONE to a depth of 12.50m bgl.

3.9 The following hazards ratings apply to the site and land within 50m and are presented in the Enviro + Geo Insight Report

- Shrink / swell clays: Negligible
- Running sands: Very Low
- Compressible deposits: Negligible
- Collapsible deposits: Very Low
- Landslides: Very Low
- Ground dissolution of soluble rocks: Negligible

Ground Workings

3.10 According to the BGS, there are no records of British Pits within 500m of the site.

3.11 There are no records of historical surface ground working features within 250m of the site.

Mining and Other Underground Workings

3.12 The site is located within an identified coal mining reporting area however the site is not within a development high risk area.

3.13 There are no records for non-coal mining areas located within 1km of the site.

3.14 There are no areas of brine extraction, gypsum extraction, tin mining or clay mining within 1km of the site.

3.15 There are no records for non-coal cavities or natural cavities identified within 1km of the site.

3.16 There are no records for historical underground working features identified within 1km of the site.

Radon Potential

3.17 The site is not located in a Radon Affected Area as less than 1% of properties above the Action Level. Therefore, radon protection measures are not required.

Hydrogeology and Hydrology

3.18 The Glaciofluvial Sheet Deposits comprising the superficial deposits are classified by the Environment Agency (EA) as a Secondary A Aquifer. The BGS states the following:

> ***Secondary A*** *'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.*

The Chester Pebble Beds Formation is classified by the Environment Agency (EA) as a Principal Aquifer with a fracture flow type and moderate to low permeability. The BGS states the following:

> ***Principal*** *'Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers.'*

3.19 The groundwater vulnerability of the site has been classified as medium to low vulnerability with soil leaching potential of low. The BGS states:

> **High -** *Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.*
> **Medium -** *Intermediate between high and low vulnerability.*

Low – *Areas that provide the greatest protection from pollution. They are characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.*

3.20 There are 46no. groundwater abstraction license records within 2km of the site. 12no. of these licences are active and 34no. are historical. The closest record refers to an active licence used for general use secondary category, located 153m west of the site.

3.21 There are 2no. surface water abstraction licences recorded within 2km of the site. Both are historical. The nearest is recorded as being used for general cooling, located 1.5km northwest of the site.

3.22 There are no potable abstraction licence records within 2km of the site.

3.23 The site is located within a Source Protection Zone 3, defined as total catchment.

3.24 There are no water network entries within 250m of the site

3.25 There are no surface water features identified within 250m of the site.

3.26 There is 1no. record of a Water Framework Directive (WFD) surface water body located within 1km of the site. The record refers to the river Irwell/Manchester Ship Canal, located 1507m northwest of the site. The river was given a failed chemical rating and a moderate ecological rating in 2019.

3.27 The site is located within the Water Framework Directive (WFD) surface water body catchment of the river Irwell/Manchester Ship Canal.

3.28 There is 1no. record of a Water Framework Directive (WFD) groundwater body located on-site. The record refers to the Manchester and East Cheshire Permo-Triassic Sandstone Aquifers. The aquifer had a poor chemical rating in 2019.

Landfill & Waste Management Activity

3.29 There are no records for current Environment Agency/Natural Resource Wales landfill records within 500m of the site.

3.30 There are no records of BGS/DoE non-operational landfill sites within 500m of the site.

3.31 There are no records of historical landfill sites from the Local Authority and Historical Mapping Records within 500m of the site.

3.32 There are no records of historic Environment Agency/Natural Resource Wales landfill site within 500m of the site.

3.33 There are no records of historical waste sites from the Local Authority and Historical Mapping Records within 500m of the site.

3.34 There are no records of current Environment Agency/Natural Resources Wales licensed waste sites within 500m of the site.

3.35 There are 17no. records of waste treatment, transfer, or disposal sites within 500m of the site. The closest record refers to a disposal of waste exemption, for use in the construction of entertainment or educational installations, located 93m southeast of the site.

Industrial Land Use Information

3.36 There are no records of potentially contaminative historical land uses identified on site, however 8no. have been identified within 500m of the site. The closest record refers to a hospital located 397m northeast in 1972. Other records in the vicinity refer to unspecified works, a police yard and a corporation yard.

3.37 There are 7no. records of current potentially contaminative land uses identified within 250m of the site. The closest record refers to an electricity substation 131m southwest of the site. Other records pertain to other electricity substations and a crane.

3.38 There are 3no. records of historical tanks identified within 500m of the site. The closest record refers to an unspecified tank located 179m south of the site dated 1891.

3.39 There are 45no. records of historical energy features identified within 500m of the site. The records all refer to electricity substations, the closest of which was located 123m east of the site dated 1976.

3.40 There is 1no. record for current petrol or fuel sites within 500m of the site. It pertains to an ASDA petrol station located 420m southwest of the site.

3.41 There are 15no. records of historical petrol or fuel sites within 500m of the site. The closest refers to a garage located 116m south, dated 1955.

3.42 There are 15no. records of historical garages within 500m of the site. The closest was located 116m south, dated 1955.

3.43 There are no records of high voltage underground electricity transmission cables within 500m of the site.

3.44 There are no records of high-pressure underground gas transmission pipelines within 500m of the site.

3.45 There are no. historical railway and tunnel features identified within 250m of the site.

3.46 There are no historical railway lines identified within 250m of the site.

3.47 There are no. current active railway line records identified within 250m of the site.

3.48 There are no underground railway lines or tunnels identified within 250m of the site.

3.49 The site is not within 500m of the route of the High Speed 2 rail project.

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

Environmental Permits, Incidents and Registers

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

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

Permit/Incident/Register	Number	Nearest Record
Sites determined as Contaminated Land (Part 2a Register)	0	N/A
Control of Major Accident Hazards (COMAH)	0	N/A
Regulated explosive sites	0	N/A
Hazardous substance storage/usage	0	N/A
Historical Licensed Industrial Activities (IPC)	0	N/A
Licensed industrial activities (Part A(1)	0	N/A
Licensed pollutant release (Part A(2)/B)	1	434m southwest - ASDA petrol station.
Radioactive Substance Authorisation	0	N/A
Licensed Discharges to controlled waters	9	134m southwest
Pollutant release to surface waters (Red List)	0	N/A
Pollutant release to public sewer	0	N/A
List 1 Dangerous Substances (European Directive E 2006/11/EC)	0	N/A
List 2 Dangerous Substances (European Directive E 2006/11/EC)	0	N/A
Pollution Incidents (EA/NRW)	0	N/A
Pollution inventory substances	0	N/A
Pollution inventory waste transfers	0	N/A
Pollution inventory radioactive waste	0	N/A

3.52 There are 9no. records of Licensed Discharge Consents to controlled waters within 500m of the study site. The nearest record is located 134m southwest and refers to trade discharges from cooling water into groundwater via a borehole. 5no. of the other records also refer trade discharges from cooling water, however the other 3no. relate to sewage discharges from sewer storm overflow.

Environmentally Sensitive Sites

3.53 There are no records of Sites of Special Scientific Interest (SSSI) within 2km of the study site.

3.54 There are no records of Local Nature Reserves (LNR) within 2km of the site.

3.55 There are no records of Designated Ancient Woodlands within 2km of the site.

3.56 There are no areas of Green Belts within 2km of the site.

3.57 The site is located within 2no. Nitrate Vulnerable Zones (NVZ), both referring to the river Irk (Moston Brook to the river Irwell) surface water.

3.58 There are no further records of Environmental Designations within 2km of the site.

Ecology

3.59 An ecological assessment of the site falls outside the brief of this report. Where considered necessary, advice should be sought from an ecological specialist in this respect.

3.60 However, the site is classified as Urban Land with no quality assigned.

Archaeology

3.61 An archaeological assessment falls outside the brief of this report. Where considered necessary, advice should be sought from an archaeological specialist in this respect.

3.62 There are no. Listed Buildings within 250m of the site.

Potential Flood Risks

3.63 Detailed assessment of flood risks is outside the scope of this report. However, an Environment Agency Flood Zone 2 and 3 are not located on site. An area designated as Flood Zone 2 is recorded 17m northeast of the site.

3.64 There are no records of flooding from rivers and sea (RoFRaS) within 50m of the site.

3.65 There are no records of flood defences within 250m of the site.

3.66 There are no record of areas benefitting from flood defences within 250m of the site.

3.67 There are no records of areas used for flood storage within 250m of the site.

3.68 The highest risk of surface water flooding occurring on-site for a 1 in 30-year return event is, 0.1m – 0.3m.

3.69 The highest risk of groundwater flooding occurring on-site is high.

Previous Site Investigations

3.70 Earth Environmental & Geotechnical Ltd are not aware of any previous site investigations carried out for the site.

4.0 SITE HISTORY

4.1 The historical development of the site has been determined by reference historical plans and Google Earth imagery. The reviewed historical plans comprise only readily available records and may be limited; however, the information available to date indicates that additional searches are unlikely to add to our understanding of the site. The earliest available historical mapping covering the site dates to 1848.

4.2 The site history is summarised in Table 2, below, followed by selected extracts from maps and aerial photographs.

Table 2: Summary of Site History

Date	On-Site History	Surrounding Land Use History
1851 1:2,500 1848 1:10,560	The western half of the site comprises an area of vacant land. However, in the eastern half of the site Upper Medlock Street runs directly through the site from northwest to southeast. Also, at least three terraced houses are present in the northeastern corner of the site.	Streets of residential properties surround the site within 100m. All are rows of terraced dwellings. Some areas of land between streets have not been developed yet. Three coal yards are recorded approximately 80m - 120m northeast, north and northwest of the site. An unspecified pump is recorded approximately105m northeast of the site.
1889 – 1893 1:2,500 1896, 1905, 1:10,560	By 1891 at least three more terraced houses are added to the existing row in the eastern side of the site. Similarly, two rows of terraced houses have been constructed on the formerly vacant area of land in the western site section. An alleyway separates the 8 terraced houses of each row. It is approximated that 22 terraced houses are located on site at this time.	All vacant land surrounding the site has been developed into streets of terraced housing. Stretford Road and tramway have been developed approximately 150m north of the site. The Crown Brewery is recorded approximately 250m southeast of the site. Drill Hall is located approximately 230m northeast of the site. Public baths are located approximately 240m north of the site. Naval Brewery is recorded approximately 260m southwest of the site. A School is recorded approximately 290m southwest of the site.
1922, 1932 1:2,500 1923, 1:10,560	No significant change on site.	Unspecified warehouses are recorded approximately 150m south, 260m southeast and 280m northeast of the site. An engineering works is recorded approximately 150m south of the site.
1948 – 1949 1:2,500 1956, 1:10,560	No significant change on site.	An unspecified warehouse is recorded approximately 100m south of the site. 4 no. ruins are recorded approximately 130m north and 240m northwest of the site.

Date	On-Site History	Surrounding Land Use History
		An unspecified works is recorded approximately 150m northeast of the site.
1973 – 1978 1:2,500 1972, 1980 - 1981 1:10,000	By 1972 the terraced houses have been demolished. Upper Medlock Street is now recorded as Poynton Close. A row of 4 larger terraced houses run through the centre of the site to the west of Poynton Close. To the east of this road the land is recorded to slope down to a Games court.	Major redevelopment has taken place in the surrounding area as many of the surrounding rows of terraced houses have been demolished. Princess road has been constructed approximately 40m east of the site. A large slope is recorded either side of the road where the land has been excavated. Martenscroft County Primary school is recorded approximately 70m south. 2no. other schools are recorded 400m and 500m southwest of the site. A hospital is recorded approximately 450m southeast of the site. Hulme crescents have been constructed approximately 500m east of the site.
1992 1:2,500	In 1992 the terraced houses and the games court has been demolished, leaving the land either side of Poynton Close vacant.	No significant change surrounding the site.
2003 1:1,250 2001, 2010, 2024 1:10,000	Poynton Close is recorded as Upper Medlock Street again.	Terraced houses have been constructed directly to the east of Upper Medlock Street.
2003 - 2021 Google Earth Aerial Image	No significant change occurs on site until 2021 when it appears the site is being used as a possible builder's yard. Multiple containers and piles of unspecified materials are present across the eastern and northern part of the site. The southwestern site section appears to have been left untouched with dense, overgrown vegetation present.	In 2018 the area of vacant land directly north of the site is covered in hardstanding. By 2018 this area appears to be used as a possible builder's yard with various containers and vehicles present, and by 2019 a building has been constructed to the north.
2022 - Present Google Earth Aerial Image	By 2022 all materials have been removed and the site appears to be a disused, vacant parcel of land, as its current configuration.	In 2023 the small parcel of land directly south of the site appears to be being used as a private carpark with multiple parked vans present.

Figure 4 OS Map Extract 1851

Figure 5 OS Map Extract 1889 - 1893

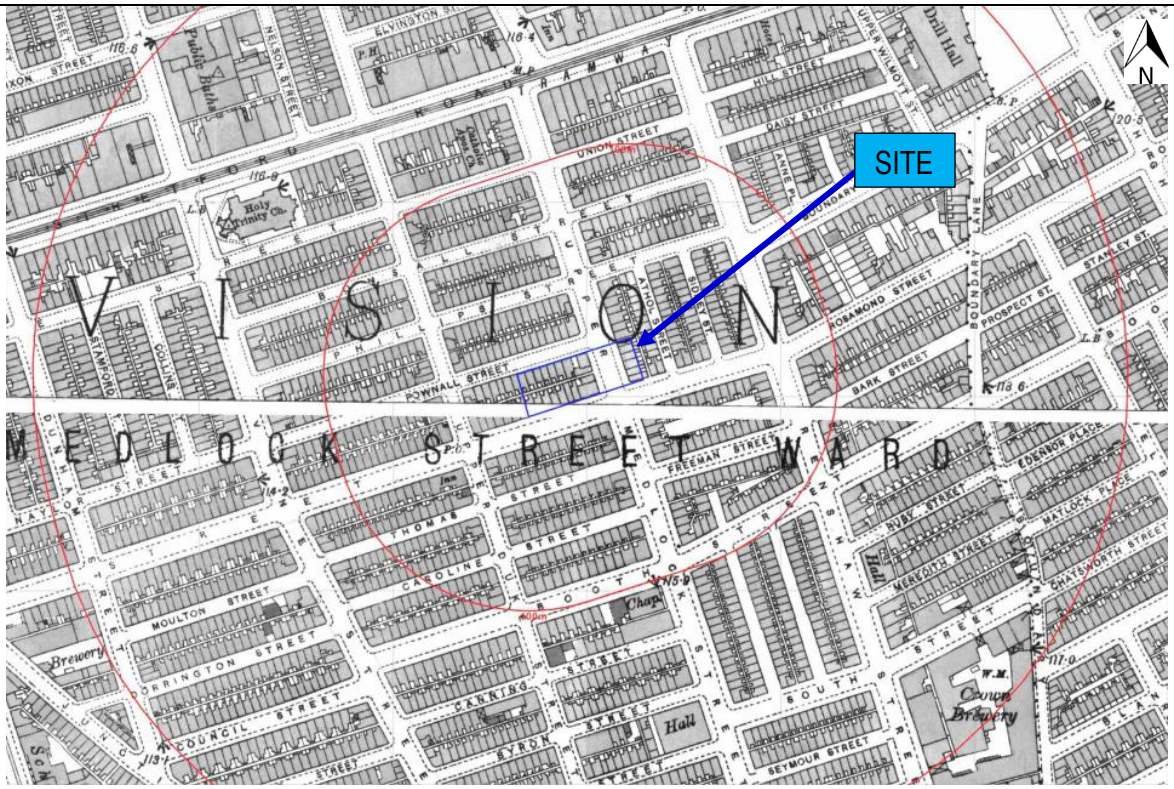


Figure 6 OS Map Extract 1973 - 1978

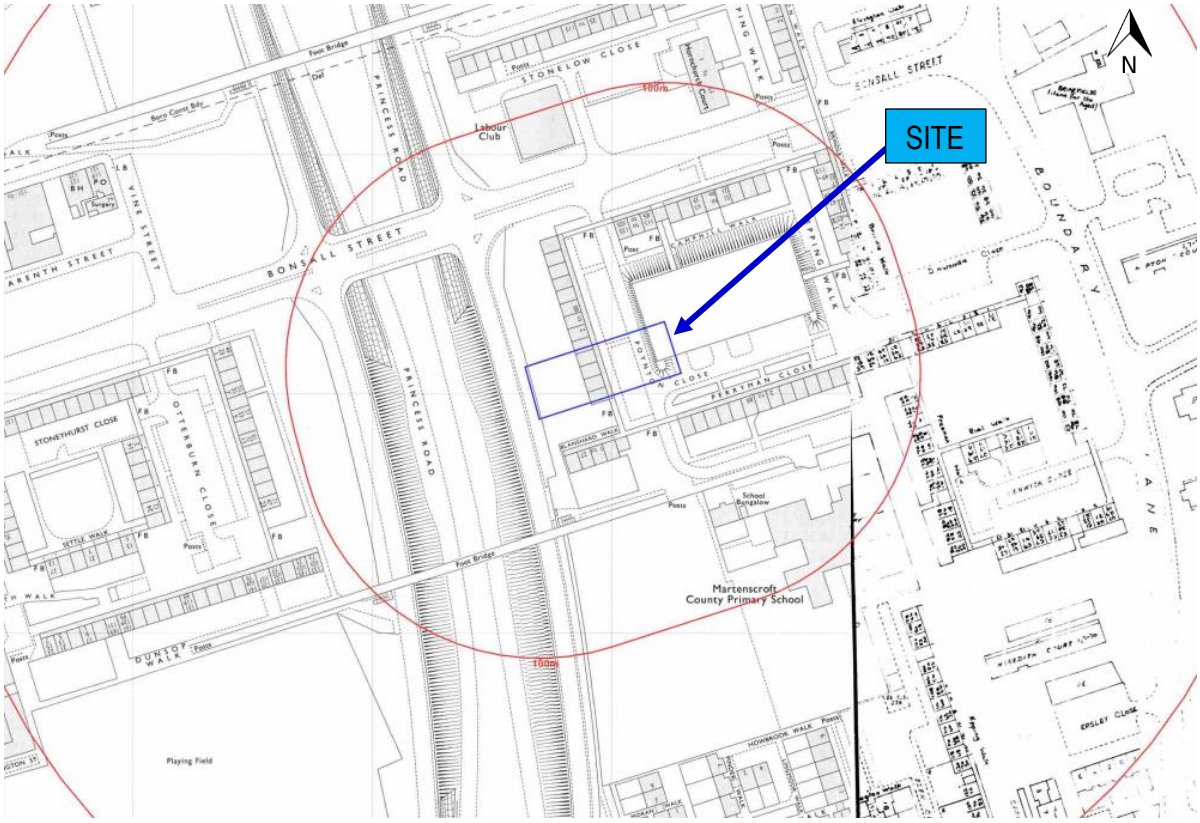
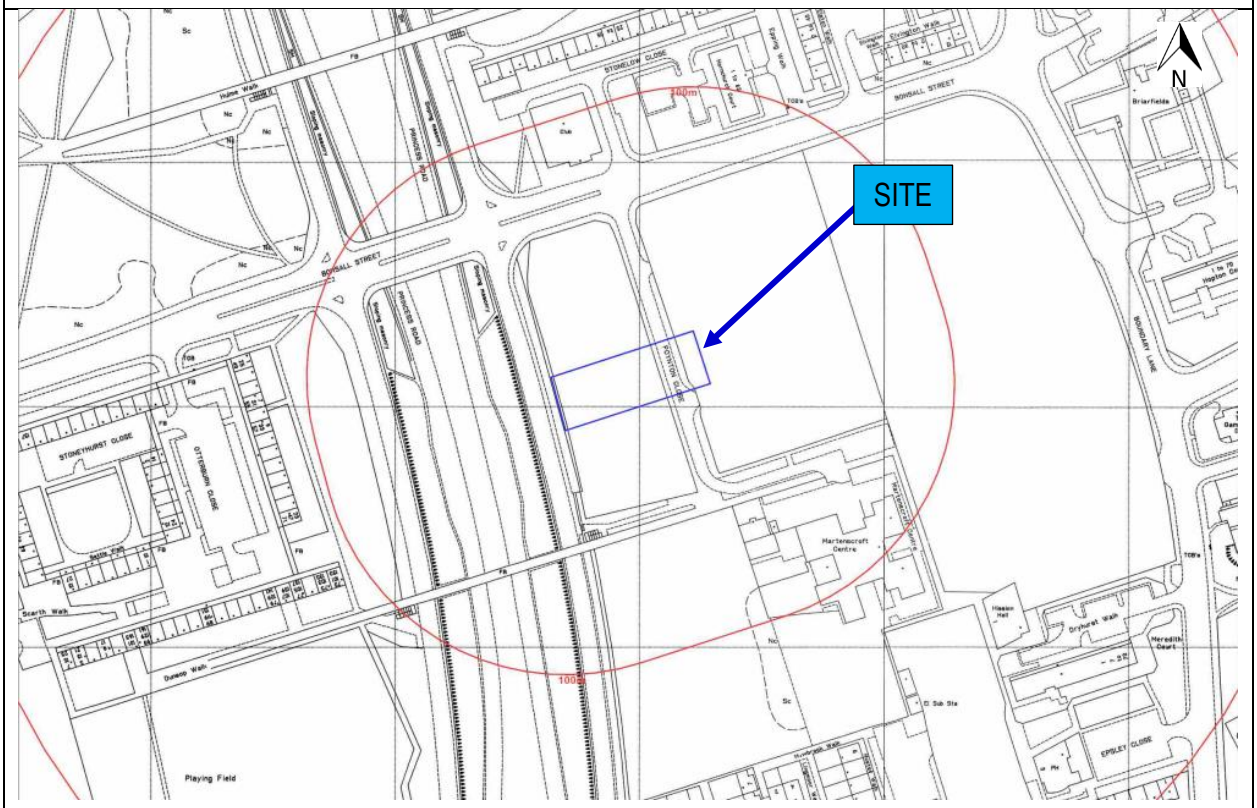


Figure 7 OS Map Extract 1992 - 1995



5.0 WALKOVER SURVEY

5.1 A walkover survey was completed on the 28th June 2024.

5.2 The photographs and notes from this survey are appended to this report as Appendix 2 and Appendix 3, respectively.

5.3 The site is accessed via a gap in the fencing in the southeast corner of the site, off Upper Medlock Street.

5.4 The site is mostly covered by grassed over Made Ground and gravel.

5.5 Weathered hardstanding (concrete and tarmac) is present in the eastern side of the site as well as a line of paving stones.

5.6 Dense, overgrown vegetation is situated in the southwestern corner of the site. Due to the site's disuse in recent years vegetation is growing out of the gravel and some areas of hardstanding.

5.7 The are currently no buildings onsite.

5.8 The site is generally flat and level.

5.9 The site is entirely bound by metal fences, approximately 2m in height.

5.10 A site features plan is presented as Figure 8 overleaf.

Figure 8 Site Features Plan

6.0 PRELIMINARY CONTAMINATION RISK ASSESSMENT

Introduction

6.1 The following paragraphs outline a Preliminary Risk Assessment (PRA) for the site based on the above desk study information as defined by Land Contamination Risk Management Environment Agency, July 2023.

6.2 Table 5 provides a Preliminary Conceptual Model (PCM) which considers the source-pathway-receptor linkages present alongside the likelihood, severity and risk level as defined within Table 3 and Table 4 below. The assessment of probability, a modified risk table, and certain consequence definitions are based on CIRIA C552 and Land Contamination Risk Management Environment Agency, July 2023.

6.3 Table 5 considers whether a pollution linkage is potentially present and provides a preliminary qualitative assessment of risk based on the information currently available. Where a possible linkage is identified, it does not necessarily mean that a significant risk exists but indicates that further information is required through appropriate site investigation to substantiate the conceptual model.

6.4 The PCM/PRA is based on a commercial residential end use.

Table 3: Consequence, Probability and Risk

Probability	Consequence,	Risk
High Likelihood- There is a pollution linkage and an event either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution	Very High – acute risk to the human health likely to result in significant harm. Risk of severe or irreversible effect on ground/surface water quality. Catastrophic damage to buildings / property.	Very High – there is a high potential that the source-pathway-receptor scenarios may give rise to harm to human health, or the environment and remedial action is likely to be required.
Likely – there is a pollution linkage, and all the elements are present, which means that it is probable an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.	High – Severe or irreversible effect on human health. Temporary severe or irreversible effect on ground/surface water quality. Reduction of water quality rendering groundwater or surface water unfit to drink and/or substantial adverse impact on groundwater dependant environmental receptors.	High – it is likely that the source-pathway-receptor scenarios may give rise to an impact on human health or the environment, which may require remediation and/or control measures to mitigate risks
Low likelihood– there is a pollutant linkage, and circumstances are possible for an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term	Moderate – Long term or short-term moderate effect on human health. Moderate effect on ground/surface water quality, reversible with time. Reduced reliability of a supply at a groundwater or surface water abstraction source	Moderate – it is possible that the source-pathway-receptor scenarios may give rise to an impact on human health or the environment, however it is either relatively unlikely that such would be severe, or if any harm were to occur it is more likely that harm would be mild.
Unlikely – there is a pollution linkage, but circumstances are such that it is doubtful that an event would occur even in the very long term.	Low – non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc.) Slight effect on ground/surface water quality, reversible with time. Marginal reduced reliability of a supply at a groundwater or surface water abstraction source.	Low – it is possible that harm could arise at the source, however it is likely that this would at worst be mild.
		Very Low – it is unlikely that the source-pathway-receptor scenarios will give rise to an impact on human health or the environment.

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

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

Potential Sources

6.5 The site has been previously occupied by terraced houses and therefore the risk of contamination is low.

Potential Receptors

6.6 The following receptors have been considered for the construction and operational stages of the proposed redevelopment.

- Current site users;
- Adjacent land users;
- Future land users;
- Construction workers during site development works;
- Groundwater within the underlying aquifer

Potential Pathways

6.7 The following pathways have been considered for the construction and operational stages of the proposed redevelopment.

- Dermal contact, ingestion, inhalation pathways of potentially contaminated soils;
- Downward vertical migration of leachate to shallow groundwater;
- Lateral migration of potentially contaminated off-site soils via surface runoff;
- Vertical or lateral migration of ground gas.

Table 5: Preliminary Conceptual Model

Source	Pathway	Receptor	Probability	Consequence	Risk	Comment
Potential ground contamination from possible on-site Made Ground and possible on-site builders yard. E.g., **Heavy Metals, PAH, hydrocarbons**	Dermal contact, ingestion, and inhalation of soils dust	Current Site Users	Unlikely	Moderate	Low	The site currently comprises a vacant parcel of land. Therefore, the risk is considered **LOW.**
		Adjacent land users	Unlikely	Moderate	Low	Residential properties bound the site to the east. The area directly to the north and the south comprises vacant land and a highway lies to the west. Usual dust control measures should be implemented as part of good site working practices during construction to reduce dust generation. Therefore, the risk is considered **LOW.**
		Future land users	Unlikely	Moderate	Low	It is proposed that the site is to be developed for commercial end-use. The majority of the site is to be covered in hard standing as well as limestone chippings, meaning there will be little to no areas of soft landscaping. It is anticipated that deep Made Ground will be present due to former terraced houses occupying the entirety of the site. More recently the site may have been used as a possible builder's yard. Therefore, based on these former land uses, there is the potential for widespread low-level contamination of soils. However, given the commercial end use, with proposed widespread hardstanding, direct exposure to potentially contaminated soils is unlikely and therefore the risk is **LOW.**
		Construction Workers	Low Likelihood	Moderate	Moderate to Low	Construction workers may be exposed to potentially contaminated soils during construction works, however exposure duration will be short-term only. Appropriate health and safety measures (in line with CDM and other relevant health and safety guidance) can reduce the risk to **LOW.**
	Downward vertical migration of leachate to shallow groundwater	Groundwater within the Underlying Aquifers	Likely	Moderate	Low	The Glaciofluvial Sheet Deposits which comprise the superficial deposits on site are classified as a Secondary A aquifer. This is underlain by the Chester Pebble Beds Formation which is considered a Principal bedrock aquifer. Potential on-site contaminants could leach into the underlying aquifers due to the permeable, granular nature of the sands and gravels which make up the superficial deposits. However, the BGS records a low soil leaching potential for the site with a medium to low groundwater vulnerability. Therefore, the risk is considered **LOW**.
	Lateral migration in surface waters	Surface water	Low Likelihood	Moderate	Low	There are no surface water abstraction licenses within 250m of the site, and the closest surface water feature/ water network entry is >200m from the site. Leachable contaminants are possible on

Source	Pathway	Receptor	Probability	Consequence	Risk	Comment
						site given its site history. However, given the distance the nearest sensitive surface water receptors are from the site, the perceived risk to surface waters is **LOW.**
	Vertical or lateral migration of ground gas	Current Site Users	Unlikely	High	Low	It is anticipated that deep Made Ground is present on site, given the site history. The site currently comprises a vacant parcel of land. Therefore, the risk to current site users from ground gas is considered **LOW**.
		Adjacent land users	Unlikely	High	Low	Residential properties bound the site to the east. The area directly to the north and the south comprises vacant land and a highway (Princess Parkway Road) lies to the west. Given the site history, it is anticipated that deep Made Ground is present on site, which has the potential to generate ground gas. The risk to adjacent land users from ground gas is considered **LOW**.
		Future land users	Unlikely	High	Low	The site is located within an area where less than 1% of properties are affected by radon, anticipated deep Made Ground means there is potential for ground gas generation on-site. The risk is considered **LOW.**
		Construction Workers	Unlikely	High	Low	Construction workers may be exposed to ground gas/depleted oxygen conditions in confined spaces and excavations; however, the duration will be short term. The risk to construction workers from ground gas is considered **LOW**.
Potential Asbestos Containing Material (ACM)	Dermal contact, ingestion, and inhalation of soils dust	Current Site Users	Likely	Moderate	Low	Asbestos is only harmful when disturbed and the site is currently a vacant parcel of land, therefore the risk to current site users is **LOW.**
		Adjacent land users	Likely	Moderate	Moderate	Residential properties bound the site to the east. The area directly to the north and the south comprises vacant land and a highway (Princess Parkway Road) lies to the west. Potential ACM is possible given the age of the former buildings on-site, meaning the risk to adjacent site users is **MODERATE.** Dust control measures (dampening down) should be implemented as part of good site working practices to reduce the risk to **LOW**.
		Future land users	Low likelihood	Moderate	Moderate to Low	It is proposed that the site is to be developed for commercial use. The majority of the site is to be covered in hard standing as well as limestone chippings, meaning there will be little to no areas of soft landscaping. Potential ACM is possible given the age of the former buildings on-site. However, given the proposed development and end-use, it is unlikely there is an exposure pathway to future land users via dermal contact,

Source	Pathway	Receptor	Probability	Consequence	Risk	Comment
						ingestion and inhalation. Therefore, the risk to future land users is considered **LOW.**
		Construction Workers	Likely	Moderate	Moderate	There is a potential for ACMs to be present in soils at the site. Disturbance of soil during the construction phase may allow any potential fibres to become airborne. The risk is therefore considered **MODERATE.** Dust control measures (dampening down) should be implemented as part of good site working practices to reduce the risk to **LOW**.
Potential Contamination from Offsite private carpark	Lateral migration in shallow groundwater and surface runoff	Current Site Users	Unlikely	Moderate	Low	The site currently comprises a vacant parcel of land. Therefore, the risk is considered **LOW**.
		Future land users	Unlikely	Moderate	Low	It is possible that the private carpark located directly south of the site may house soils contaminated with hydrocarbons from vehicles leaks, which could leach on site via surface runoff or lateral shallow groundwater migration. However, this land has only been a possible carpark for the last year, so it highly unlikely that any significant contamination has built up. Therefore, the risk is considered **LOW**.
		Construction Workers	Unlikely	Moderate	Low	Construction workers may be exposed to potentially contaminated soils during construction works, however exposure duration will be short-term only. Appropriate health and safety measures (in line with CDM and other relevant health and safety guidance) can reduce the risk to **LOW.**

7.0 GEOTECHNICAL HAZARDS ASSOCIATED WITH THE DEVELOPMENT

7.1 In addition to the environmental hazards there are also geotechnical hazards associated with the stability of the ground including load bearing capacity, slope stability and effects of ground mining activities. Local Authorities follow NPPF (2012) which requires that a site be suitable for its new use considering of ground conditions and land instability, including from natural hazards to former activities such as mining.

7.2 A summary of the geotechnical considerations is provided below in Table 6.

Table 6: Summary of Geotechnical Hazards

Geohazards:	
Highly Compressible Ground	Negligible risk
Collapsible Soils	Very low risk
Swelling Clay	Negligible risk
Running Sand	Very low risk
Ground Dissolution	Negligible risk
Landslip	Very low risk
Mining & Quarrying	No mining or quarrying is recorded as taking place on site. The site is located within an identified coal mining reporting area however it is not within a Coal Authority Development High Risk Area. No historical surface ground workings or historical underground workings have been identified within 250m of the site. Therefore, the risk from mining is low.
Geotechnical Design Considerations	
Site Clearance	The site is currently a vacant parcel of land. Semi-mature trees and overgrown vegetation may need to be cleared in the southwestern site section.
Trees	Semi-mature trees are present in the southwestern site section.
Existing Buildings/Obstructions	There are currently no existing buildings on site. However, the remnants of a historical road runs through the eastern section of the site. This may present challenges with 'breaking out' if an intrusive ground investigation takes place. Also, the foundations of former terraced houses may present obstructions in the shallow subsurface. Furthermore, it is unknown whether these houses also had basements. If so, this would present a further challenge, especially if they have been infilled with demolition materials from the former houses. An intrusive ground investigation is recommended prior to any construction works taking place to discover the depth and extent of any possible on-site basements.
Foundations	The depth and type of proposed foundations would depend on the ground conditions present on site.

	An intrusive ground investigation is recommended prior to any construction works taking place to understand the most suitable foundation options for the site. If deep Made Ground is present, then shallow foundations may not be feasible, and a deeper foundation solution may have to be considered.
Geotechnical Design Considerations	
Floor Slabs	An intrusive ground investigation is recommended prior to any construction works taking place to understand the most suitable floor slab design for the on-site ground conditions.
Groundwater	Exact groundwater conditions are not known at this stage. For more detailed knowledge of the groundwater regime, an intrusive investigation would be needed. However, it is recorded that the site is underlain by a Secondary A aquifer and Principal bedrock aquifer. The highest risk of groundwater flooding occurring on-site is moderate to high. It may be necessary to undertake groundwater monitoring of the site to understand the groundwater regime.
Earthworks	Extensive earthworks are unlikely to be required for the proposed development.
Slopes	The site is generally flat.
Retaining Walls	There are no retaining walls on or adjacent to the site.
Chemically aggressive ground conditions	Chemically aggressive ground conditions are anticipated to be present as deep Made Ground is expected on-site. An intrusive geotechnical investigation would be necessary to confirm chemically aggressive ground.

8.0 CONCLUSIONS & RECOMMENDATIONS

Conclusions

8.1 Historically, the site comprised a row of terraced houses off Upper Medlock Street which, from 1848 historical OS mapping, runs directly through the eastern section of the site whilst the western site section is vacant. By 1889 two more rows of terraced houses are constructed in the western part of the site. The site remains relatively unchanged until 1972 when all three terraces are demolished, and a new row of terraced houses is constructed to the west of Upper Medlock Street which is now recorded as Poynton Close. A slope down to a games court is noted in the northeastern site section, east of Poynton Close. In 1992, the games court and terraced houses have been demolished and the land either side of Poynton lose is vacant. The site remains unchanged until 2021 when Google Earth aerial imagery reveals the eastern site section being used as part of a potential builder's yard. By 2023 all materials have been removed, putting the site in its modern-day configuration as a vacant parcel of land.

8.2 It is understood that the client wishes to develop the site into an electricity substation including switchouse, transformers and compounds as well as a new security fence and access.

8.3 Based on the previous land use, there is a low potential for contamination on the site.

8.4 The site is underlain by Glaciofluvial Sheet superficial deposits typically comprising sands and gravels. The solid geology beneath the site is recorded to be the Chester Pebble Beds Formation comprising sandstone.

8.5 The site is located within the specified search distance of an identified coal mining reporting area, however not within a Coal Authority Development High Risk Area.

8.6 The site is not located in a Radon Affected Area, as less than 1% of properties are above the Action Level. Radon protection measures are therefore not required for the proposed development.

8.7 Given the site history and the proposed development, the overall risk from soil contamination to end users and construction workers is **LOW.**

8.8 The overall risk to controlled waters is concluded to be **LOW**.

8.9 The risk from ground gas to end users and construction workers is considered **LOW**.

8.10 The site is not located within an Environment Agency Flood Zone 2 or 3. However the highest risk of groundwater flooding is **HIGH.**

Recommendations

8.11 A site investigation is required to assess ground conditions for foundation design purposes.

8.12 As part of the site investigation, it would be prudent to obtain soil samples for chemical testing.

APPENDIX 1

GROUNDSURE REPORTS

APPENDIX 2

SITE PHOTOGRAPHS

<table>
<tr><td>Earth Environmental & Geotechnical Ltd

Tel: 0161 975 6088
Email: info@earthenvironmental.co.uk
Web: www.earthenvironmental.co.uk</td><td>SITE PHOTOGRAPHS

EARTH ENVIRONMENTAL & GEOTECHNICAL</td></tr>
<tr><td>Job No.: A6339/24</td><td>Site: Hulme Primary, Manchester</td></tr>
<tr><td>Plate 1 Site access via Upper Medlock Street, facing northwest</td><td>Plate 2 Paving slabs and gravel underfoot, facing west</td></tr>
<tr><td> </td><td> </td></tr>
<tr><td>Date: 28th June 2024</td><td>Date: 28th June 2024</td></tr>
<tr><td>Plate 3 Overgrown vegetation and semi-mature trees in the southwestern site section, facing west</td><td>Plate 4 Central site section, facing south</td></tr>
<tr><td> </td><td> </td></tr>
<tr><td>Date: 28th June 2024</td><td>Date: 28th June 2024</td></tr>
</table>

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SITE PHOTOGRAPHS

EARTH ENVIRONMENTAL & GEOTECHNICAL

Job No.: A6339/24

Site: Hulme Primary, Manchester

Plate 5 Paving slabs underfoot facing southwest at Upper Medlock Street.

Date: 28th June 2024

Plate 6 Semi-mature trees in the southwestern site section, facing southwest.

Date: 28th June 2024

Plate 7 Facing east along the northern boundary

Date: 28th June 2024

Plate 8 Facing north at the former road (Poynton Close)

Date: 28th June 2024

Earth Environmental & Geotechnical Ltd

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SITE PHOTOGRAPHS

EARTH ENVIRONMENTAL & GEOTECHNICAL

Job No.: A6306/24

Site: Hulme Primary, Manchester

Plate 9 Metal fencing along the western boundary, facing southeast

Date: 28th June 2024

Plate 10 Manhole cover just west of the western boundary, possible drainage services crossing the site

Date: 28th June 2024

Plate 11 Electrical services along the western boundary with Birchall Lane, facing southeast

Date: 28th June 2024

Plate 12 Possible site access off Bonsall Street to the north of the site, facing southeast

Date: 28th June 2024

Figure 9 Site Walkover Photo Locations

APPENDIX 3

SITE WALKOVER NOTES

EARTH ENVIRONMENTAL & GEOTECHNICAL

WALK OVER SURVEY REPORT

Site: Hulme Primary, Manchester **Date:** 28th June 2024

Job No: A6339 **Undertaken By:** Daniel Shanks

Purpose of Site Walkover:
1) Provide further information for the Desk Study Report;
2) Identify potential contamination sources, pathways, and receptors;
3) Identify geotechnical features and potential geohazards;
4) Determine locations for potential exploratory boreholes.

Desk Study features checked during site visit	**Feature and Information required**	**Present**	**Description / Comments**
Site Setting	Description required for: Town/Country/Suburb Setting Industrial/Residential/Retail Usage Current Site use (if undertaking security and access to the site)		Inner City setting Disused Industrial, Disused residential Disused industrial
Evidence of Past Activities	Are there: Any relevant street names in area? Features or relics, which indicate past history?	Yes/~~No~~ Yes/~~No~~	Poynton Close Weathered hardstanding
Geographic Setting	Description required for: Low lying flood plain/dry valley/rolling hills etc.		Flat land
Ground Conditions	Is there any evidence of: Mining, Mine entries Subsidence Landslip/slope erosion Former investigation works	 ~~Yes~~/No ~~Yes~~/No ~~Yes~~/No ~~Yes~~/No	
Topography	Description required for: Are there apparent differences between site and surrounding area? (If yes describe the presence of retaining walls, and slopes).	Yes/~~No~~	Slope to the west of Birchall Lane down to Princess Parkway Road.

	Is there evidence of Made Ground / Fill on site?	Yes/~~No~~	Evidence of Made ground in the eastern site section. Paving slabs and hardstanding present from former Poynton Street.
Site Boundaries and Neighbours	Description required for: Type of boundary demarcation (if any) on each side of site, usage of adjacent land and name of industrial/commercial occupiers. Note any adjacent features such as water course and other potentially environmentally sensitive uses (residential, school, infirmary, SSSI etc.)		The entire site is demarked by metal fences. The surrounding area is occupied by residential terraced housing to the east of Upper Medlock Street. Princess Parkway Road is to the west of Birchall Lane. A vacant parcel of land lies to the north and a possible private car park is to the south. It should be noted that Martenscroft Nursery School is located 50m to the southeast.
Vegetation	Are there any vegetation/trees on or close to side (if yes describe locations, type, maturity, etc.)? Is there any evidence of poor health / distress?	Yes/~~No~~ Yes/~~No~~	Semi-mature trees and overgrown vegetation is located in the southwestern corner of the site. The site appears to have been left vacant and disused for the last year or two.
Ground Surface	Are there areas of hardstanding and estimate the split between hard and soft cover? (If yes describe locations, types, and conditions). Is the any evidence of any spillages or staining?	Yes/~~No~~ ~~Yes~~/No	30% old hardstanding. Hardstanding is generally in poor condition and weathered to gravel in places. Predominantly in the eastern site section. 70% soft cover in the western and central site sections.
Site Drainage	Are there any drain covers / soakaways (if yes describe locations)? Are there any outfalls/water courses on site (note the condition of water courses in open water courses? discolouration, odour, eutrophication, oily sheen, gas bubbling water, clear or cloudy) Where a watercourse runs alongside or crosses a site are there any differences in visible water quality upstream and downstream of the site?	~~Yes~~/No ~~Yes~~/No ~~Yes~~/No	Manhole cover noted along Birchall Lane just off the western site boundary.

Desk Study features checked during site visit	**Feature and Information required**	**Present**	**Description / Comments**
Electrical Equipment	Are there any electricity sub stations on or adjacent to the site? Are there any electrical transformers, capacitors, pylons etc. on site?	~~Yes~~/No	
Buildings	Description of Buildings, including age, state of repair, materials used in construction. Is there any evidence of asbestos construction materials e.g., roofing, insulation materials? Do any buildings have basements? Do any buildings have a boiler room (if yes, describe fuel type and storage arrangements)?	 ~~Yes~~/No ~~Yes~~/No ~~Yes~~/No	No current or recent buildings on site. Historical terraced housing on site could have had basements. Unable to know until ground is excavated
Landfilling	Is there any evidence of gas protection measures (gas protection measures (gas membrane, gravel-filled trenches, venting pipes, etc.)?	~~Yes~~/No	
Process Air Emissions	Point Source: Are there any stacks / vents / cooling towers / abatement equipment? Fugitive Source: is there any stockpiled material / windblown dust / vapour process?	~~Yes~~/No ~~Yes~~/No	
Storage of fuels & Chemicals	Are there any drums / containers (if yes, describe quantity, full /empty, stored on hard standing / soft landscaping, bunding)? Are there any above ground fuel tanks (if yes, describe locations, volumes, how many, bunding, used / disused, condition?) Is there any evidence of underground fuel tanks (fuel pumps, covers, vent pipes, and condition).	~~Yes~~/No ~~Yes~~/No ~~Yes~~/No	
Accidents	In the event of a large spillage would runoff affect any vulnerable watercourse/culverts?	~~Yes~~/No	

Desk Study features checked during site visit	**Feature and Information required**	**Present**	**Description / Comments**
Waste	Are there any waste skips present on site? Are waste storage facilities adequate? Is there any litter/fly tipped material?	~~Yes~~/No ~~Yes~~/No ~~Yes~~/No	The site is vacant.
Atmospheric	Are there any fumes, odours originating from site or affecting site from neighbouring sites?	~~Yes~~/No	
Access / Further Investigations	If a Phase 2 Investigation is likely to be required, describe any access problems including headroom where relevant, services, overhead cables, restricted access areas, confined spaces, trafficked areas, etc. that are likely to affect investigation scope/techniques. Identify possible site office and storage locations. Identify possible water supply		If an excavator is required, the site may have to be accessed off Bonsall Street to the north as the gap in the fencing to the south may be too narrow. Site office can be located on-site. No water supply observed on site.
Site Environs	Are there any local features that could have a harmful influence e.g., landfill, industrial processes, railway land? Are there any sensitive water features/courses near to the site?	~~Yes~~/No ~~Yes~~/No	Railway line approximately 50 south of the site.
Local Knowledge / Anecdotal Evidence			1848 – Upper Medlock Street runs directly through the site with terraced houses occupying the northeastern site section. 1889 – Two further rows of terraced houses are constructed in the western half of the site. 1973 – The terraced houses are demolished, and a new row of terraced dwellings are constructed to the west of Upper Medlock Street, which is now recorded as Poynton Close. A slope is recorded in the eastern site corner. 1992- Terraced houses are demolished leaving the land either side of Poynton Close vacant. 2021 – Site used as a possible builder's yard. 2022 - present – Site vacant.
Site Dimensions	Describe shape of Site in plan and measure dimensions.		Rectangular shaped parcel of land with an area of approximately 0.14 hectares.

APPENDIX 4

REPORT LIMITATIONS

LIMITATIONS

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

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

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

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

The report was written in 2024 and should be read considering any subsequent changes in legislation, statutory requirements, and industry best practices. Ground conditions can also change over time and further investigations, or assessment should be made if there is any significant delay in acting on the findings of this report. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of Earth Environmental & Geotechnical Ltd. In the absence of such written advice of Earth Environmental & Geotechnical Ltd, reliance on the report in the future shall be at the client's own and sole risk. Should Earth Environmental & Geotechnical Ltd be requested to review the report in the future, Earth Environmental & Geotechnical Ltd shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between Earth Environmental & Geotechnical Ltd and the client.

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

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

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

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

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

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

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