



EARTH ENVIRONMENTAL  
& GEOTECHNICAL

## Phase 1 GeoEnvironmental Desk Study

Burch Street

Bury

February 2024

On behalf of

MR. UDDIN

Earth Environmental & Geotechnical Ltd  
Houldsworth Mill Business Centre  
Houldsworth Street  
Stockport  
SK5 6DA

Tel : 01619756088

Email  
[headoffice@earthenvironmental.co.uk](mailto:headoffice@earthenvironmental.co.uk)

[www.earthenvironmental.co.uk](http://www.earthenvironmental.co.uk)



**PHASE I GEOENVIRONMENTAL DESK STUDY**

**BURCH STREET**

**BURY**

**FOR**

**MR. UDDIN**

Earth Environmental & Geotechnical Ltd  
Houldsworth Mill Business & Arts Centre  
Houldsworth Street  
Stockport  
SK5 6DA

[www.earthenvironmental.co.uk](http://www.earthenvironmental.co.uk)

Tel: 0161 975 6088

**Report No. A5782/23**

**FEBRUARY 2024**

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|--------------------------|-------------------------------------------------------------------|
| <b>Report Title:</b>     | <b>Burch Street, Bury<br/>Phase I GeoEnvironmental Desk Study</b> |
| <b>Report Reference:</b> | <b>A5782/24</b>                                                   |
| <b>Client:</b>           | <b>Mr. Uddin</b>                                                  |
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| <b>Drafted By:</b>       | <b>J Tuzio</b>                                                    |
| <b>Reviewed By:</b>      | <b>A Czarnecki</b>                                                |
| <b>Authorised By:</b>    | <b>A Czarnecki</b>                                                |

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## 1.0 INTRODUCTION

### Appointment

- 1.1 Earth Environmental & Geotechnical Ltd has been commissioned by RA Design & Project Management Ltd on behalf of Mr. Uddin (the Client) to undertake a Phase I GeoEnvironmental Desk Study for the proposed residential development on vacant land on Richard Burch Street, Bury.
- 1.2 It is understood that the client wishes to construct a new three storey residential building adjoining No. 6.
- 1.3 The ground and second floor will each comprise of two one bedroomed flats and the third floor will comprise a one-bedroom flat. The building will also have associated parking for three cars.
- 1.4 A proposed development plan for the site is shown in Figure 1 below.

**Figure 1 Proposed Development Plan**



## **Objective**

- 1.5 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**

- 1.6 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.
  - Bury Council planning portal.

## 2.0 SITE LOCATION AND DESCRIPTION

- 2.1 The site is in Bury, Greater Manchester, approximately 1km to the northeast of Bury Town Centre.
- 2.2 The approximate National Grid Reference for the centre of the site is SD 80965 11429 (X: 380963, Y: 411432), with the closest postcode being BL9 6DU.
- 2.3 The maximum dimensions of the proposed dwelling site are 18m north to south, and 11m east to west. The site occupies an area of approximately 0.02 hectares.
- 2.4 The site is a rectangular shaped parcel of land with current access from Richard Burch Street via the B6221 to the east. The site is accessed on foot from the north, south and west.
- 2.5 The land is surfaced predominantly in grass vegetation. There is a felled tree in the southwest corner of the site accompanied by slightly raised ground. The boundary of the site is demarcated by concrete bollards.
- 2.6 The site is surrounded by a mixture of residential and industrial developments. Walmersley Road (A56) is located directly west.
- 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 by 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.
- 3.4 The site is underlain by superficial deposits of Devensian Till comprising Diamicton, commonly known as Boulder Clay.
- 3.5 The solid geology beneath the site is shown to be the Pennine Lower Coal Measures Formation comprising sandstone.
- 3.6 There are 3no. records of linear features within 500m of the site boundary. The closest record refers to a fault, inferred located 240m south of the site.
- 3.7 There are no records of landslips within 500m of the site boundary.
- 3.8 There are 21no. borehole records identified within 250m of the site. The closest record is located 144m to the southeast of the site, BGS reference:SD81SW508. The borehole encountered the following sequence of strata:
- Variable Made Ground of stone, ash, and clinker to a depth of 0.70m
  - Sandy silty clay to a depth of 1.00m.
- 3.9 The site is in an area where the hazard rating is very low with regards to shrink swell clays, running sands, collapsible deposits, and landslides. The hazard rating is negligible with regards to compressible deposits and soluble rocks.

#### **Ground Workings**

- 3.10 There are 11no. records of historical surface ground working feature identified within 250m of the site boundary. The closest record refers to a pond located 72m to the east of the site, dated 1851. Other records in the vicinity refer to other ponds and reservoirs.
- 3.11 According to the BGS, there are no records of a British Pit within 500m of the site.

#### **Mining and Other Underground Workings**

- 3.12 The site is located within the specified search distance (1km) of an identified coal mining area. Reference to the Coal Authority interactive online viewer shows the site is not located 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 within 1km of the site.

### Radon Potential

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

### Hydrogeology and Hydrology

- 3.18 The superficial deposits are classified by the Environment Agency (EA) as a Secondary Undifferentiated Aquifer. The Devensian Till deposits have a mixed flow type with a low to high permeability. The BGS states the following:

**Secondary Undifferentiated** *'Assigned where it is not possible to attribute either category A or B to a rock type. In general, these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.'*

- 3.19 The Pennine Lower Coal Measures Formation is classified by the Environment Agency (EA) as a Secondary A Aquifer with a fracture flow type and moderate to low permeability. 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.'*

- 3.20 The groundwater vulnerability and soil leaching potential of the site has been classified as low superficial and bedrock vulnerability with a low leaching potential. The BGS states:

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

- 3.21 There are 13no. groundwater abstraction licence records within 2km of the site. The closest historical licence refers to a well at Waterfold Farm, Heap Bridge, Near Bury, located 1.6km southeast of the site.
- 3.22 There are 10no. surface water abstraction licence records within 2km of the site. All the abstraction licences are historical. The closest licence refers to a tributary of the River Irwell located 915m to the north of the site.
- 3.23 There are no potable abstraction licence records within 2km of the site.
- 3.24 The site is not located within 500m of a Source Protection Zone or a Source Protection Zone within a confined aquifer.

- 3.25 There are 9no. water network entries within 250m of the site. the closest record refers to an inland river not influenced by normal tidal action named Barn Brook located 192m east of the site.
- 3.26 There are no surface water features identified within 250m of the site.
- 3.27 There are no records of a Water Framework Directive (WFD) surface water body located within 250m of the site.
- 3.28 There is 1no. record of a Water Framework Directive (WFD) groundwater body located on-site. The record refers to the Northern Manchester Carboniferous Aquifers located on site. 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 2no. records of historic Environment Agency/Natural Resource Wales landfill sites within 500m of the site. The nearest record refers to Mill Lodges, Hudcar Lane located 304m northeast of the site.
- 3.31 There is 1no. record of BGS/DoE non-operational landfill sites within 500m of the study site. this record refers to a landfill site at Woodfields, Bury located 479m southwest of the site.
- 3.32 There is 1no. record of a historical landfill site from the Local Authority and Historical Mapping Records within 500m of the site. This record refers to a refuse tip located 315m southwest of the site.
- 3.33 There are 33no. records of a historical waste site from the Local Authority and Historical Mapping Records within 500m of the site. The closest record refers to a scrap yard located 141m to the west of the site, dated 1984.
- 3.34 There are 22no. records of current Environment Agency/Natural Resources Wales licensed waste sites within 500m of the site. The closest record refers to a metal recycling site located 161m to the east of the site.
- 3.35 There are 59no. records of a waste treatment, transfer, or disposal site within 500m of the study site. The closest record refers to the storage of waste in secure containers located 122m to the south of the site.

### **Industrial Land Use Information**

- 3.36 There are 151no. records of potentially contaminative historical land uses identified within 500m of the site. The closest record refers to an unspecified works dated 1983 located 141m southeast of the site. Other records in the vicinity refer to unspecified mills, sawmills, a cotton mill etc.
- 3.37 There are 36no. records of current potentially contaminative land uses identified within 250m of the site. The closest record refers to an electricity substation located 50m to the south of the

site. Other records in the vicinity refer to an autoshop, consumer product sales, a works, an ambulance station etc.

- 3.38 There are 55no. records of historical tanks identified within 500m of the site. The closest record refers to an unspecified tank located 175m to the west of the site, dated 1973.
- 3.39 There are 46no. records of historical energy features identified within 500m of the site. The closest records refer to an electricity substation located 50m to the south of the site, dated 1996.
- 3.40 There are no records for current petrol or fuel sites within 500m of the site.
- 3.41 There are no records of historical petrol or fuel sites within 500m of the site.
- 3.42 There are 73no. records of a historical garage identified within 500m of the site. The nearest record refers to a garage located 86m to the east of the site, dated 1996.
- 3.43 There are no records of a 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 6no. 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 5km 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 |
|---------------------------------------------------------------|--------|
| Historical Licensed Industrial Activities (IPC)               | 3      |
| Part A (1) and IPPC Authorised Activities                     | 0      |
| Pollutant Release to Surface Waters (Red List)                | 0      |
| List 1 Dangerous Substances Inventory Sites                   | 0      |
| List 2 Dangerous Substances Inventory Sites                   | 0      |
| Part A (2) and Part B Activities and Enforcements             | 10     |
| Category 3 or 4 Radioactive Substance Authorisations          | 0      |
| Licensed Discharge Consents                                   | 2      |
| Planning Hazardous Substance Consents and Enforcements        | 0      |
| Dangerous or Hazardous (COMAH and NIHHS) Sites                | 0      |
| Sites Determined as Contaminated Land under Part 2A EPA 1990  | 0      |
| Regulated Explosive Sites                                     | 0      |
| Pollutant Release to Public Sewer                             | 0      |
| Substantiated Pollution Incidents (Category 1 and 2)          | 15     |
| Pollution Inventory Substances, Wastes and Radioactive Wastes | 0      |

- 3.52 There are 3no. records of historical licenced industrial activities (IPC) within 500m of the study site. The record refers to coating processes and printing at Bury Cooper Whitehead Ltd. located 349m to the northeast of the site.
- 3.53 There are 10no. records of Part A (2) and Part B activities and enforcements within 500m of the study site. The closest record refers to a dry cleaner at Geldard's Dry Cleaners located 77m to the south of the site.
- 3.54 There are 2no. records of Licensed Discharge Consents to controlled waters within 500m of the study site. The closest record refers to sewage discharge (sewer storm overflow) into Barn Brook located 227m to the southeast of the site.
- 3.55 There are 15no. records of substantiated pollution incidents within 500m of the study site . The closest record refers oils and fuel released 135m to the southwest of the site. The incident had a Category 4 (no impact) on air and water and a Category 3 (Minor Impact) of land.

### **Environmentally Sensitive Sites**

- 3.56 There are no records of a Site of Special Scientific Interest (SSSI) within 2km of the study site.
- 3.57 There are no records of Designated Ancient Woodland within 2km of the study site.
- 3.58 There is 1no. record of a Local Nature Reserve (LNR) within 2km of the study site. The closest record refers to Chesham Woods located 747m to the north of the site.

3.59 There are 4no. records of Green Belt land within 2km of the study site. The record refers to the Merseyside and Greater Manchester Greenbelt located in Bury.

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

### **Ecology**

3.61 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.

3.62 However, the site is classified as urban land.

### **Archaeology**

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

3.64 However, there are no records of Listed Buildings, Scheduled Ancient Monuments or Conservation Areas within 250m of the site.

### **Potential Flood Risks**

3.65 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.

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

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

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

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

3.70 The highest risk of surface water flooding occurring on-site is negligible.

3.71 The highest risk of groundwater flooding occurring on-site is low.

### **Previous Site Investigations**

3.72 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.
- 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1849<br>1:1,056<br><br>1850-1851<br>1:10,560                                            | The site is occupied by a private garden area belonging to Brookshaw House.     | Some residential property development to the south and west of the site.<br><br>Brookshaw House is located approx. 100m north of the site.<br><br>A spring is located approximately 80m southeast of the site.<br><br>Various cotton mills are in the 500m vicinity of the site. Chesham Cotton Mill is located approximately 480m east. An unspecified Cotton Mill is located approximately 460m south. Hudcarr Cotton Mill is located approximately 480m northeast of the site.<br><br>East Lancashire railway located approximately 600m west of the site, running north to south. |
| 1890-1891,<br>1891, 1910,<br>1930<br>1:2,500<br><br>1908-1909,<br>1927-1928<br>1:10,560 | Significant property development with 2no. residential properties.              | Albert Iron works is located approximately 140m southeast of the site.<br><br>Multiple reservoirs are located less than 500m to the east and west of the site.<br><br>Significant residential property development surrounding the site.                                                                                                                                                                                                                                                                                                                                              |
| 1937-1939,<br>1958, 1959<br>1:2,500<br><br>1938, 1956,<br>1967-1969<br>1:10,560         | No Significant Change.                                                          | Building developments no longer present adjacent Fox Street, approximately 120m southwest of the site.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1983-1085,<br>2003<br>1:1.250<br><br>1980-1983,<br>2001, 2010,<br>2024<br>1:10,000      | Building developments no longer present on mapping records. Land is now vacant. | Change in land use 100-250m east of the site. Area has become more industrial with various depots, works and mills.<br><br>An ambulance station is located approximately 100m southwest of the site.<br><br>Reservoirs no longer present on mapping records.                                                                                                                                                                                                                                                                                                                          |

| Date                                                                                                    | On-Site History                                                                                                                                                 | Surrounding Land Use History                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                         |                                                                                                                                                                 | <p>Mills no longer present on mapping records, usage change to depots and works.</p> <p>Classification change of adjacent main road to A56.</p>                                                                                                                                                                                                                                                                                                                                            |
| <p>2000, 2005, 2013, 2017, 2018, 2019, 2020, 2021, 2022, 2023</p> <p>Google Earth Satellite Imagery</p> | <p>The site is a vacant plot of land situated adjacent to Richard Burch Street. It is rectangular in shape and appears to be surfaced in grassy vegetation.</p> | <p>Surrounding the site is a mixture of residential and industrial end use development.</p> <p>Immediately adjacent to the site in all directions are residential property developments.</p> <p>Industrial estate development of depots and warehouses are located approximately 100m east of the site.</p> <p>An ambulance station is located approximately 80m west of the site.</p> <p>Nearby roads include Walmersley Road (A56) to the west and Brook street (B6221) to the east.</p> |

Figure 4 OS Map Extract 1850-1851



Figure 5 OS Map Extract 1958

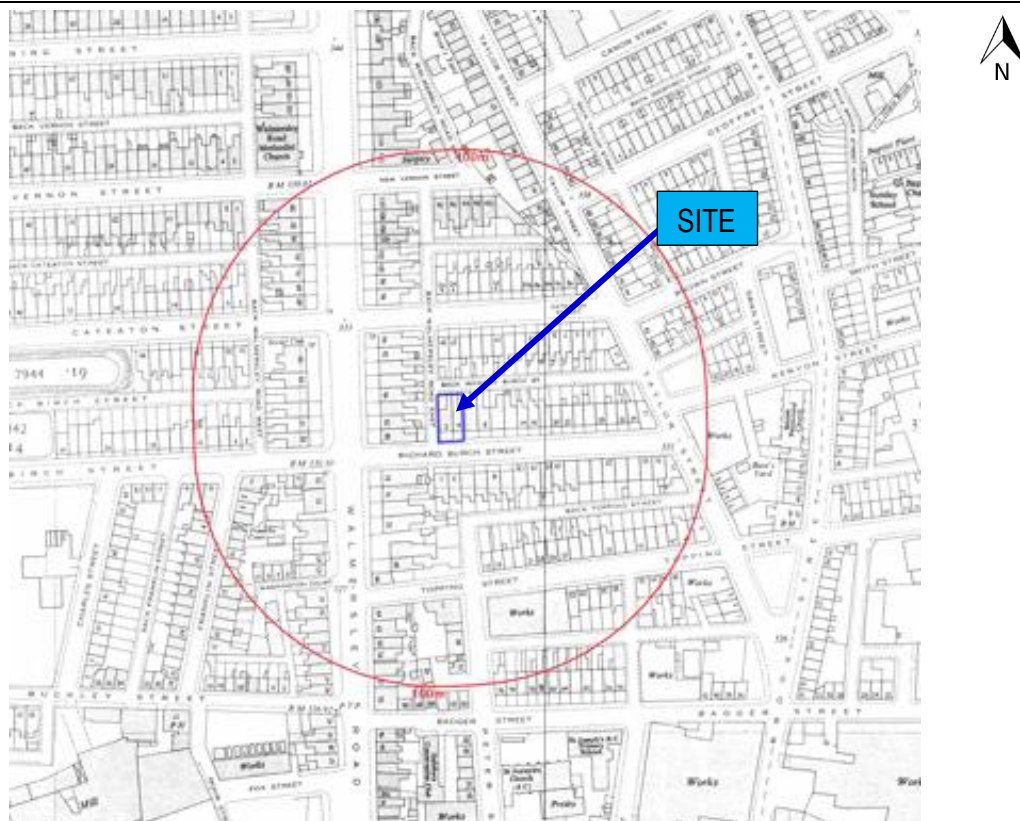


Figure 6 OS Map Extract 2003

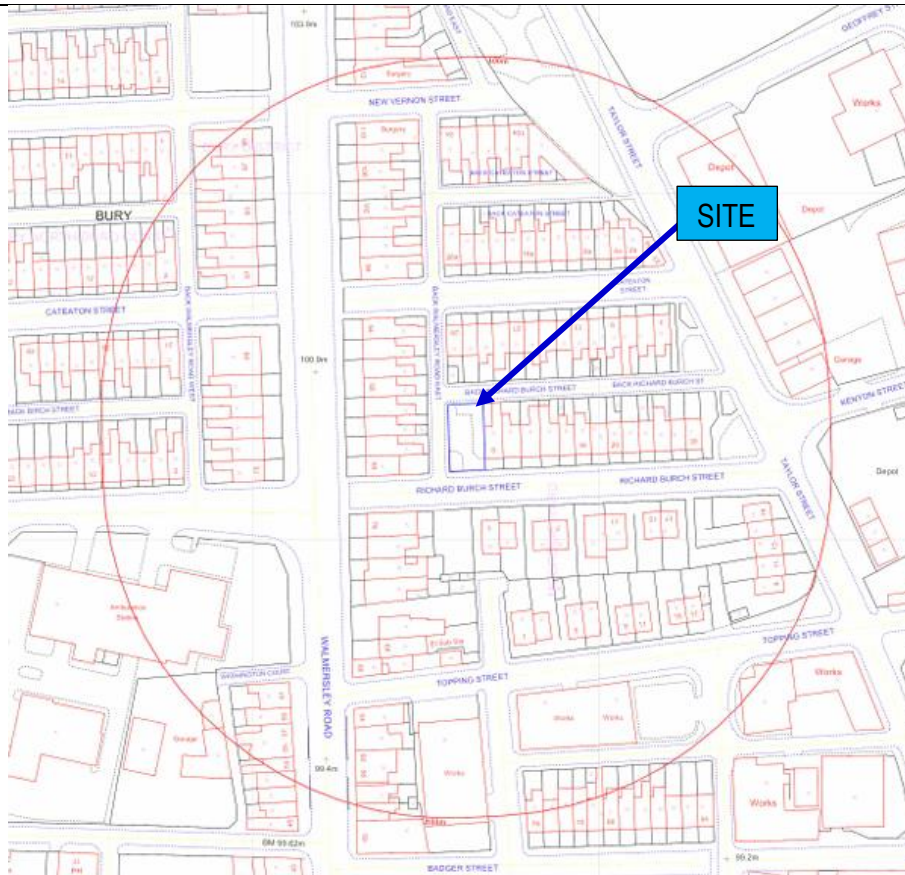
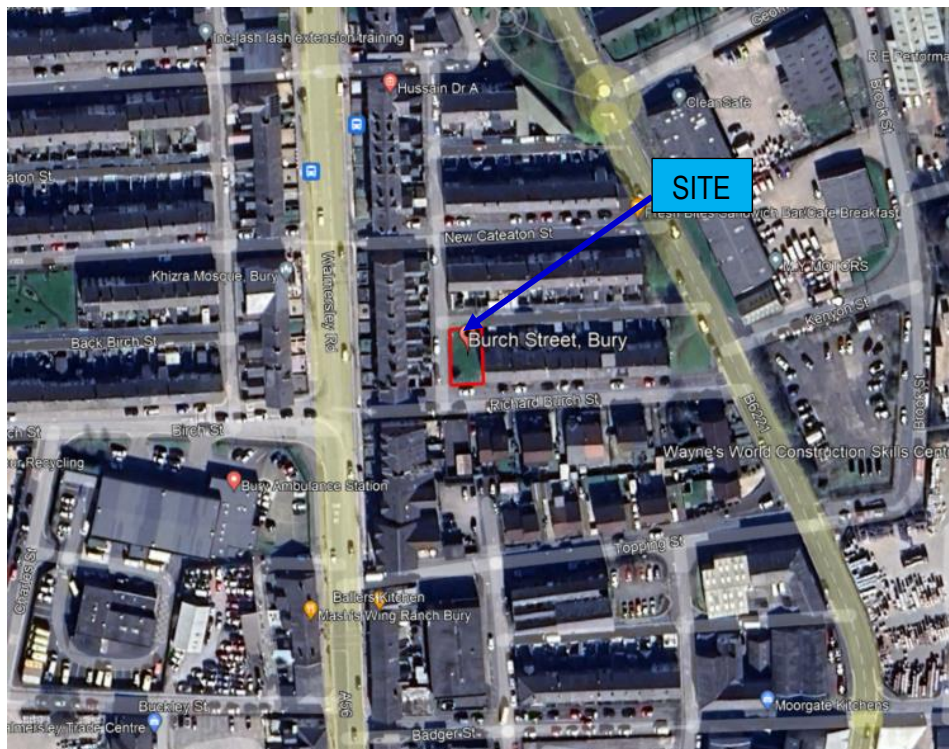


Figure 7 Aerial Photograph 2023



## 5.0 WALKOVER SURVEY

- 5.1 A walkover survey was completed on 26<sup>th</sup> January 2024. The photographs and notes from this survey are appended to this report as Appendix 2 and Appendix 3, respectively.
- 5.2 The site was accessed via either Richard Burch St or Back Richard Burch St, from the B6221.
- 5.3 The site was a vacant rectangular patch of land which is easily accessible from the north, west and south.
- 5.4 The site was covered predominantly in grass and demarcated with concrete bollards. There was a small concrete pad in the southeast corner adjacent to the neighbouring property.
- 5.5 A felled tree was observed in the southwestern corner of the site, along with some slightly raised ground.
- 5.6 Potential old brick foundations were visible on the ground along the eastern wall, adjacent to the neighbouring property.
- 5.7 There was evidence of a bonfire/burnt ground in the northeastern corner, along with various fly-tipped waste including plastic bags, glass & plastic bottles, coffee cups, clothing, bricks, and a wooden panel.
- 5.8 The site was bordered by the wall of a residential property development to the east. The wall is in poor condition with the rendering flaking off onto the site.
- 5.9 The immediate surrounding areas comprise of terraced dwellings and associated gardens.
- 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 Environmental 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 Environmental 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 proposed 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 historically accommodated two residential property developments associated with the existing adjacent terraces. According to mapping records, the houses were no longer present after 1980.
- 6.6 Therefore, there is limited potential for the presence of contamination on the site or within the general area.

### Potential Receptors

- 6.7 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

- 6.8 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;
  - Vertical or lateral migration of ground gas.

**Table 5: Preliminary Conceptual Model**

| Source                                                               | Pathway                                                        | Receptor                                  | Probability    | Consequence | Risk     | Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------|----------------------------------------------------------------|-------------------------------------------|----------------|-------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Potential ground contamination</p> <p>E.g., Heavy Metals, PAH</p> | Dermal contact, ingestion, and inhalation of soils dust        | Current Site Users                        | Low            | Low         | Low      | The site currently comprises a vacant patch of grassy land. Two terraced residential properties have existed previously on site. Contamination is unlikely to be present within the soils on-site. Therefore, the risk is considered <b>LOW</b> .                                                                                                                                                                                                                                      |
|                                                                      |                                                                | Adjacent land users                       | Low            | Low         | Low      | The adjacent land comprises a residential property development with private garden. Given the development history of the site and the age of potential Made Ground soils it is unlikely adjacent land users will be affected. 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 <b>VERY LOW</b> .                                                              |
|                                                                      |                                                                | Future land users                         | Low Likelihood | Low         | Low      | The proposed development consists of a 3-store residential apartment building with associated vehicle parking. A small concrete slab is located on the southeastern boundary which may have contaminated Made Ground beneath, however the likelihood is low. Therefore, the risk to future site users via direct exposure is <b>LOW</b> .                                                                                                                                              |
|                                                                      |                                                                | Construction Workers                      | Low Likelihood | Low         | Low      | Construction workers may be exposed to potentially contaminated soils during construction works, however exposure duration will be short-term only. There has been historic development on site, however given the age of the previous development, there is a low likelihood contamination. The risk to construction workers is considered <b>LOW</b> . Appropriate health and safety measures (in line with CDM and other relevant health and safety guidance) should be adhered to. |
|                                                                      | Downward vertical migration of leachate to shallow groundwater | Groundwater within the Underlying Aquifer | Low Likelihood | Low         | Low      | Leachable contaminants are unlikely to be present on site due to the limited development. The superficial soils underlying the site are anticipated to be cohesive with a low leaching potential which will inhibit migration to the underlying aquifer. The risk is therefore considered <b>LOW</b> .                                                                                                                                                                                 |
|                                                                      | Lateral migration in surface waters                            | Surface water                             | Unlikely       | Low         | Very Low | Leachable contaminants are unlikely to be present on site due to the limited development. There are no surface water features but 9no. water network entries within 250m of the site, however due to the distance of Barns Brook from the site, the perceived risk to surface waters is <b>VERY LOW</b> .                                                                                                                                                                              |

| Source                                       | Pathway                                     | Receptor             | Probability    | Consequence | Risk | Comment                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------|---------------------------------------------|----------------------|----------------|-------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                              | Vertical or lateral migration of ground gas | Current Site Users   | Low            | Low         | Low  | The site currently comprises a vacant patch of grassy land. Historically the site has had previous residential property development, with visible red brick foundations in the ground along the eastern wall, therefore Made Ground is anticipated. There are no other significant sources of ground gas identified on site or within close proximity. Therefore, the risk to current site users from ground gas is considered <b>LOW</b> . |
|                                              |                                             | Adjacent land users  | Low            | Low         | Low  | The adjacent land comprises of residential dwellings. Made Ground may be present onsite, however given the age, there are likely no significant sources of ground gas identified on site. The risk to adjacent land users from ground gas is therefore considered <b>LOW</b> .                                                                                                                                                              |
|                                              |                                             | Future land users    | Low Likelihood | Low         | Low  | The proposed development consists of a terraced residential apartment building with associate vehicle parking. The site is not located within a radon affected area and no significant sources of ground gas are identified. Therefore, the risk is considered <b>LOW</b> .                                                                                                                                                                 |
|                                              |                                             | Construction Workers | Low Likelihood | Low         | 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 <b>LOW</b> .                                                                                                                                                                                                      |
| Potential Asbestos Containing Material (ACM) |                                             | Current Site Users   | Low Likelihood | Moderate    | Low  | The site currently comprises a vacant grassy patch of land. Two terraced residential property buildings have historically accommodated the site, which may have been demolished. Asbestos may be present within the Made Ground, however, is only harmful when disturbed. The risk to current site users is <b>MODERATE TO LOW</b> .                                                                                                        |
|                                              |                                             | Adjacent land users  | Low Likelihood | Moderate    | Low  | The adjacent land comprises of residential dwellings. Given the historic onsite development, the presence of asbestos is likely within Made Ground soils. Dust control measures (dampening down) should be implemented as part of good site working practices to reduce the risk to <b>MODERATE TO LOW</b> .                                                                                                                                |

| Source | Pathway | Receptor             | Probability    | Consequence | Risk            | Comment                                                                                                                                                                                                                                                                                                                                                               |
|--------|---------|----------------------|----------------|-------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        |         | Future land users    | Low Likelihood | Moderate    | Moderate to Low | The proposed development consists of a terraced residential apartment building with associated vehicle parking. Historic onsite property building development may have contained ACMs. There is a small area of hardstanding to be removed which may contain asbestos containing material, albeit unlikely. The risk is therefore considered <b>MODERATE to LOW</b> . |
|        |         | Construction Workers | Low Likelihood | Moderate    | Moderate to Low | Construction workers may be exposed to asbestos within the Made Ground due to the development history of the site, however, this will only be for a short amount of time. Therefore, the risk is considered <b>MODERATE TO LOW</b> .                                                                                                                                  |

## 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**

| <b>Geohazards:</b>                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Highly Compressible Ground                | Negligible risk                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Collapsible Soils                         | Very low risk                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Swelling Clay                             | Very low 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 a Coal Mining Reporting Area. However, the site is not located within a High Development Risk Area. Therefore, the risk from mining is low.                                                                                                                                                                                                                                                                                                                                             |
| <b>Geotechnical Design Considerations</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Site Clearance                            | <p>The proposed dwelling site comprises a grassy patch of land which is already largely cleared. Fly-tipped litter, a fallen tree, and remnants of burnt material will have to be removed.</p> <p>The concrete bollard demarcations will also have to be removed pre-development.</p>                                                                                                                                                                                                                                                                                          |
| Trees                                     | No standing trees are present on the site. A fallen tree is located in the southwestern corner of the site.                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Existing Buildings/Obstructions           | <p>Potential red brick foundations are present alongside the eastern boundary wall, which may extend into the topsoil below.</p> <p>A small concrete slab is located in the southeastern corner of the site.</p>                                                                                                                                                                                                                                                                                                                                                               |
| Foundations                               | <p>The depth and type of proposed foundations would depend on the ground conditions present on site. The site is underlain by superficial deposits of Devensian Till. If cohesive soils are encountered the depth of foundations will need to be adjusted for the effects of nearby trees in accordance with NHBC guidance.</p> <p>An intrusive ground investigation is recommended prior to any construction works taking place to discover the most suitable foundation options for the site and to make sure the ground conditions are the same across the entire site.</p> |

| Geotechnical Design Considerations      |                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Floor Slabs                             | Again, an intrusive geotechnical investigation is recommended prior to any construction works to discover 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 Undifferentiated Aquifer. The highest risk of groundwater flooding occurring on-site is low. |
| Earthworks                              | Extensive earthworks are unlikely to be required for the proposed development.<br><br>A potential tree stump may have to be removed in the southwestern corner of the site.                                                                                                                                                 |
| Slopes                                  | There are no slopes located on the site.                                                                                                                                                                                                                                                                                    |
| Retaining Walls                         | It is unlikely a retaining wall will be utilised on this site.                                                                                                                                                                                                                                                              |
| Chemically aggressive ground conditions | Chemically aggressive ground conditions are not expected at this site. An intrusive geotechnical investigation would be necessary to confirm chemically aggressive ground.                                                                                                                                                  |

## 8.0 CONCLUSIONS & RECOMMENDATIONS

### Conclusions

- 8.1 The site was historically developed upon comprising two terraced residential properties, which disappeared from mapping records after 1980.
- 8.2 The site is predominantly surfaced with grass, there is a small concrete pad in the southeastern corner of the site.
- 8.3 It is understood that the client wishes to construct new three storey, apartment dwellings including within the roof space. The development will include new associated parking for three cars.
- 8.4 There is limited potential for contamination on the site due to an absence of any contaminative land uses.
- 8.5 The site is underlain by superficial deposits of Devensian Till comprising diamicton (Secondary Undifferentiated Aquifer) and the solid geology of the Pennine Lower Coal Measures Formation comprising sandstone (Secondary A Aquifer).
- 8.6 The site is located within the specified search distance of an identified coal mining area. However, the site is not located within a Development High Risk Area.
- 8.7 The property is not located in a Radon Affected Area, as less than 1% of the properties are above the Action Level.
- 8.8 Given the limited development on site, the overall risk from soil contamination to end users and construction workers is **LOW**.
- 8.9 The overall risk to controlled waters is concluded to be **VERY LOW** based on the low leaching potential of the soils and absence of any nearby surface water features.
- 8.10 The risk from ground gas to end users and construction workers is **MODERATE TO LOW** due to the absence of any significant sources of ground gas or deep made ground.
- 8.11 An Environment Agency Flood Zone 2 and 3 are not located on site and the highest risk of groundwater flooding is **LOW**.

### Recommendations

- 8.12 An intrusive investigation should be undertaken to establish geotechnical parameters for the design of foundations, floor slabs and pavement construction for the proposed new structures and surrounding area.

## **APPENDIX 1**

### **GROUNDSURE REPORTS**

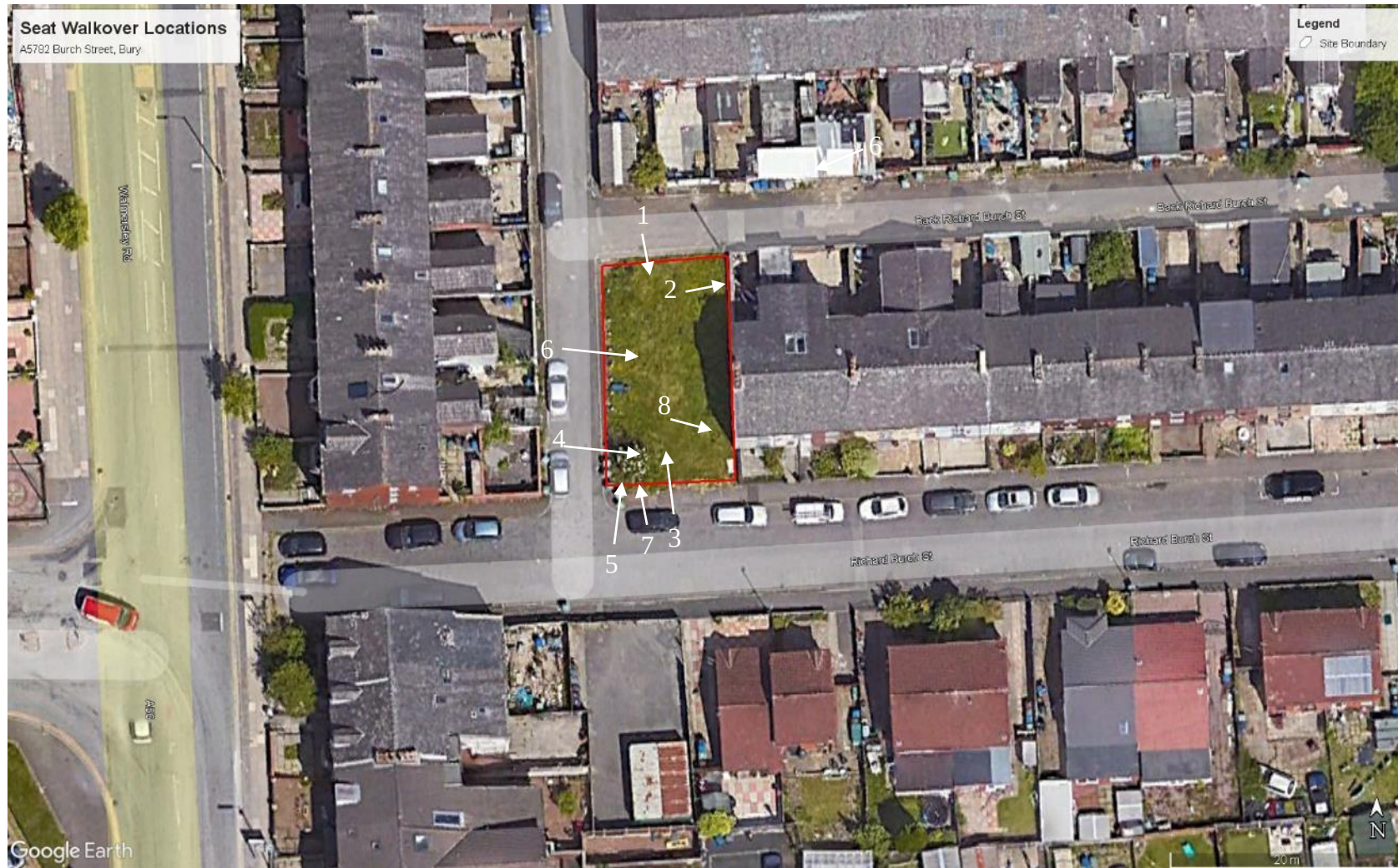
## **APPENDIX 2**

### **SITE PHOTOGRAPHS**

|                                                                                                                                                                                          |                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| <p><b>Earth Environmental &amp; Geotechnical Ltd</b></p> <p><b>Tel:</b> 0161 975 6088<br/> <b>Email:</b> info@earthenvironmental.co.uk<br/> <b>Web:</b> www.earthenvironmental.co.uk</p> | <p><b>SITE PHOTOGRAPHS</b></p>  |
| <p><b>Job No.:</b> A5782/23</p>                                                                                                                                                          | <p><b>Site:</b> Burch Street, Bury</p>                                                                             |
| <p><b>Plate 1 Photo across site viewing south</b></p>                                                                                                                                    | <p><b>Plate 2 Photo of fly-tipped litter along eastern boundary wall.</b></p>                                      |
|                                                                                                        |                                 |
| <p><b>Date:</b> 25<sup>th</sup> January 2024</p>                                                                                                                                         | <p><b>Date:</b> 25<sup>th</sup> January 2024</p>                                                                   |
| <p><b>Plate 3 Photo across the site viewing north</b></p>                                                                                                                                | <p><b>Plate 4 Viewing across site and wall of adjacent building viewing east.</b></p>                              |
|                                                                                                       |                                |
| <p><b>Date:</b> 25<sup>th</sup> January 2024</p>                                                                                                                                         | <p><b>Date:</b> 25<sup>th</sup> January 2024</p>                                                                   |

|                                                                                                                                                                                          |                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| <p><b>Earth Environmental &amp; Geotechnical Ltd</b></p> <p><b>Tel:</b> 0161 975 6088<br/> <b>Email:</b> info@earthenvironmental.co.uk<br/> <b>Web:</b> www.earthenvironmental.co.uk</p> | <p><b>SITE PHOTOGRAPHS</b></p>  |
| <p><b>Job No.:</b> A5782/23</p>                                                                                                                                                          | <p><b>Site:</b> Burch Street, Bury</p>                                                                             |
| <p><b>Plate 5 Photo of slightly raised ground in the southwestern corner of the site.</b></p>                                                                                            | <p><b>Plate 6 Photo showing concrete bollard demarcations.</b></p>                                                 |
|                                                                                                        |                                 |
| <p><b>Date:</b> 25<sup>th</sup> January 2024</p>                                                                                                                                         | <p><b>Date:</b> 25<sup>th</sup> January 2024</p>                                                                   |
| <p><b>Plate 7 Photo viewing eastwards along Back Richard Burch Street</b></p>                                                                                                            | <p><b>Plate 8 Potential red brick foundations from previous onsite development.</b></p>                            |
|                                                                                                       |                                |
| <p><b>Date:</b> 25<sup>th</sup> January 2024</p>                                                                                                                                         | <p><b>Date:</b> 25<sup>th</sup> January 2024</p>                                                                   |

Figure 9 Site Walkover Photo Locations



## **APPENDIX 3**

### **SITE WALKOVER NOTES**

### WALK OVER SURVEY REPORT

**Site:** Burch Street, Bury

**Date:**

26<sup>th</sup> January 2024

**Job No:** A5782

**Undertaken By:**

Joseph Tuzio

**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:<br><br>Town/Country/Suburb Setting<br><br>Industrial/Residential/Retail Usage<br><br>Current Site use (if undertaking security and access to the site) |                                                  | Suburb<br><br>Mixed, residential, and industrial<br><br>Vacant              |
| Evidence of Past Activities                   | Are there:<br><br>Any relevant street names in area?<br><br>Features or relics, which indicate past history?                                                                     | Yes/No<br><br>Yes/No                             | Richard Burch Street/Back Richard Burch Street<br><br>Red Brick foundations |
| Geographic Setting                            | Description required for:<br>Low lying flood plain/dry valley/rolling hills etc.                                                                                                 |                                                  | Flat                                                                        |
| Ground Conditions                             | Is there any evidence of:<br><br>Mining, Mine entries<br><br>Subsidence<br><br>Landslip/slope erosion<br><br>Former investigation works                                          | Yes/No<br><br>Yes/No<br><br>Yes/No<br><br>Yes/No |                                                                             |
| Topography                                    | Description required for:<br><br>Are there apparent differences between site and surrounding area? (If yes describe the presence of retaining walls, and slopes).                | Yes/No                                           |                                                                             |

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                           |                                                                                                          |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------|
|                                | Is there evidence of Made Ground / Fill on site?                                                                                                                                                                                                                                                                                                                                                                                       | Yes/No                                    | Potential Made Ground below red brick footings.                                                          |
| Site Boundaries and Neighbours | <p>Description required for:</p> <p>Type of boundary demarcation (if any) on each side of site, usage of adjacent land and name of industrial/commercial occupiers.</p> <p>Note any adjacent features such as water course and other potentially environmentally sensitive uses (residential, school, infirmary, SSSI etc.)</p>                                                                                                        |                                           | Demarcated by concrete bollards on the western boundary, wall of adjacent house on the eastern boundary. |
| Vegetation                     | <p>Are there any vegetation/trees on or close to site (if yes describe locations, type, maturity, etc.)?</p> <p>Is there any evidence of poor health / distress?</p>                                                                                                                                                                                                                                                                   | <p>Yes/No</p> <p>Yes/No</p>               |                                                                                                          |
| Ground Surface                 | <p>Are there areas of hardstanding and estimate the split between hard and soft cover? (If yes describe locations, types, and conditions).</p> <p>Is there any evidence of any spillages or staining?</p>                                                                                                                                                                                                                              | <p>Yes/No</p> <p>Yes/No</p>               | Small concrete slab located in the southeastern corner, predominantly surfaced with grassy topsoil.      |
| Site Drainage                  | <p>Are there any drain covers / soakaways (if yes describe locations)?</p> <p>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)</p> <p>Where a watercourse runs alongside or crosses a site are there any differences in visible water quality upstream and downstream of the site?</p> | <p>Yes/No</p> <p>Yes/No</p> <p>Yes/No</p> |                                                                                                          |

| 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                                    | Overhead cables above site.                                                   |
| Buildings                                     | <p>Description of Buildings, including age, state of repair, materials used in construction.</p> <p>Is there any evidence of asbestos construction materials e.g., roofing, insulation materials?</p> <p>Do any buildings have basements?</p> <p>Do any buildings have a boiler room (if yes, describe fuel type and storage arrangements)?</p>                                  | <p>Yes/No</p> <p>Yes/No</p> <p>Yes/No</p> | Rendering from adjacent building wall cracked with some fallen debris onsite. |
| 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                         | <p>Point Source: Are there any stacks / vents / cooling towers / abatement equipment?</p> <p>Fugitive Source: is there any stockpiled material / windblown dust / vapour process?</p>                                                                                                                                                                                            | <p>Yes/No</p> <p>Yes/No</p>               |                                                                               |
| Storage of fuels & Chemicals                  | <p>Are there any drums / containers (if yes, describe quantity, full /empty, stored on hard standing / soft landscaping, bunding)?</p> <p>Are there any above ground fuel tanks (if yes, describe locations, volumes, how many, bunding, used / disused, condition?)</p> <p>Is there any evidence of underground fuel tanks (fuel pumps, covers, vent pipes, and condition).</p> | <p>Yes/No</p> <p>Yes/No</p> <p>Yes/No</p> |                                                                               |
| 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                                         | <p>Are there any waste skips present on site?</p> <p>Are waste storage facilities adequate?</p> <p>Is there any litter/fly tipped material?</p>                                                                                                                                                                                                                                     | <p>Yes/No</p> <p>Yes/No</p> <p>Yes/No</p> | Various fly-tipped litter onsite.                                                                             |
| Atmospheric                                   | Are there any fumes, odours originating from site or affecting site from neighbouring sites?                                                                                                                                                                                                                                                                                        | Yes/No                                    |                                                                                                               |
| Access / Further Investigations               | <p>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.</p> <p>Identify possible site office and storage locations.</p> <p>Identify possible water supply</p> |                                           | <p>Overhead cables above the site.</p> <p>Office space on the vacant land</p> <p>N/A</p>                      |
| Site Environs                                 | <p>Are there any local features that could have a harmful influence e.g., landfill, industrial processes, railway land?</p> <p>Are there any sensitive water features/courses near to the site?</p>                                                                                                                                                                                 | <p>Yes/No</p> <p>Yes/No</p>               |                                                                                                               |
| Local Knowledge / Anecdotal Evidence          |                                                                                                                                                                                                                                                                                                                                                                                     |                                           |                                                                                                               |
| Site Dimensions                               | Describe shape of Site in plan and measure dimensions.                                                                                                                                                                                                                                                                                                                              |                                           | Rectangular in shape. Approximately 18m north to south and 11m east to west. Approximately 0.1 acres in size. |

## **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.