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Phase 1 Desk Study Site Investigation Report

LOCATION	33a Church Lane, Clayton West, Huddersfield, HD8 9LY
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FOR	Byram Construction Ltd
CLIENT REF.	
OUR REF.	G24327

Prepared by

Checked by

Matthew Pennington BSc (Hons)
Geoenvironmental Engineer

Stuart Howe BSc (Hons) FGS
Senior Geotechnical Engineer



Head Office

Units 3a and 4 Terry Dicken Industrial
Estate
Ellerbeck Way
Stokesley
North Yorkshire
TS9 7AE

Manchester

Suite 26 Atlantic Business Centre
Atlantic Street
Altrincham
WA14 5NQ

Nottingham

Unit 4 Bailey Brook Industrial Estate
Amber Drive, Langley Mill
Nottingham
NG16 4BE

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Appendix 1 – Historical Map Record

Appendix 2 – GroundSure Enviro + GeoInsight Report

Appendix 3 – RGS CMRA and Updated Coal Authority Report

Executive Summary

The major conclusions of this desk-based Phase one study are summarised in the table below:

Site Suitability	Desk Study Finding	Preliminary Assessment
Normal Foundations	Bedrock expected to be present at shallow depth with possible thin drift deposits. Consideration should be made to vegetation influence if clay soils are encountered.	Borehole investigation to confirm strength of ground with regard to supporting building loads. Soil analysis might also be included to establish risk with regard to shrink-swell clay to rule out vegetation influence or assess strength of any potentially weaker soils.
Soakaways	Potentially suitable	Water infiltration testing to quantify permeability of superficial deposits if granular strata are encountered.

Potential Risks	Desk Study Finding	Preliminary Risk Assessment
Radon Gas	Less than 1% of properties affected	None. No radon protection required.
Chemical Contamination	Historical nearby and on-site land uses potentially giving rise to a range of inorganic and organic contaminants including asbestos, metals/metalloids, PAHs and petroleum hydrocarbons.	Low
Hazardous Gas	Potential for hazardous gas to migrate from possible unrecorded coal mine workings and if deep made ground is present.	Moderate
Ground Instability/ subsidence	Potential for significant deposits of compressible made ground. Potential for vegetation influence on shrink-swell clays which may be present, including risk of soil heave.	Low
Shallow Coal Ground Instability/ subsidence	Potential for unrecorded shallow coal mining.	Moderate

NB. Arbitrary potential hazard assessment: High (Red), Moderate (Amber), Low (Yellow), Very Low (Green), Negligible (uncoloured)

1. Introduction

In accordance with your instruction, Geoinvestigate Ltd. has carried out a Phase 1 Desk Study Investigation of the land adjacent to 33a Church Lane, Clayton West, Huddersfield, HD8 9LY. The location of the site is shown on the Groundsure Enviro+Geo Insight report presented in Appendix 2.

The site currently comprises an area of land some 0.01 ha in size with access from Holmfield Road from the east down Holmfield towards the fenced off site.

It is understood that it is proposed to construct a new residential development at the site, comprising a single detached dwelling adjacent to 33a Church Lane, Clayton West, Huddersfield, HD8 9LY.

The purpose of the Phase 1 Desk Study investigation was to review the historical land use and geological information for the site in order to provide an assessment of the potential geotechnical/foundation problems together with a qualitative contamination and ground gas risk assessment.

2. Scope of Works

The investigation comprised a review of the following information:

- An extract from the 1:50,000 BGS geological mapping.
- Historical OS maps of various scales dating back to 1854 (presented in Appendix 1).
- Observations from a walkover study carried out by Geoinvestigate.

3. Findings of Phase 1 Investigation

3.1 Anticipated Geology

The extract of the 1: 50,000 BGS geological mapping indicates no superficial deposits will be present at the site with sandstone bedrock belonging to the Pennine Lower Coal Measures probably present commencing from shallow depth.

The nearest BGS borehole records show shallow made ground underlain by shallow bedrock of mudstone, however this borehole is located 200m from site.

3.2 Historical OS Maps and Historical Land Use

Copies of historical OS maps were obtained for the site covering the period 1854 to 2024. Historical land uses and major features located within the site boundary and externally but potentially within influencing distance are summarised in Table 1 on the following page. The earliest OS map of 1854 shows the site to be undeveloped, being agricultural land by the neighbouring small village.

Table 1: Summary of Historical OS Map Land Use & Potential Hazard Identification

Map Feature	Location	Appears	Absent	Notes
Unnamed Building	East of site	1892	1959	Building is demolished and last seen on 1959 mapping. Possibly shown as divided into three buildings on mapping record from 1970. (See below)
Three Unnamed small buildings	East of site	1970	Present	Possibly lock-up garages present until recently onsite. Possible source of contamination through use and construction materials.
Quarry (2)	120m South (Closest)	1892	1913	No longer labelled as quarries after 1906 mapping. Quarries outline no longer present on mapping after 1913, potentially infilled feature.
Reservoirs	240m Southeast	1892	1979	No longer labelled as reservoir from 1913 mapping. No longer present from 1970 mapping, potentially infilled feature.
Holmfield Crescent	10m South	1959	Present	Surrounding adjacent area is developed into residential housing.
Electric Substation	25m Northeast	1970	Present	Unlikely to affect the site
Park Mill Colliery	235m Northeast	1965	1993	No longer present from 1993 mapping onwards, potentially infilled feature.

NB. Arbitrary potential hazard assessment: High (Red), Moderate (Amber), Low (Yellow), Very Low (Green), Negligible (uncoloured)

A review of the historical OS maps has highlighted the land uses most likely to present (or have presented) a hazard or source of potentially harmful contamination to the study area. The primary feature of interest

is the nearby electrical substation, potentially infilled quarries, wells and the demolished building previously on site. The Park Mill Colliery and tip are likely too distant to have meaningfully affected the site.

3.3 GroundSure Enviro + GeoInsight Reports

The GroundSure Enviro+Geo Insight Report presented in Appendix 2 provides listings of potentially contaminative current and past land uses together with possible pathway and receptor information. It also covers other potential risks to the site including ground hazards associated with the area's natural geological setting and man-made hazards such as those arising from development activities. A summary of the relevant Report findings is presented in Table 2 below and on the following pages.

Table 2: GroundSure Enviro+Geo Insight Summary:

Details	Feature	Location relative to site
Past land use		
Historical industrial land uses	Unspecified Quarry (4) Unspecified Pit (4) Colliery (1) Unspecified Disused Mill (2) Unspecified Pit (2) Unspecified Tank (1) Railway Sidings (1)	119m South (closest) 117m South (closest) 167m North 191m Southeast (closest) 214m South (closest) 237m Southeast 247m North
Historical Tanks	Unspecified Tank (1)	18m West
Historical Energy Features	Electrical Substation (4)	11m Northeast (closest)
Historical garages	None within 250m	N/A
Landfill and Other Waste Sites		
Historical landfill (LA/mapping records)	None recorded within 500m	N/A
Historical landfill (EA/NRW records)	None recorded within 500m	N/A
Historical waste sites	None recorded within 500m	N/A
Licensed waste sites	None recorded within 500m	N/A
Waste exemptions	Treating waste exemption (2)	232m North (closest)
Past land use		
Recent industrial land uses	Electricity Sub Station M Lindley Joinery Incora	29m North 213m Northeast 244m North
Current or recent petrol stations	None recorded within 500m	N/A
Control of Major Accident Hazards (COMAH)	None recorded within 500m	N/A
Licensed pollutant release (Part A(2)/B)	None recorded within 500m	N/A
Licensed Discharges to controlled waters	Trade Discharges Sewage Discharges	355m Northwest 446m West
Pollution Incidents (EA/NRW)	Contaminated Water Agricultural Materials and Waste Not Identified	314m North 376m Southwest 486m Southwest
Hydrogeology - Superficial aquifer		
Superficial aquifer	Secondary A	383m Northwest
Bedrock aquifer	Secondary A	Onsite
Groundwater vulnerability	Medium	Onsite
Surface Water Abstractions	None recorded within 2000m	N/A

Table 2 is continued on the following page

Table 2 (ctd.): GroundSure Enviro+Geo Insight Summary:

Hydrology		
Water Network (OS MasterMap)	None recorded within 250m	N/A
WFD Surface water body catchments	River WB catchment	On Site
WFD Surface water bodies	River	446m Northwest
WFD Groundwater bodies	Don & Rother Millstone grit & Coal Measures	Onsite
Environmental designations		
Local Nature Reserves (LNR)	No records within 2000m	N/A
Visual and cultural designations		
Listed Buildings	Church Of All Saints Clayton West Baptist Chapel and Sunday School	131m Northeast 153m East
Agricultural and Habitat designations		
Agricultural Land Classification	Grade 3 Grade 4	Onsite 223m Southwest
Environmental Stewardship Schemes	None recorded within 250m	N/A
Priority Habitat Inventory	Deciduous woodland (2)	174m South
Geology 1:10,000 scale		
Artificial and made ground (10k)	Infilled Ground (artificial deposit) (1)	185m South
Superficial geology (10k)	Alluvium – Clay and Silt	395m Northwest (closest)
Bedrock geology (10k)	Pennine Lower Coal Measures Formation-SDST Pennine Lower Coal Measures Formation – Mudstone, Siltstone and Sandstone	Onsite 25m Northwest
Bedrock faults and other linear features (10k)	Coal seam, inferred (5) Normal fault, inferred (5)	109m Southeast (closest) 476m East (closest)
Geology 1:50,000 scale		
Artificial and made ground (50k)	None recorded within 500m	N/A
Superficial geology (50k)	Alluvium	395m West
Bedrock geology (50k)	Pennine Lower Coal Measures Formation - Sandstone Pennine Lower Coal Measures Formation - Mudstone, Siltstone and Sandstone	Onsite 25m Northwest
Bedrock permeability (50k)	Fracture (high to moderate) Fracture (moderate to low)	Onsite 25 Northwest
Bedrock faults and other linear features (50k)	Coal seam, inferred (9) Fault, Inferred	109m Southeast 476m East
Natural ground subsidence		
Shrink swell clays	Negligible Very low	Onsite 25 Northwest
Running sands	Negligible	Onsite
Compressible deposits	Negligible	Onsite
Collapsible deposits	Very low	Onsite
Landslides	Very Low	Onsite
Ground dissolution of soluble rocks	Negligible	Onsite
Table 2 is continued on the following page		

Table 2 (ctd.): GroundSure Enviro+Geo Insight Summary:

Details		Feature				Location relative to site	
Mining, ground workings and natural cavities							
BritPits		Sandstone (2) Coal, Deep (3)				163m South 204m South	
Surface ground workings		Unspecified Pit (8) Unspecified Quarry (4) Colliery (2) Reservoirs (6) Ponds (1)				117m South 119m South 167m North 197m Southeast 201m Southeast	
Underground workings		Colliery (10) Unspecified Shaft (4) Unspecified Old Shaft (5) Unspecified Level (3) Tunnel (3) Disused Tunnel (1) Old Colliery (3)				167m North (closest) 635m South (closest) 636m South (closest) 843m North (closest) 843m North (closest) 854m North 956m North	
Non-coal mining		None recorded within 1000m				N/A	
JPB mining areas		In addition to being located inside an area where The Coal Authority have information on coal mining activities, Johnson Poole & Bloomer (JPB) have information such as mining plans and maps held within their archive of mining activities that have occurred within 1km of this property which may supplement this information.				None recorded on site	
Coal mining		The site is located within a coal mining area as defined by the Coal Authority. A Consultants Coal Mining Report is recommended to further assess coal mining issues at the site. This can be ordered directly through Groundsure or your preferred search provider.				Onsite	
Radon Risk							
Radon Risk		Less than 1%. No protection required				Onsite	
Soil chemistry							
Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 – 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
Railway infrastructure and projects							
Historical railway and tunnel features		Railway Sidings (1)				247m North	
Railways		None recorded within 250m				None	

The GeolInsight report has highlighted no additional potential risks to the site or the intended development arising due to historical or current land uses and the site's geological setting beyond those already discussed save for perhaps the records of the coal mining in the area.

3.4 Coal Authority Report Summary

Geoinvestigate were provided with a Coal Mining Risk Assessment report undertaken by Rogers Geotechnical Services (RGS) ref. J3596/16/EDS, dated August 2016. Due to its age, Geoinvestigate considered a new coal authority report to be obtained.

The RGS CA report is summarised below;

- The site is in a surface area which could not be affected by the past underground mining.

- The property is within an area where the coal authority believes there is coal at or close to the surface. The potential presence of coal workings at or close to the surface should be considered prior to any site works or future development activity.
- The coal authority believes that there are possible unrecorded shallow workings.
- There are no known coal mine entries within the boundary of the property, there may however be mine entries/additional mine entries in the local area which the Coal Authority has no Knowledge of.
- There has been no damage notice or claim for any property within 50m of the site and no records of mine gas, subsidence or remedial works are recorded for the site.

The updated CA report (51003461088001, dated 5th November 2024) is summarised below;

- The site is in a surface area which is likely not affected by the past underground mining.
- The coal authority believes that there are possible unrecorded shallow workings.
- The property is not within an area where the coal authority suspects coal outcrops.
- There are no known coal mine entries within the boundary of the property, there may however be mine entries/additional mine entries in the local area which the Coal Authority has no Knowledge of.
- There has been no damage notice or claim for any property within 50m of the site and no records of mine gas, subsidence or remedial works are recorded for the site.

Based on the CA report, a significant risk of subsidence to the proposed development might be inferred as unrecorded shallow coal workings are considered probable.

3.5 Walkover Survey Observations

A site reconnaissance visit was undertaken on the 4th November 2024 by Kris Rodway of Geoinvestigate.

The site was as described in Section 1 of this report comprising open land with some trees and evidence of recent vegetation removal and a thin concrete slab on the west of the site.

The site currently comprises an area of land some 0.01 ha in size with access using a double width gate from Holmfield via Holmfield Road. Access to the site is via a narrow and overparked road.

Some large trees with TPO are present along the northern boundary.

The inspection of the surface of the site found no obvious evidence of physical hazards or odours, staining, or residues that might be indicative of the presence of chemical (including hydrocarbon) contamination.

On previous photos provided, possible asbestos cement roofing and cladding materials were noted on the now removed garages.

On the basis of the walkover inspection only, the risk of a serious contamination hazard occurring at this site would be assessed to be very low given the current condition of the site and use. The hazardous gas risk at the site, based solely on the findings of the walkover survey, would also be assessed to be very low given it is unlikely any substantial gas source exists beneath the site.

The presence of trees might indicate a potential for vegetation influence on shrink-swell clays (if clay soils are present) and potentially soil heave following vegetation removal that has taken / may take place.

It is noted however that despite the apparent lack of evidence of any contamination encountered during the visual inspection described above, any planning application is likely to require confirmation that no contamination is likely to have occurred. Photographs taken during the walkover survey are presented below and on the following page:

Photograph 1: thin concrete slab at site entrance



Photograph 2: Looking west along site



Photograph 3: Looking east along site



Photograph 4: Looking across site from unnamed lane



Photograph 5: East end of site and cleared vegetation**Photograph 6:** Looking east past site down Holmfield

4. Qualitative Risk Assessment

4.1 Methodology

In order to assess the potential risks to the site, information obtained on the potential sources of hazard identified in Section 3 have been reviewed and applied to a model of the site. This allows an assessment of the potential sources of contamination to be made by examining the potential pollutant linkages between these and the receptors at the site.

The risk assessment presented comprises a source-pathway-receptor model developed in the context of the intended end use of the site (Residential use).

It is noted that an alternative land use would present different pollutant linkages with vulnerable receptors and differing pathways for exposure. Were the intended land use to be changed at the site, a revised risk assessment would be required.

Identified potential sources of hazard or contamination, vulnerable receptors, and possible pathways by which they may be exposed are presented in the Conceptual Ground Hazard Model (CGHM) presented in Figure 1, see Section 4.2.

In addition to risks to human health and controlled waters and aquifers posed by contamination and ground gas, the CGHM examines the potential risks to the construction of the development including its buildings from geological or geotechnical hazards.

It allows an overall assessment to be made of the potential hazards and risks to the site and the proposed development with respect to “fitness for purpose”. Bedrock geology which is anticipated to underlie the site is assumed to exhibit potentially variable permeability and only limited superficial geology is expected, if any.

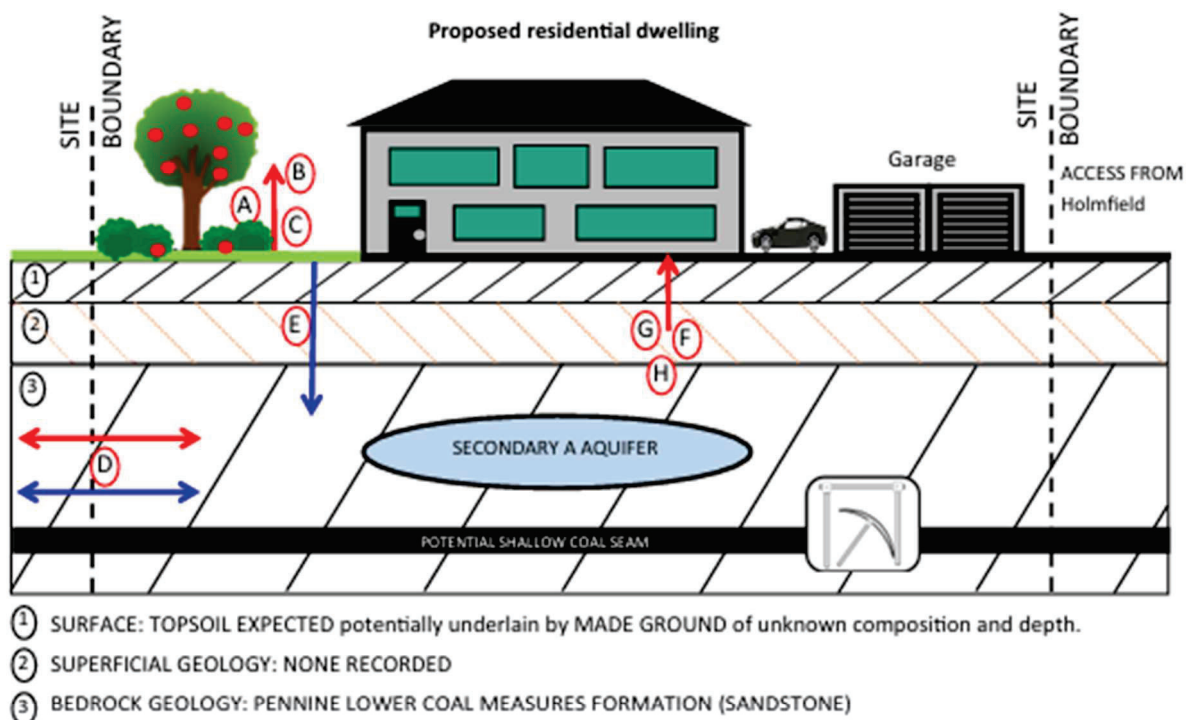
4.2 Risk Assessment

The desk study has highlighted the presence of possible sources of contamination which could potentially affect (or have affected) the site, primarily comprising the former onsite and adjacent buildings and two quarries.

Contamination from external sources would require a favourable pathway for migration into the site and the majority of external sources of contamination are likely to be too distant or minor to pose any significant risk. The BGS extract does not record any superficial deposits so near-surface permeability is unknown and likely variable.

Potential receptors at the site would include the end users of the site (residents), workers employed in the construction of the new development, the buildings themselves and their services, plants and vegetation, neighbouring sites (and their users/occupants), nearby surface water and ground water at depth. A representation of the potential hazards and pollutant linkages is shown in Figure 1 overleaf.

Figure 1 – Conceptual Ground Hazard Model of site including a Source, Pathway and Receptor Model



IDENTIFIED HAZARDS Including Potential CONTAMINATION SOURCES

- Possible presence of made ground and historical contamination thereof by past land use and development and/or demolition works at the site.
- Potentially contaminative historical land uses on nearby/adjacent sites including; former onsite and adjacent buildings and two quarries.
- Potential for made or infilled ground to generate hazardous gases either within the study site or on adjacent/nearby sites.
- Possible hazardous gas risk from shallow historical coal mining.
- Potential ground stability issues associated with; vegetation influence and shrink-swell clays, potentially weak and compressible made ground, compressible natural deposits and shallow historical coal mining.

IDENTIFIED RECEPTORS and ASSOCIATED PATHWAY

- A**— End Users through Direct Contact / Inhalation / Ingestion. Buildings and hard standing will encompass some of the site, removing any pathway to end users through direct contact in these areas.
- B**— Plants and Trees through uptake, likely given the intended end use and proposed development layout.
- C**— End Users through cultivation and consumption of vegetables / fruit. Considered possible given the intended end use and proposed development layout.
- D**— Neighbouring Sites through lateral migration (in soil and water, including surface water run off).
- E**— Groundwater through leaching of sub-soil.
- F**— Buildings and services through direct contact.
- G**— End users and buildings through ground gas migration.
- H**— Geotechnical risks to buildings and services.

The CGHM and the summary table below (Table 3) present the most likely potential sources of contamination, gas or geotechnical risk that are considered to be possible either within or near to the study site.

The identified potential contamination sources could feasibly have given rise to low level mobile contamination of made ground and/or natural deposits which might underlie the site. No superficial geology is recorded for the site and there are no nearby borehole records, meaning permeability is unknown.

Therefore, assuming the worst-case scenario, the potential for harmful contamination to exist at the site from historical sources is assessed to be Low/Moderate (as opposed to very low or negligible) owing to the potentially contaminative activities located near to and/or within the study area (primarily concerning historical development and demolition and nearby quarries).

The hazardous gas risk is assessed to be Moderate due to the potential for unrecorded shallow coal mining beneath the site and nearby quarries. No significant gas risk is expected associated with made ground unless deeper (>1.0m) made ground is subsequently discovered at the site.

The actual current level of risk to the development and its users can only be ascertained for certain through confirmation of the ground conditions by a Phase 2 intrusive investigation, including a contamination survey, a rotary probe drilling exercise to check for shallow mining, and a gas monitoring survey.

Table 3: Summary of Conceptual Ground Hazard Model

Potential Source	Associated Contaminants	Pathway	Receptor	Preliminary Risk Rating
Historical land use and development. Possible made ground. Quarries	Inorganic and organic chemical contaminants within soil. -Trace metals -PAHs -Petroleum hydrocarbons -Asbestos	-Direct human contact -Ingestion of soil -Ingestion of dust -Inhalation of vapour -Leaching into ground or surface waters -Overground migration to external sites (soil and water) -Permeation of pipes.	-Site Operatives -End Users -Vegetation -Controlled waters -Structures and services -Neighbouring sites/users	Low/moderate
Possible made ground, former quarry and shallow coal workings	Landfill-type gases (CO ₂ , CH ₄ etc.)	Hazardous ground gas migration through permeable geology -Inhalation -Explosion risk	-Site Operatives -End Users -Structures	Moderate
Local Geology	Radon gas	Radon gas migration through underlying geology.	-End Users	Very Low
Shallow coal mine workings	N/A	Ground instability via risk of settlement / collapse	-End Users -Structures	Moderate
Shrink-swell clays	N/A	Ground instability vegetation influence / heave	-End Users -Structures	Low
Infilled ground	N/A	Ground instability via risk of settlement	-End Users -Structures	Low

NB. Arbitrary potential hazard assessment: High (Red), Moderate (Amber), Low (Yellow), Very Low (Green), Negligible (uncoloured)

5. Conclusions

A summary of the anticipated ground conditions, risks and implications based on the findings of Sections 3 and 4 of this report is presented in Table 4 below:

Table 4: Summary of Phase 1 Desk Study Findings

Concern	Desk Study Finding	Initial Risk Assessment	Potentially Useful Action in a Phase 2 Site Investigation
Normal Foundations	Bedrock expected to be present at shallow depth with possible thin drift deposits. Consideration should be made to vegetation influence if clay soils are encountered.	Unclear due to mining risk	Borehole investigation to confirm strength of ground with regard to supporting building loads. Soil analysis might also be included to establish risk with regard to shrink-swell clay to rule out vegetation influence, or assess strength of any potentially weaker soils.
Soakaways	Sandstone bedrock may offer sufficient permeability.	Potentially suitable	Water infiltration testing to quantify permeability of superficial deposits if granular strata are encountered.
Radon Gas	Less than 1% of properties affected	Very Low	None. No radon protection required.
Chemical Contamination	Historical nearby and on-site land uses potentially giving rise to a range of inorganic and organic contaminants including asbestos, metals/metalloids, PAHs and petroleum hydrocarbons.	Low	Chemical analysis for potential contaminants in soil samples (and potentially leachate). Samples should be recovered from made ground (if found) and topsoil, and also potentially underlying natural sub soils to check for potential leaching and/or migration into the site from possible external sources.
Hazardous Gas	Potential for hazardous gas to migrate from possible unrecorded coal mine workings and if deep made ground is present.	Moderate	Ground gas monitoring wells in shallow boreholes to monitor CO ₂ , CH ₄ content etc. Or installation of gas protection measures.
Ground Instability/ subsidence	Potential for vegetation influence on shrink-swell clays which may be present, including risk of soil heave.	Low	Borehole investigation to confirm strength of both natural and made ground and shrinkage potential of any cohesive soils.
	Potential for significant deposits of compressible made ground.	Low	
	Potential for unrecorded shallow coal mining.	Moderate	Rotary borehole investigation.

The initial risk assessment provided above is tentative as it is based only on the Phase 1 desk study. The risks will need to be reassessed and may perhaps change significantly becoming higher or lower depending on the results of the Phase 2 intrusive investigation and contamination/gas survey, should these be undertaken.

6 Recommendations

In light of the Phase 1 desk study findings, it is recommended that a Phase 2 investigation be undertaken at the site to better explore the possible risks that have been identified. This should include contamination analyses together with a geotechnical appraisal of the site to establish correct foundation requirements. As there are relative uncertainties, this work is recommended in order to establish the actual site conditions and to properly assess both geotechnical and environmental risks.

The Phase 2 investigation should be designed to focus on the potential contaminants highlighted in the CGHM (Figure 1 and Table 4).

Table 5: Proposed Phase 2 Site Investigation Specification

Action	Quantities	Justification/Details
Window Sampling Boreholes	Up to 4 boreholes. (up to 4m in depth – if achievable)	<p>Establish actual ground conditions and confirm strength of ground.</p> <p>Retrieve samples of possible made ground and natural soils for geotechnical testing and contamination analysis. Potentially recover ground water samples if encountered.</p> <p>Installation of ground gas monitoring wells (if appropriate).</p>
Hand excavated trial pits	Up to 3 (up to 1m in depth – if achievable)	Further inspect condition and composition of soils and recover additional samples for contamination analyses, including in locations which may be difficult for plant to access.
Rotary Open Hole Boreholes	Up to 3 boreholes (up to 30m in depth).	Inspect for evidence of shallow coal mining such as voiding / broken ground. Water flush should be used to ensure safe drilling.
Chemical Contamination Analysis of Soils and Leachate (and possibly ground water if pertinent)	Up to 6 No. samples from topsoil and/or made ground at shallow depth (<1m) and potentially also deeper natural strata or made ground (if encountered).	<p>Quantify risk posed to receptors identified in CGHM (see Figure 1) for revised risk assessment.</p> <p>Determinands should include a range of metals/metalloids, speciated PAH content, petroleum hydrocarbon content, BTEX, asbestos presence, and soil organic matter content (to aid in revised risk assessment).</p>
Gas monitoring	Up to 6 No. visits over 3 months. Preferably including occasions of <1000mb and after sharp drop (may only be required in made ground encountered at site).	<p>Quantify risk posed by potential hazardous gas from made/in-filled ground. Possible analysis of Total Organic Carbon (TOC) to support gas measure recommendations (or in the absence of gas monitoring data) using guidance published in CL:AIRE research bulletin RB17.</p> <p>If no evidence of shallow mining or significant (>1m deep) made ground deposits are encountered, then monitoring may not be necessary or may be cut short (i.e. if there is no feasible significant gas sources).</p> <p>However, a reduced monitoring period and installation of CS2 protection levels may be possible with Local Planning Authority Approval.</p>
Geotechnical Testing	Up to 50+ No. Up to 5 No.	<p>Moisture content determination to classify nature of soils.</p> <p>Atterberg Limit determinations to assess the shrinkage and swelling characteristics of the ground should clay soils be encountered.</p>
Provision of Factual and Interpretive Report	N/A	Presentation of findings and implications including: <ul style="list-style-type: none"> • Site plan • Borehole and trial pit logs • Results of geotechnical testing • Contamination analysis results • Ground gas measurements (if appropriate) • Revised CGHM and chemical contamination risk assessment including appropriate soil assessment criteria. • Advice regarding any necessary remediation/validation • Advice regarding foundation design etc.

END OF REPORT
