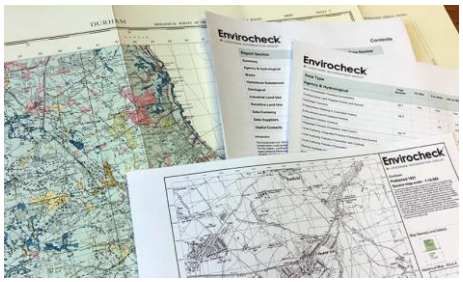

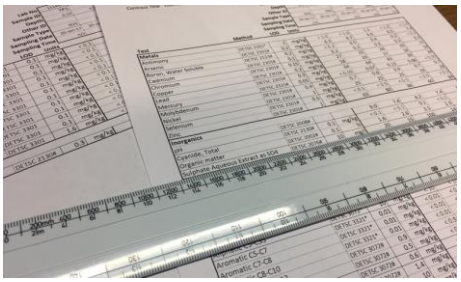

Phase 1: Desk Study

53-55 Heathbank Road, Manchester, M9 0WA

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PHASE 1 DESK STUDY

53-55 Heathbank Road, Manchester, M9 0WA.

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Revision	Date	Prepared By	Signed
Final	May 2025	Gary Thompson *Engineering Geologist*	[redacted]
		Checked By	
		L Cassidy *Associate Director*	[redacted]
		Approved By	
		L Cassidy *Associate Director*	[redacted]

1 EXECUTIVE SUMMARY

Site Address	53-55 Heathbank Road, Manchester, M9 0WA.
Site Description	Site is a rectangular area of undeveloped land that is generally flat and has an even topography. It consists of a small area of hardstanding/gravel to the North bordering the road and the remainder of the site being covered by overgrown vegetation.
Site History *On Site* *Offsite*	 The earliest maps (1893) show that the site was agricultural land. Mapping from 1893 – 2024 show no development or significant change to the site. From the earliest mapping the area around the site was predominantly agricultural land. In the early 20th century residential development of Victoria Avenue, Residential housing street and school buildings 50m to NNE of site. Later in the early 20th century extensive residential development surrounding full site, up to boundary of site. Residential semi-detached properties to North, East & South of site more than 500m from site boundary, and 200m to the SW. School buildings 100m to NW and 350m to East, Church building 250m to the East. Mid-20th century large school building complex 350m South of site.
Proposed End Use	The proposed development is outlined to be two semi-detached residential dwellings with soft landscaping and hardstanding.
Environmental Setting *Landfill & Waste* *Regulated Industries* *Geology* *Hydrogeology* *Hydrology* *Flooding* *Radon Gas*	 There are no Landfills or any facilities handling or managing waste within 250m of the site. There are no areas of infilled land noted within 250m of the site. There are 2no contemporary trade directory entries within 500m of the site. There are no fuel station entries within 500m of the site. The solid geology beneath the site is likely to mostly comprise of Mudstone of the Manchester Marls Formation and Sandstone of the Chester Formation. The drift deposits on site are likely to comprise of Glacial Till. Using the Environment Agency's Policy and Practice for the Protection of Groundwater the solid geology beneath the site is classified as a Principal Aquifer. The overlying drift is classified as a Secondary Aquifer – Undifferentiated. The site does not lie within a source protection zone. There are no Groundwater Abstractions located within 1km of the site. The nearest surface water feature is an unnamed pond located 1060m to the NE of the site on the southern bank of the river Irk. There are 2no Surface Water Abstractions within 1km of the site. The Envirocheck Report states the site is not at risk of Flooding from Rivers and the Seas without defences, and there are no flood defences, flood water storage areas or areas benefiting from flood defences and flood storage present within 250m of the site. The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level. No radon protection measures are necessary for new buildings or extensions on the site.
Preliminary Mining Assessment	The site is not located within a Development High Risk Area, and the mining report did not highlight significant risk of shallow mining within influencing distance of the site. No further investigation into coal workings is considered necessary.
Preliminary Geotechnical Assessment	Given the proposed development and expected ground conditions, the use of strip foundations is anticipated at present.
Preliminary Contamination Assessment	The desk study has shown that the site may have been exposed to some contamination, with construction/demolition waste and possibly oils or fuel from vehicle spills the most likely source local to the structures. Asbestos may also be present on the site from previous/existing building materials used adjacent to the site.
Potential Sources of Ground Gas	Made ground is expected on site, therefore ground gas assessment is recommended due to the nature of the development.
Phase 2 Recommendations	• Hand dug trial pits to 1.20mbgl to ensure positions are clear of underground services. • A series of small percussive boreholes to ca. 6.00mbgl with insitu testing and samples. • Gas monitoring comprising six visits over three months. • Geotechnical testing. • Chemical testing.

2 INTRODUCTION AND SCOPE OF INVESTIGATION

Solmek were instructed by Mr Stef Olsz to undertake a desk study on a parcel of land at 53-55 Heathbank Road, Manchester, M9 0WA. The proposed development is outlined to be two residential dwellings with associated parking and soft landscaping.

The following steps may be required in the investigation and remediation of potentially contaminated land:

Phase 1: Desk Study
Phase 2: Intrusive Investigation
Phase 3: Remediation Statement
Phase 4: Validation Reports

Phases 1 and 2 are generally required in the redevelopment of most sites. Phases 3 and 4 are subject to the findings of the initial stages. This report represents Phase 1 of the site investigation.

The purpose of this Phase 1 Desk Study is to evaluate likely ground conditions and significant environmental issues at the site, and to plan the scope of subsequent phases of investigation.

This report may be regarded as a Preliminary Risk Assessment in accordance with respect to the Environment Agency's guidance document Environment Agency *Land Contamination Risk Management*, which replaced the now-withdrawn *Contaminated Land Report 11 – Model Procedures for the Management of Land Contamination (2004)*.

This Phase 1 Desk Study has been undertaken with due regard to current contaminated land guidance issued by the Royal Institution of Chartered Surveyors (RICS) together with BS 10175:2011+A1:2013, *"Investigation of Potentially Contaminated Land - Code of Practice"* and relevant sections of BS 5930:2015+A1:2020, *"Code of Practice for Ground Investigations"*.

The objectives of the investigation are as follows:

- Determine the land use history of the site from an inspection of available Historical Maps
- Determine the environmental setting of the site from available sources
- Determine whether past mining may have had an influence on the site
- Determine whether the site has previously been used for purposes that may have given rise to significant ground contamination
- Provide recommendations for further investigation.

3 SITE WALKOVER AND DESCRIPTION

3.1 General

The centre of the site is located at OS Grid Ref 385430, 404090 and covers an area of approximately 0.08Ha. The area is located at 53-55 Heathbank Road, Manchester, M9 0WA.

The preliminary site inspection was undertaken on the 8th May 2025 and site photographs are presented in Appendix A.

3.2 Site Description

The desk study area is located on a parcel of land between the residential dwellings of 51 & 57 Heathbank Road, Manchester.

The site is a disused undeveloped parcel of land surrounded by residential properties, with the northern boundary of Heathbank Road and residential fenced gardens to the remaining three boundaries. Vehicular access to the site is via a gap between low fencing, in the north of the site (Figures 6, 7 & 13).

The site is a roughly rectangular area of undeveloped land that is generally flat and has an even topography. It consists of a small area of hardstanding and gravel to the North (Figures 7 & 15) bordering the road, whilst the remainder of the site comprises overgrown vegetation (Figures 10 to 12).

Mature and semi-mature deciduous trees were noted sporadically across the eastern, southern and western boundaries of the site (Figures 6 to 8).

Fly-tipped material was noted sporadically across the site and was most notable in the southwest (Figure 9) and west (Figure 12) of the site.

3.3 Off Site Features

The surrounding area of the site mostly comprises semi-detached residential dwellings (Figures 6 & 7), with Heathbank road directly to the North of the site (Figure 13). Victoria Avenue is situated 60m to the North of the site with a number of commercial retail businesses and a parcel of disused hard standing 80m to the NW.

4 SITE HISTORY

4.1 Map Descriptions

In order to determine the history of the site, previous editions of Historical Maps and Ordnance Survey Plans were inspected. The Historical Maps are presented in Appendix B.

Table 1 presents a summary of the history of the area which includes plots from 1884 to 2024. The summary focuses on the historical land uses and changes relevant to the site and the proposed end use. Measurements are taken from the nearest boundary of the site and all distances quoted are approximate.

TABLE 1: SUMMARY OF SITE HISTORY

OS Map Edition	On-site Features	Off-site Features
1884 1:10,560 1893 1:2,500	Agricultural land, with site consisting of open field with no buildings.	Farm road 20m to the NE of site running in NW-SE direction. Farm buildings 100m to NW of site.
1910 1:10,560 1909 1:2,500	No significant change.	Victoria Avenue- Residential housing street and school buildings 50m to NNE of site.
1923 1:10,560 1932 1:2,500	No significant change.	No significant change.
1932 1:2,500 1933 1:10,560	No significant change.	Extensive residential development surrounding full site, up to boundary of site. Residential semi-detached properties to North, East & South of the site in excess of 500m from site boundary, and 200m to the SW. School buildings 100m to NW and 350m to East. Church building 250m to the East. A school is present 150m N of the site.
1938 1:10,560	No significant change.	No significant change.
1956 1:10,500 1952 1:2,250	No significant change.	Further residential development 100m to the East and 250m to the SW of the site.
1958 1:1,250	No significant change.	No significant change.
1966 1:10,500	No significant change.	Large school building complex 350m South of site.
1978 1:10,000 1982	No significant change.	No significant change.

1:1,250		
1975 **1:25,000**	No significant change.	No significant change.
1982 **1:10,000** **1989** **1:2,500**	No significant change.	No significant change.
1990 **1:10,000** **1992** **1:1,250**	No significant change.	No significant change.
1999 **1:10,000** **2000** **Arial Photography**	No significant change.	No significant change.
2006 **1:10,000**	No significant change	No significant change.
2024 **1;10,000**	No significant change	No significant change

4.2 Potential Contamination Sources Identified via Historical Plans

Possible contamination from historical land uses which may have impacted the site have been identified:

Made ground from materials used to infill depressions and form a level area for access or building. This may include brick, concrete, timber, ash, slag, coal and metals.

Construction/demolition waste from construction and demolition immediately around the site over the documented history. This may include brick, concrete, timber, asbestos and metals.

Roads/Parking Areas located off-site (Heathbank Road) and a small hardstanding area on-site may have utilised coal tar, which can result in high levels of PAHs and Phenols and may require disposal as hazardous waste. In addition, historically road construction used ash as a sub-base material, which could be a further source of PAHs.

5 ENVIRONMENTAL SETTING

5.1 Information Sources

The environmental setting of the site was determined through reference to the following:

- Envirocheck Report (including historical map extracts)
- British Geological Survey (BGS): 1:50 000 geological map series sheet No 85 Manchester Bedrock.
- British Geological Survey (BGS): 1:10 560 geological map series sheet SD 80 SE & SD 80 SW.
- BRE Publication BR211 Radon: Guidance on Protective Measures for New Dwellings

5.2 Landfill and Waste

The Envirocheck Report indicates that there are no Registered Landfill Sites located within 250m of the site.

The Envirocheck Report indicates that there is one Historic Landfill Site located within 250m of the site. It was located at Plant Hill Road, Higher Blackley, Manchester, 121m SW of the site, with no further information provided.

The Envirocheck report indicates that there are no Local Authority Recorded Landfill sites located within 250m of the site.

The Envirocheck Report indicates that there are no Waste Treatment, Transfer and Disposal Sites entries located within 250m of the site.

The Envirocheck Report indicates that there are no Licenced Waste Management Facilities located within 250m of the site.

The Envirocheck Report indicates that there is 2no areas of Potentially Infilled Land (Non-Water) within 250m of the site. This was an unknown filled ground (pit, quarry, etc) 153m East of the site, dated 1990 & 170m SW of the site, dated 1990.

The Envirocheck Report indicates that there is 11no areas of Potentially Infilled Land (Water) within 250m of the site. They are categorised as Unknown Filled Ground (Pond, marsh, river, stream, dock, etc) ranging from 28 – 248m from the site, recorded between the dates of 1894 -1956, with no further information provided.

5.3 Regulated Industries

The Envirocheck Report indicates that there are 2no Contemporary Trade Directory Entries located within 250m of the site. The nearest entry is 'Craft in Iron', listed as a Gate manufacturer 137m NW of and currently classified as inactive, located 52m NW of the site. The nearest active entry is for 'Hawk Appliances Ltd', listed as a Domestic appliances repair and servicing company, located 137m NW of the site.

The Envirocheck Report indicates that there are no Recorded Fuel Sites located within 250m of the site.

The Envirocheck Report indicates that there are no records of any Pollution controls located within 250m of the site.

The Envirocheck Report indicates that there are no sites dealing with Hazardous, Explosive or Radioactive Substances located within 500m of the site.

5.4 Geology

The drift deposits on site are likely to consist of Glacial Till (Figure 3).

The site is shown to be underlain by solid geology of Mudstone of the Manchester Marls Formation and Sandstone of the Chester Formation (Figure 4).

A Coal seam (Rams (bottom furnace) coal) is present 1.04km to the East of the site and is not shown to dip below the site.

The nearest fault of 'Bradley Fold Fault' with a SE dip is located 600m north of the site.

BGS Borehole SD80SW210, located ca. 900m northwest of the site, shows drift deposits of firm to stiff, brown light grey sandy silty clay to a depth of 3.00mbgl. Medium dense, orange/brown, slightly clayey silty fine sand, to a depth of 3.60mbgl (0.60m thickness). Medium dense, slightly clayey silty fine sand and rounded fine - coarse gravel to a depth of 5.70mbgl (2.10m thickness). Medium dense brown/grey, very sandy clayey silt with occasional rounded gravel and cobbles, to a depth of 10mbgl (4.30m thickness). Stiff, brow/grey silty clay with occasional subrounded fine - medium gravel and coal fragments to a depth of 14.50mbgl (4.5m thickness).

BGS Borehole SD80SW925, located ca. 600m southwest of the site, shows made land of loose topsoil, ashes, cinders, sand, brick, etc to a depth 0.80mbgl. Drift deposits of loose orange/brown clayey slightly gravelly sand to a depth of 1.50mbgl (0.70m thickness). Loose/medium dense brown, very silty gravelly sand to a depth of 4.0mbgl (2.50m thickness). Very loose brown very silty sand to a depth of 5.20mbgl (1.20m thickness). Very loose/loose brown silty sand to a depth of 7.15mbgl (1.95m thickness).

BGS Borehole SD80SW908, located ca. 1500m west of the site, shows that drift deposits of firm dark brown/grey sandy clay are present to a depth of 1.70mbgl. Dark brown peat with pockets of sand to a depth

of 2.20mbgl (0.50m thickness). Very soft grey/brown very sandy clay to a depth of 5mbgl (3.80m thickness). Very stiff dark brown clay with pockets of brown sand to a depth of 5.8mbgl (0.80m thickness). Sand and gravel to a depth of 6.4mbgl (0.60m thickness).

A very low risk of potential for collapsible ground stability on site has been identified within the Envirocheck Report.

A very low risk of potential for landslide ground stability on site has been identified within the Envirocheck Report.

A very low risk of potential for running sand stability on site has been identified within the Envirocheck Report.

A very low risk of potential for shrinking or swelling clay ground stability on site has been identified within the Envirocheck Report.

5.5 Mining & Quarrying

The site is within a Coal Mining Affected Area as defined by the Mining Remediation Authority (formerly the Coal Authority), as a result a coal mining search report was required to assess the risks posed by historic and possible future coal mining to any current or future developments on the site.

The coal mining search report conducted by David Bellis Consulting Surveyors dated 2nd May 2025 is presented in Appendix D.

The mining report highlights that the site is situated in an area where no seams have been worked within the likely zone of physical influence on the surface.

The report highlights that the site is not situated within the boundary of a former opencast coal mining site. Neither is the site located within 200m of a currently operating opencast coal mine or 800m of a future opencast coal mine.

The report follows on to state that they have no knowledge of any shafts or adits within 20m of the site or the boundary of the site. Also, there are no tips or lagoons in the vicinity of the site.

The Coal Authority Licensed Mine Gas dataset shows no record of mine gas emissions within the property or the property boundary requiring action.

The Coal Authority licensed Coal Mining Related Hazards dataset shows that the property has not been subject to remedial works by the Coal Authority, or its representatives, under the Coal Authority Emergency Surface Hazard Call Out Procedures.

The Envirocheck Report indicates that there are 10no BGS recorded Mineral Sites located within 1km of the site all of which have ceased activity. The nearest is located 612m SE of the site with the commodity listed as Opencast Sand.

The site is not within 1km of a Non-Coal mining area of Great Britain.

The site is not within 1km of a Man-Made Mining Cavity.

The site is not within 1km of a Natural Cavity.

The site is not within 1km of a Brine Compensation area.

5.6 BGS Estimated Soil Chemistry

The Envirocheck report sets out the BGS Estimated Soil Chemistry for several metals on-site. These are summarised below in Table 2, with specific reference to the proposed end-use threshold of the site, utilising LQM derived Suitable for Use Levels (S4ULs), whilst the lead value relates to the Category 4 Screening Level (March 2014) developed by Contaminated Land: Applications In Real Environments (CL:AIRE).

TABLE 2: SUMMARY OF BGS ESTIMATED SOIL CHEMISTRY

Contaminant	Estimated Concentration (mg/kg)	Residential with Home Grown Produce threshold (mg/kg)
Arsenic	<15	37
Cadmium	<1.8	11
Chromium	60-90	910
Lead	<100	200
Nickel	30-45	180

It can be seen from Table 2 that none of the metals are estimated to be above the relevant thresholds for the site, however site-specific contamination testing would be required to verify this.

5.7 Hydrogeology

Using the Environment Agency's Policy and Practice for the Protection of Groundwater the solid geology beneath the site is classified as a Principal Aquifer. The overlying drift is classified as a Secondary Aquifer - Undifferentiated.

The groundwater vulnerability is categorised as Secondary Superficial Aquifer – Low Vulnerability.

The site does not lie within a Source Protection Zone.

The Envirocheck Report indicates that there are no Groundwater Abstractions located within 1km of the site.

The Water Framework Directive for the site states the waterbody as the Manchester and East Cheshire Permo – Triassic Sandstone Aquifers. The overall rating, chemical rating and quantitative measure were all classified as Poor in 2019.

5.8 Hydrology

The nearest surface water feature is an unnamed pond located 1060m to the NE of the site on the Southern bank of the River Irk.

The Envirocheck report states the Water Framework Directive catchment of the site is the River Irk (Wince to Irwell) within the Roch Irk Medlock catchment.

The Envirocheck Report states the Water Framework Directive for Groundwater of the Manchester and East Cheshire Permo – Triassic sandstone aquifers overall rating for the site was poor, chemical rating poor and quantitative poor in 2019.

The Envirocheck Report states there is 1no Licensed Discharge Consent entry within 500m of the site, 315m NW of the site, of uncontaminated surface water from a domestic property dated 1988.

The Envirocheck Report states there are no Records of Water Industry Act Referrals (potentially harmful discharges to the public sewer) located within 500m of the site.

The Envirocheck Report indicates that there are 2no Surface Water Abstractions located within 1km of the site. The nearest 940m NE of the site by Balfour Beatty Major Projects for the purpose of dust suppression and status of license is 'current'. The second is located 991m NE of the site and shown as 'Expired'.

5.9 Flooding

The Envirocheck Report states the site is not at risk of Flooding or Extreme Flooding from Rivers and the Seas without defences.

The Envirocheck Report indicates that there are no flood defences, flood water storage areas or areas benefiting from flood defences and flood storage present within 250m of the site.

5.10 Sensitive Land Use

A Local Nature Reserve of 'Blackley Forest' is located 922m NW of the site.

The site is within the boundaries of a Nitrate Vulnerable Zone of the River Irk (Moston Brook to River Irwell)

The site does not lie within 2km of any form of Designated Environmentally Sensitive Sites or Protected Areas.

5.11 Radon Gas

The site is not in a Radon Affected Area, as less than 1% of properties are estimated to be at or above the Action Level.

In accordance with the procedure described in BRE Publication BR211 Radon: Guidance on Protective Measures for New Dwellings, no radon protection measures are necessary for new buildings or extensions on the site.

5.12 Unexploded Ordnance (UXO)

An Unexploded Bomb Risk Map has been obtained from Zetica UXO to provide an initial assessment of UXO risks to the site. The map is appended as Figure 5.

The map indicates the site is within an area of moderate risk, defined as an area with a bombing density of 15 to 49 bombs per 1000 acre, with no possible military targets, industry, transport site, etc identified within 500m of the site.

Based on the risk rating above, consideration should be given to carrying out a specialist UXO assessment.

6 CONCEPTUAL SITE MODEL

6.1 General

Based on the information presented in the preceding Sections, and in accordance with the LCRM guidance noted in Section 1, a Preliminary Conceptual Site Model has been produced.

The main features of the model are discussed in the following sections together with preliminary recommendations where appropriate.

6.2 Likely Ground Conditions

It is expected that, based on available information, ground conditions are likely to be made ground comprising areas of both topsoil and hardstanding. The surface deposits are likely to be underlain by further made ground, likely to consist of construction/demolition waste. The drift deposits on site are likely to comprise glacial till, underlain by solid geology of Mudstone of the Manchester Marls Formation and Sandstone of the Chester Formation.

6.3 Potential Buried Obstructions

Based on the site history, buried obstructions are possible, but cannot be wholly discounted. Relic construction material, bricks and rubble from nearby dwelling construction are the most likely obstructions.

6.4 Coal Mining Risk Assessment

The site is within a Coal Mining Reporting Area as defined by the Mining Remediation Authority (formerly the Coal Authority).

The ten times seam thickness rule states that where competent rock exceeds ten times the extracted seam thickness, then no major crown holing should occur at the surface (Structural Foundations Manual; M. F. Atkinson, *Spon Press* 2003). If the competent rock cover is less than ten times the extracted seam thickness,

then recommendations suggest the workings must be grouted using a mixture of pulverised fuel ash (PFA) and cement placed into the area under pressure.

Multiple situations may mean a ratio in excess of 10x seam thickness is required to prevent crown hole collapse, including but not exclusive to; steeply dipping strata, presence of groundwater, a high extraction ratio noted, and multiple seam extractions underlying the site (CIRIA C758D, Table 5.1). Additionally, weak basement rock underlying the workings has potential to cause a separate collapse mechanism via pillars sinking.

Conversely, there are scenarios where the acceptable cover criterion may be decreased from 10x seam thickness, these include where a rigid non-degradable roof strata is present to stop the upward void migration and where low residual voidage is proven either via infilling or extensive collapse (CIRIA C758D, Table 5.1).

For certain developments, a ratio of less than 10x may be addressed via bridging techniques i.e. utilising raft foundations, however this would be dependent on approval from the regulatory authorities.

Given the absence of shallow coal seams within influencing distance to the surface, and the site's location outside of a Development High Risk Area, no further investigation into historical coal mining is considered necessary.

6.5 Preliminary Geotechnical Assessment

Given the expected ground conditions noted in the sections above, the use of shallow foundations for the new development is anticipated at present. Where deep made ground or soft/loose natural deposits are encountered, foundations will need to be taken through the made ground/disturbed ground into underlying natural strata of adequate bearing capacity.

Trees are present around the site perimeter and therefore, foundations may need deepening in accordance with NHBC Standards Chapter 4.2.

The above suggestions should be regarded as tentative until Phase 2 intrusive works are undertaken, and information is available regarding design loads and development layout.

6.6 Preliminary Contamination Assessment

The desk study has shown that the site is unlikely to have been exposed to anything other than minimal contamination, with construction/demolition waste and possibly oils or fuel from vehicle spills the most likely source local to the structures. Asbestos may also be present on the site from previous building materials used adjacent to the site.

In view of the historic, current and future site use, chemical contamination testing is considered necessary. The following chemical testing suite should be considered for selected soil samples:

TABLE 3: POTENTIAL PRIORITY CONTAMINANTS

Inorganic Contaminants	Organic Contaminants
Arsenic, Boron, Cadmium, Chromium, Lead, Mercury, Nickel, Zinc, Selenium, Free Cyanide, Soluble Sulphate, pH, Asbestos	Phenol, Organic Matter, speciated PAH

It should be noted that the above potential contaminants are commonly associated with the specified past land uses of the site, and adjacent land use. Risk assessment should be undertaken for contamination identified during intrusive investigation.

Potential pathways which link the potential contaminants to end users of the site and controlled waters (receptors) include the following:

- Ingestion of soil (outdoors) / dust (indoors)
- Skin contact with soil (outdoors) / dust (indoors)
- Inhalation of dust (outdoors and indoors)

- Contamination via buried water pipes
- Surface water run-off, including via existing drainage infrastructure
- Downward infiltration of leachable contaminants to groundwater

6.7 Potential Sources of Ground Gas

Ground gases such as carbon dioxide and methane can be classed as a form of contamination. Potential sources of ground gases include:

- Made Ground
- Quarries, Infilled Clay Pits & Infilled Ponds
- Underlying Natural Strata (alluvium, peat and chalk)
- Petrol re-fuelling sites (which also includes Volatile Organic Compounds)
- Landfill (on and off-site)
- Coal measures

Based on historical map evidence and consideration of the sites environmental setting the table below shows a preliminary comparison of *consequence* against *probability* where ground gas is considered a potential threat to human health.

TABLE 4: POTENTIAL GROUND GAS POLLUTION LINKAGES

Potential Sources	Potential Pathway	Receptor
Made ground (CO_2, CO and CH_4).	Ingress and Accumulation into buildings from vertical and horizontal migration	Future users of site are likely to include adults and children. Construction workers (in particular utility workers).
Preliminary Comparison of Consequence verses Probability		
	Classification	**Justification**
Probability *(Based on Table 8.1, CIRIA C665, 2007)*	LOW LIKELIHOOD	Ground gas from made ground.
		No landfills located within 1km radius of the site.
		coal mining in area.
Consequence *(Based on Table 8.2, CIRIA C665, 2007)*	MEDIUM	Residential development.
	Risk	**Details**
Consequence vs. Probability *(Based on Table 8.3, CIRIA C665, 2007)*	LOW RISK	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild. *(Based on Table 8.4, CIRIA C665, 2007)*

Given the conditions noted above a ground gas assessment is considered necessary for the site to observe standing groundwater levels and to allow measurements to be made of hazardous gases and/or contamination levels in groundwater. Monitoring should be undertaken following site works on a minimum of six occasions over three months.

6.8 Risk Assessment for Contaminated Land

As part of this Phase 1 Desk Study, a preliminary conceptual model and risk assessment is produced. This assessment should be revised following the Phase 2 Site Investigation outlining a qualitative risk assessment. Should there be unacceptable risks to the various receptors/end-users following the Phase 2 works, then a remediation strategy may be required to outline measures to satisfy Part 2A of the Environmental Protection Act (1990). The above measures are in line with Environment Agency *Land Contamination Risk Management*, which replaced the now-withdrawn Contaminated Land Report 11 – *Model Procedures for the Management of Land Contamination* (2004).

The results of the chemical contamination testing as part of the Phase 2 investigation should be compared to a current Land Quality Management (LQM) – Suitable 4 Use Levels (S4UL) December 2014.

6.9 Conceptual Site Model

The conceptual model collates the salient aspects of the site to form a model which should enable comparison after fieldwork and testing. This model identifies the potential pollution linkages that may influence the proposed development and geotechnical considerations.

The risk ratings are based on the current potential liabilities and likely potential future liabilities. The risks posed by the geotechnical and contamination aspects of the site will be revised following site works, and any mitigating action required added.

The Preliminary Conceptual Model has been undertaken in accordance with CIRIA C552. The Preliminary Conceptual Model assesses the consequence and the likelihood of a risk being realised to provide a risk classification, which is then used to produce the Preliminary Conceptual Model. Full details of the tables used to assess consequence, likelihood and risk classification are presented in Appendix E.

TABLE 5: PRELIMINARY CONCEPTUAL MODEL

Source	Pathway	Receptor	Risk Rating	Comments
Asphyxiating or explosive ground gases • Made ground • Not in Radon Affected Area • Coal Mining	**Ground gas migration** • Migration through permeable soils • Inhalation	**Future site users** • Adult & infant residents	Moderate /Low	Gas monitoring recommended. Six visits over three months proposed.
		Users during development • Construction workers	Low	
Areas of contamination • Potential contaminants in made ground • Potential demolition/construction waste	• Inhalation • Dust ingestion • Dermal contact	**Future site users** • Adult & infant residents	Moderate /Low	Gardens proposed – contamination testing required to quantify the risks.
		Users during development • Construction workers	Moderate /Low	Contamination testing required to determine risks posed during construction. Consideration to be given to Health and Safety Executive Guidance. *Protection of Workers and the General Public During the Development of Contaminated Land.*
	• Inhalation • Dust ingestion	**Users of surrounding sites** • Nearby residents	Low	Potential low risk during construction from dust generation. Contamination testing required to quantify the risks.
	• Leaching of mobilised contaminants	**Drift geology** • Secondary Aquifer	Low	Low sensitivity aquifer. No nearby abstractions.
		Solid geology • Principal Aquifer	Low	High sensitivity aquifer, however this is overlain by low permeability deposits. No nearby abstractions.
	• Drainage • Lateral migration • Accumulation of contaminated sediment	**Surface water features** • Pond 1060m to NE	Very Low	Very limited potential for contamination from site to reach surface water, either via surface run-off or groundwater movement.
	• Uptake via roots and leaf surfaces	**Vegetation** • Gardens proposed	Low	Gardens proposed – contamination results to be assessed against phytotoxic thresholds.
Areas of contamination above service fabric or BRE Special Digest 1 thresholds	• Direct contact	**Construction Materials** • Concrete	Moderate /Low	pH and sulphates to be assessed during Site Investigation.
	• Direct contact	**Construction Materials** • Service Fabric	Moderate /Low	Consideration to be given to Pipe Material Table (Appendix E) during Site Investigation.

7 PROPOSED PHASE TWO INTRUSIVE WORKS

A Phase 2 Site Investigation should be undertaken to verify the assumptions made in the Preliminary Conceptual Site Model and to provide data for foundation design.

An outline ground investigation strategy is summarised below, based on the preliminary conceptual site model and information obtained during the desk study.

7.1 Site Investigation Rationale

The Conceptual Model highlights that there is potential for contamination on the site. Therefore, an intrusive investigation should be undertaken with the sampling strategies outlined within BS10175:2011 +A1:2013 and CLR4:1994. These strategies can be considered as:

- Non targeted (BS10175) – If no obvious hotspots or potential sources of contamination have been outlined in the desk study, it would be recommended to utilise a stratified random pattern of sampling locations.
- Targeted (CLR4) – If a possible hotspot is suspected on the site, it is recommended to adopt a targeted approach to sample the immediate vicinity of the hotspot. Highly focussed sampling consisting of several samples within the area of the hotspot may be necessary to delineate the extent of the hotspot.

These strategies can be employed either separately or in conjunction and any site investigation should be individually tailored to each site.

The density of sampling required is defined within BS10175 which notes that the density required is dependent on a number of factors including confidence and robustness required, and contaminants, pathways and receptors present.

7.2 Site Specific Sampling Rationale

The analysis of historical maps and the Conceptual Model did not highlight any defined hotspots on the site. Therefore, a non-targeted approach should be utilised, with sample locations arranged evenly across the site in a defined pattern, in order to provide maximum site coverage.

The chemical testing proposed for the site is outlined in Section 6.6.

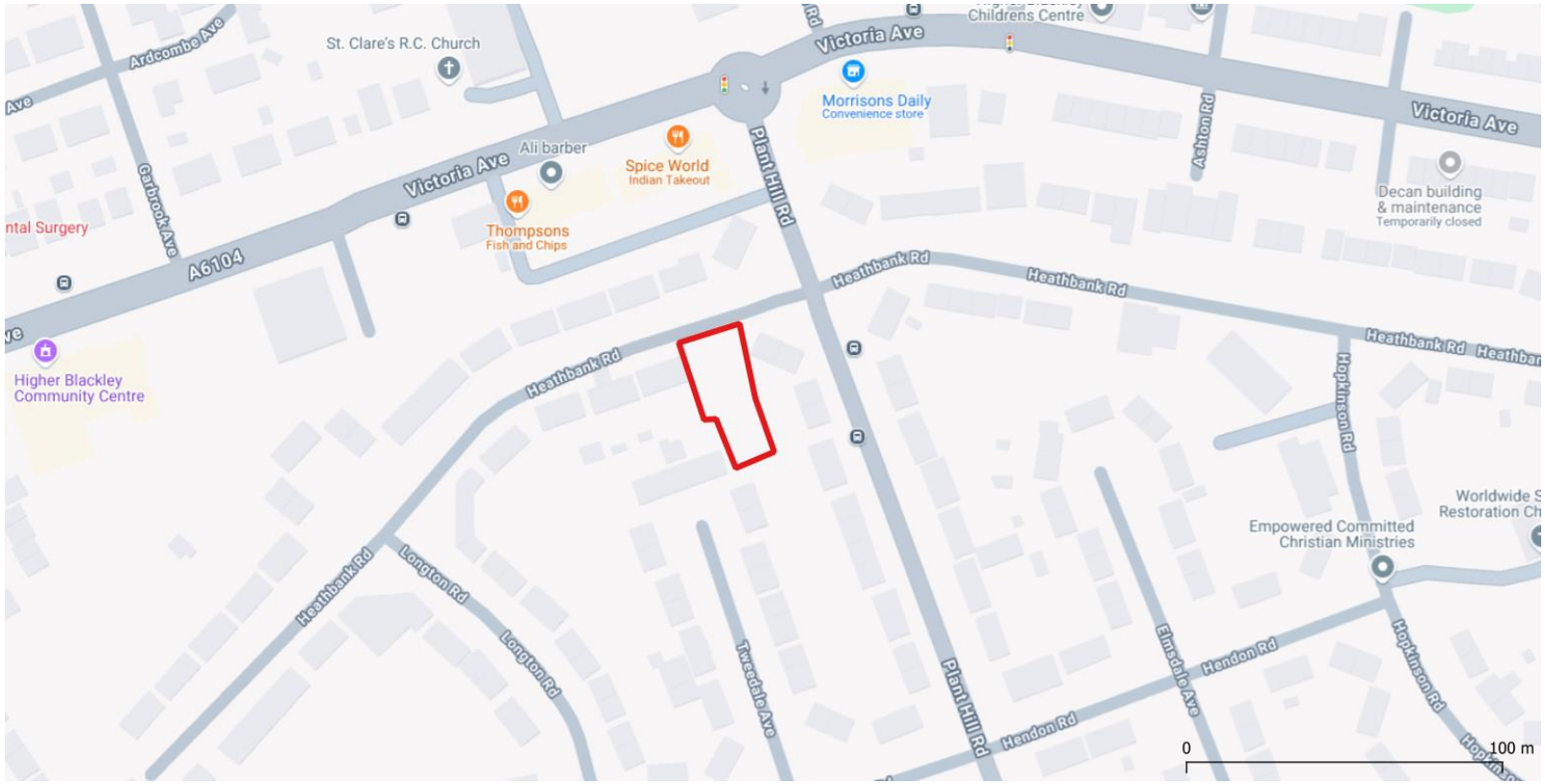
7.3 Proposed Methods of Investigation

The methods of investigation outlined within Table 6 are considered necessary to address the risks outlined within the Conceptual Model. The locations of these investigation positions will be set out in line with the proposed sampling methodology outlined in Section 7.2.

TABLE 6: SITE INVESTIGATION RECOMMENDATIONS

Proposed method of investigation	Purpose	Comments
Hand dug trial pits	Hand dug trial pits to 1.20mbgl to ensure positions are clear of underground services.	To be undertaken prior to the drilling of all boreholes and following CAT scanning and service plan inspection.
A series of small percussive boreholes to ca. 6.00mbgl	• To determine shallow ground conditions. • To collect soil samples for geotechnical and chemical testing. To observe soils profile, localised variations in materials and presence of groundwater.	• Ensure positions are CAT scanned, and service plans inspected prior to any excavation. • Hand vanes to be taken in cohesive deposits. • SPT samples in granular strata and rock head. Disturbed and jar samples to be undertaken for chemical testing.
Gas/groundwater monitoring wells	To observe standing groundwater levels and to allow measurements to be made of hazardous gases and/or contamination levels in groundwater.	Monitoring to be undertaken following site works on a minimum of six occasions.
Chemical testing	• To allow the potential risks identified within the conceptual model to be addressed.	• Chemical soils testing to cover potential priority contaminants from Table 2.
Geotechnical testing	• To confirm material properties and to provide concrete classification of materials.	Tests may include sulphate analysis, pH, moisture content, Atterberg limit determination, particle size distribution tests and triaxial testing. • Further tests may be required depending on the materials encountered.

Appendix A
Maps & Photos



Title
Site Location Plan
Project
53-55 Heathbank Road, Manchester, M9 0WA.
Client
Stef Olsz
Date
May 2025
Fig No.
Figure 1
Scale
Do Not Scale
Key
Site Boundary

N

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Title	Satellite Image
Project	53-55 Heathbank Road, Manchester, M9 0WA.
Client	Stef Olsz
Date	May 2025
Fig No.	Figure 2
Scale	Do Not Scale

Key

Site Boundary

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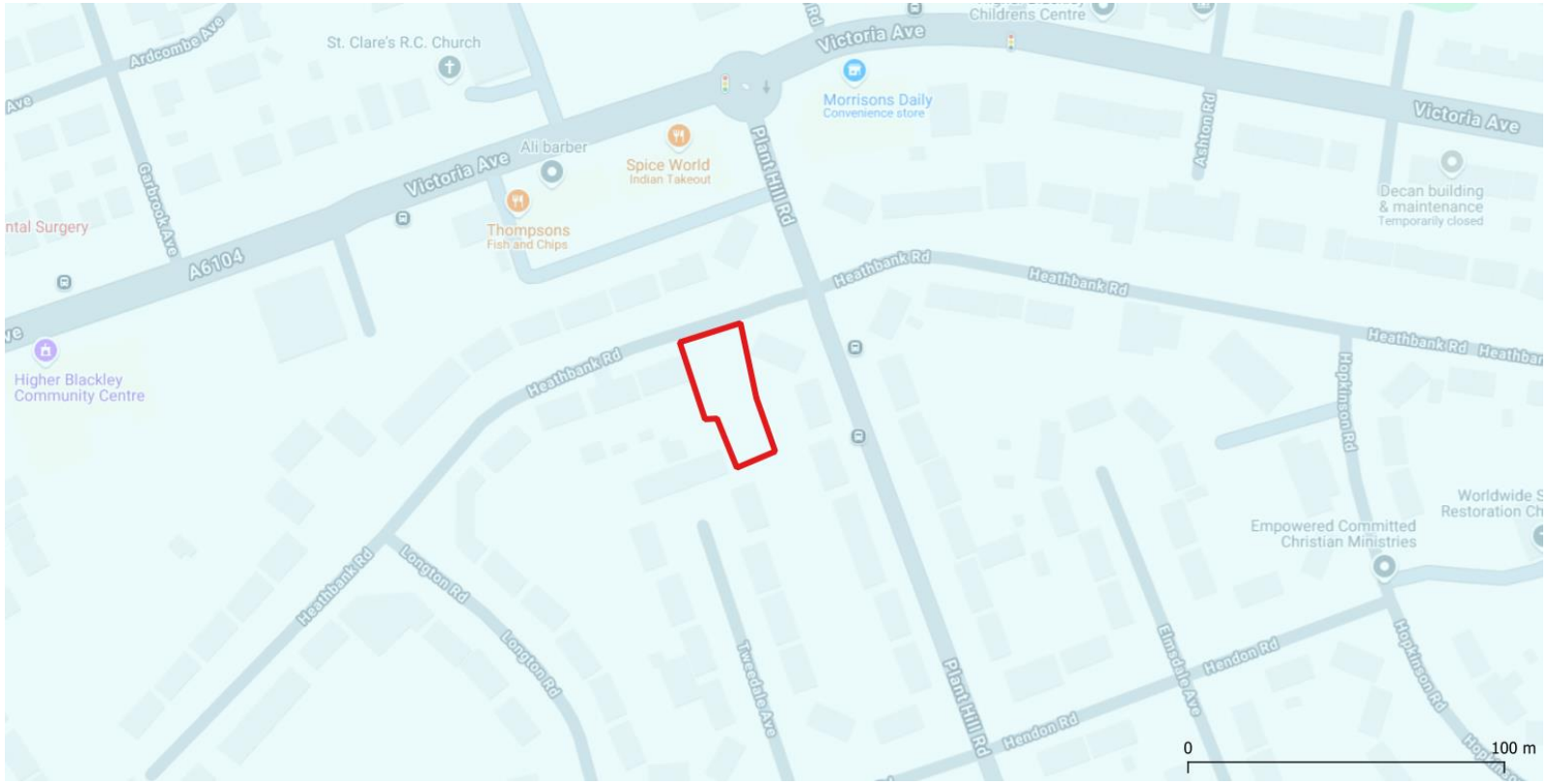

Title
Drift Map

Project
53-55 Heathbank Road,
Manchester, M9 0WA.

Client
Stef Olsz

Date
May 2025

Fig No.
Figure 3

Scale
Do Not Scale

Key

Site Boundary

Glacial Till

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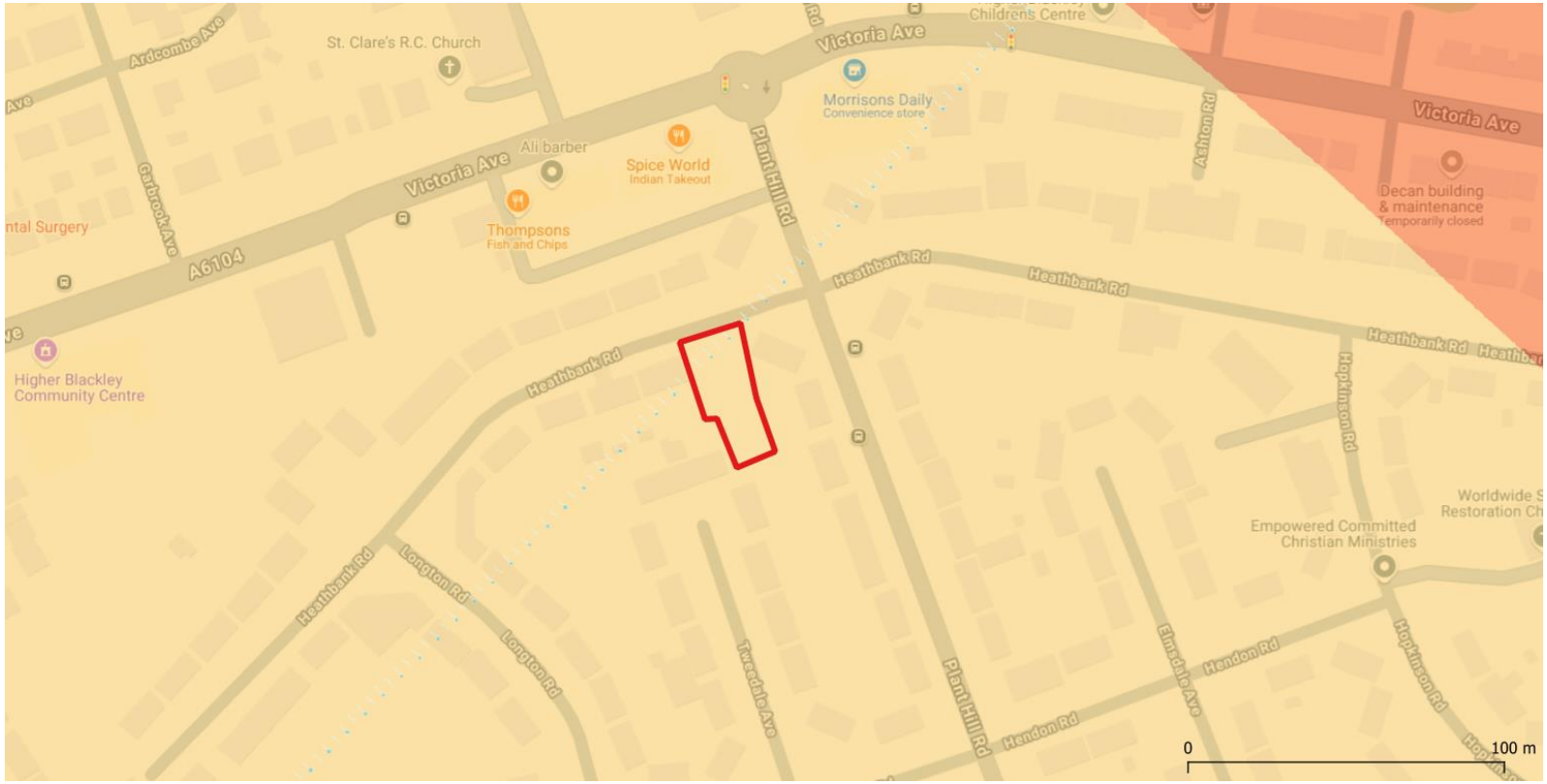

Title
Bedrock Map

Project
53-55 Heathbank Road,
Manchester, M9 0WA.

Client
Stef Olsz

Date
May 2025

Fig No.
Figure 4

Scale
Do Not Scale

Key

Site Boundary

Chester Formation - Sandstone

Manchester Marls Formation – Mudstone

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UNEXPLODED BOMB RISK MAP

zeticaUXO

SITE LOCATION

Map Centre: 385351,404086

This map principally indicates a hazard from Unexploded Bombs (UXB) due to WWII bombardment. Other sources of Unexploded Ordnance (UXO) may be present. It should be noted that this map does not represent UXO risk and should not be reported as such when reproduced.

LEGEND

- **High:** Areas indicated as having a bombing density of 50 bombs per 1000acre or higher.
- **Moderate:** Areas indicated as having a bombing density of 15 to 49 bombs per 1000acre.
- **Low:** Areas indicated as having 15 bombs per 1000acre or less.

Miltary | **Industry** | **UXO find** | **Other**

Transport | **Docks** | **Luftwaffe targets**

Utilities | **Bombing decoy** | **Airfields**

How to use your Unexploded Bomb (UXB) risk map?

This map indicates the potential for UXBs to be present because of World War Two (WWII) bombing. It can be incorporated into a technical report, such as a Phase 1 Desk Study, or similar document as an indication of the potential for UXO encounter on a Site. Other sources of UXO may also be indicated, although note that these are not comprehensive and more detailed research is required to confirm their presence.

What if my Site is in a moderate or high density area?

We typically recommend that a detailed UXO desk study and risk assessment is undertaken for sites in an area with a moderate or high bombing density.
Additionally, if your site is in close proximity to a strategic target, military establishment, airfield or bombing decoy, then additional detailed research is recommended.

If my site is in a low risk area, do I need to do anything?

If both the map and other research confirm that there is a low potential for UXO to be present on your site, then, subject to your own comfort and risk tolerance, works can proceed with no special precautions.

If you are unsure whether other sources of UXO may be present, you can request one of our pre-desk study assessments (PDSA) by emailing a site boundary and location to pdsa@zetica.com.

You should never plan site work or undertake a risk assessment using these maps alone. More detail is required, to include an assessment of the likelihood of a source of UXO hazard from other military activity not reflected on these maps.

If I have any questions, who do I contact?

tel: +44 (0) 1993 886682 **email:** uxo@zetica.com **web:** www.zeticauxo.com

The information in this UXB risk map is derived from a range of sources and should be used with the accompanying notes on our website.

Zetica cannot guarantee the accuracy or completeness of the information or data used and cannot accept any liability for any use of the maps. These maps can be used as part of a technical report or similar publication, subject to acknowledgement. The copyright remains with Zetica Ltd.

Figure 6: View looking southeast towards the site access.

Figure 7: View looking southwest towards the site access and neighbouring property (No. 57)

Title	**Date**
Figures 6 & 7	May 2025
Project	
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Figure 8: View looking south though the centre of the site.

Figure 9: View of fly-tipped material in the southwest of the site.

Title	**Date**
Figures 8 & 9	May 2025
Project	
53-55 Heathbank Road, Manchester	
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Figure 10: View of the southeastern corner of the site.

Figure 11: View towards the southwestern corner of the site.

Title	**Date**
Figures 10 & 11	May 2025
Project	
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Figure 12: Overgrown area and fly-tipped material in the west of the site.

Figure 13: View looking south at the site access.

Title	**Date**
Figures 12 & 13	May 2025
Project	
53-55 Heathbank Road, Manchester	
Client	
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Figure 14: View looking northeast through the site access towards the neighbouring properties.

Figure 15: View of the gravelled area in the north of the site.

Title	**Date**
Figures 14 & 15	May 2025
Project	
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Client	
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