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PRELIMINARY GEOENVIRONMENTAL INVESTIGATION

of land at

CHAPEL LANE, PENISTONE

Prepared for
Persimmon Homes West Yorkshire

Report No. 3826-G-R001
Date: February 2013

EXECUTIVE SUMMARY

The site is located off Chapel Lane, approximately 0.5km south of Penistone town centre (NGR 424100 402700). The site occupies an area of 4.8 hectares. The site comprises undeveloped grass-covered fields.

IDG were commissioned by Persimmon Homes to provide a preliminary geoenvironmental appraisal of the site. It is understood that the site is to be redeveloped with housing; a proposed layout is not currently available.

IDG's investigation included a review of available environmental information, together with a walkover survey.

A summary of salient geoenvironmental issues is provided in the table below.

Issue	Remarks
Former Uses	Agricultural land.
Mining & Quarrying	Lower Penistone coal seam outcrops in the southern part of the site and underlies much of the site at shallow depth. Further investigation is required to assess the potential risk from unrecorded mineworkings. Two areas of sandstone quarrying were recorded prior to 1893 within 150m of the site. There is no evidence to indicate that the site has been affected by quarrying; however, the possibility of localised, unrecorded areas of quarrying cannot be ruled out.
Hazardous Gas	Should mineworkings be encountered during the additional investigation, gas monitoring will be required.
Anticipated Ground Conditions	Ground conditions are likely to comprise clays and weathered Coal Measures rocks.
Flooding & Drainage	Site is not at risk of flooding from rivers. Based on anticipated ground conditions, soakaways are unlikely to represent an effective means of dispersing storm water.
Anticipated Contamination	No sources identified.
Preparatory Works	Topsoil strip.
Anticipated Foundation Solutions	Stiff clays or weathered rock should provide sufficient bearing capacity to enable the adoption of strip footings for two storey housing. Reinforcement may be required.
Recommendations for Ground Investigation	Trial pits to assess shallow ground conditions. Probeholes to check for the presence of voids or broken ground associated with possible unrecorded shallow mine workings. Gas monitoring will be required should mine workings be encountered.

At this stage, anticipated significant abnormals relating to geoenvironmental issues at the site are:

- Possible unrecorded mineworkings.

This brief summary should not be assumed to represent a complete account of all the potential geo-environmental issues that may exist at the site. As such it is strongly recommended that the report be read in its entirety.

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Appendix D - Search Responses

From	To	Date	Content
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Coal Authority	IDG	31 01 2012	Coal Mining Search response

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FOREWORD (Preliminary Geoenvironmental Investigation Report)

This report has been prepared for the sole use and reliance of the Client named on page 1 and cannot be relied upon by any other parties without the express written authorisation of ID Geoenvironmental Limited (IDG). Any unauthorized third party relies on this report at their own risk and the authors owe them no duty of care.

The report presents observations and factual data obtained during our site investigation, and provides an assessment of geoenvironmental issues with respect to information provided by the Client regarding the proposed development. Further advice should be sought from IDG prior to significant revision of the development proposals.

The report should be read in its entirety, including all associated drawings and appendices. IDG cannot be held responsible for any misinterpretations arising from the use of extracts that are taken out of context. However, it should be noted that in order to keep the number of sheets of paper in the hard copy to a minimum, some information is only included within the "electronic", PDF Report on the accompanying CD.

The findings and opinions conveyed in any Desk Study section of the report (including review of any third party reports) are based on information obtained from the sources listed, which IDG understands are reliable. All reasonable skill, care and diligence has been applied in examining the information obtained. However, IDG accept no responsibility for inaccuracies in the data supplied or for opinions based on any such inaccurate data.

Where the report refers to the potential presence of invasive weeds such as Japanese Knotweed, or the presence of asbestos containing materials, it should be noted that the observations are for information only and should be verified by a suitably qualified expert.

IDG reserve the right to amend their conclusions and recommendations in the light of further information that may become available.

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1 INTRODUCTION

1.1 The Commission and Brief

1.1.1 ID Geoenvironmental Limited (IDG), were commissioned by Persimmon Homes West Yorkshire to carry out a preliminary geoenvironmental investigation of land at Chapel Lane, Penistone.

1.1.2 The agreed scope of works included:

- A site walkover and inspection.
- An assessment of the environmental setting and land use history of the site and adjacent area from published geological and topographic maps and environmental database sources.
- Identification of potential receptors and derivation of site conceptual model.
- Assessment of anticipated foundation and engineering issues associated with redevelopment for a residential end-use.
- Provision of recommendations for an appropriate ground investigation.

1.1.3 Correspondence regarding IDG's appointment, including the brief for this investigation, is included in Appendix F.

1.1.4 It is understood that consideration is being given to a residential redevelopment of the site as described in Section 2.4 below.

1.1.5 The principal objectives of this preliminary phase of investigation are to identify geoenvironmental issues affecting the site. Recommendations for intrusive investigation of the site are given in Section 6.

1.2 Report Format and Limitations

1.2.1 Standard definitions, procedures and guidance are contained within Appendix A, which includes background, generic information on assessment of the environmental setting of the site.

1.2.2 This Preliminary Investigation comprised an inspection of historical and geological maps and information provided by Landmark Information Group, The Environment Agency, British Geological Survey and the Coal Authority. In addition a site inspection has been carried out by IDG.

1.2.3 General notes and limitations relevant to all IDG preliminary investigations are described in the Foreword and should be read in conjunction with this report. The text of the report draws specific attention to any modification to these procedures and to any other special techniques employed.

2 SITE DESCRIPTION AND THE PROPOSED DEVELOPMENT

2.1 General

2.1.1 The site location is shown on Drawing Number 3826-G-D001 presented in Appendix B to this report. Site details are summarised in the Table below.

Detail	Remarks
Location	0.5km south of Penistone town centre
NGR	424100 402700
Area	4.8 ha
Known Services	None
Other	A Public Footpath crosses the site

2.2 Site Features

2.2.1 An IDG Engineer completed a walkover survey of the site on 4th February 2013. A photographic record of salient site features at the time of the walkover survey is presented in Appendix C to this report.

2.2.2 Existing salient features are summarised in the Table below.

Feature	Remarks
Current Access	Off Chapel Lane
Topography	Gentle slope from north west corner to south east corner
Approximate areas	4.8 ha grass
Nature of boundaries	North – dry stone wall West – hawthorn hedge and wall of existing barn East – varied fencing on boundaries of adjacent gardens and open space South – dry stone retaining wall
Surrounding land uses	North – Schole Hill Lane, with fields beyond East – existing houses South – Chapel Lane, with fields beyond West – farm track, with fields beyond
Nearest watercourse	Coal Pit Dike – 120m to south

2.2.3 There is a small stone barn with asbestos cement roof on the south western boundary of the site. This is currently used to store agricultural machinery and implements. Various discarded items were noted in the area near the building, such as dressed stone sections, fence posts, a bath and agricultural vehicle wheels and an axle. An agricultural trailer was parked close to the building at the time of our inspection.

2.3 Japanese Knotweed

2.3.1 During the site walkover, we did not notice the presence of any Japanese Knotweed. However, it should be noted that we are not qualified ecologists and as such cannot be guarantee the absence of Knotweed or other invasive vegetation.

2.4 The Proposed Development

2.4.1 It is understood that consideration is being given to redevelopment of the site with two storey domestic dwellings, associated gardens, POS and adoptable roads and sewers. No site layout has been provided at this stage.

3 SITE HISTORY

3.1.1 In order to investigate the development history and previous land uses at the site and immediate surrounding land, site centred extracts from Ordnance Survey (OS) plans dating back to 1855 were examined. These plans are presented in Appendix D to this report.

3.1.2 The Table below provides a summary of the salient points relating to the history of the site with respect to the proposed end use. It is not the intention of this report to describe in detail all the changes that have occurred on or adjacent to the site. Significant former uses/operations are highlighted in bold text for ease of reference.

Summary of Site History

Date(s)	Site	Surrounding Land
1855	Undeveloped fields; small building located in the south of the site, adjacent to the south west boundary	Sandstone quarries 150m to west and 110m to north
1893	No significant change	Sandstone quarries no longer shown
1960		Housing to north east; Issues shown 200m to west
1978		Housing to east

4 ENVIRONMENTAL SETTING

4.1 General

4.1.1 Notes describing how the site's environmental setting has been assessed are included in Appendix A to this report. The responses received from the Coal Authority and Landmark are presented in Appendix E.

4.1.2 Records for six boreholes (3m deep) for the construction of school buildings north of Clarel Street approximately 140m north east of the site were examined. These recorded stiff clays to a depth of approximately 1.8m below ground level (bgl), underlain by clay representing weathered rock to 2.4m. The underlying rock comprised weathered siltstone.

4.2 Landfills

4.2.1 There are no known or suspected areas of landfill within 350m of the proposed development site.

4.2.2 Historical plans indicate quarries to the north and west of the site. These were backfilled prior to 1894 and therefore, are not considered to represent a significant source of hazardous gas.

Summary of Environmental Setting

Issue	Data reviewed	
Geology	1:50,000 BGS map (Sheet 86, Glossop)	Drift – no drift deposits indicated on geological plan. Solid – Lower Coal Measures rocks comprising mudstones, sandstones and coal seams. Shallowest coal seam – Lower Penistone coal shown to outcrop within the southern part of the site and underlie much of the site at shallow depth. Strata Dip – probably close to horizontal beds. Faults – evidence of minor faults to south of site.
Mining	Coal Authority (CA) Report BGS Sheet 86	Past and present workings – CA Report notes that 'the property is not within the zone of likely physical influence on the surface from past underground workings. However the property is in an area where the Coal Authority believe there is coal at or close to the surface. This coal may have been worked at some time in the past'. Mine entries – None recorded. Opencast – No records of opencast workings in the local area.
Quarrying	BGS Recorded Minerals Sites Landmark Report, Historical OS Plans	Rud Brook Lane, 111m north of site: opencast sandstone workings, now ceased. Schole Hill, 152m west of site: opencast workings in Penistone Flags, now ceased.
Radon	Landmark Report	No measures required.
Hydrogeology	Environment Agency Landmark Report	Source Protection Zone – none. Secondary Aquifer A (Solid). Soil leaching potential – low. Groundwater abstractions – none in vicinity of site. Pollution incidents – none relevant to site.
Hydrology	Environment Agency Landmark Report	Nearest watercourse – Coal Pit Dike 120m to south. Pollution incidents – none relevant to site. Abstractions – none in vicinity of site. Discharge consents – none in vicinity of site.
Flood Risk	Environment Agency	Site is not at risk of flooding from rivers.

5 PRELIMINARY CONCEPTUAL SITE MODEL

5.1.1 The historical plans show that the site has been occupied by agricultural land until the present day, a land use which is not likely to have caused significant ground contamination.

5.1.2 Given the presence of a Secondary A aquifer below the site and the nearby watercourse, the environmental setting of the site is considered to be of moderate sensitivity.

5.1.3 Potential pollutant linkages are shown on a preliminary conceptual site model, presented as Drawing No 3826-G-D002 in Appendix B to this report. It is considered likely that the conceptual model will be subject to modification in light of data arising from the proposed intrusive ground investigation.

5.2 Land Contamination - Part IIA

5.2.1 Local Authorities have responsibilities with respect to contaminated land in the context both of Part IIA of the Environmental Protection Act 1990, and the Town and Country Planning Act 1990.

5.2.2 The contaminated land regime in Part IIA was introduced specifically to address the historical legacy of land contamination. It applies where there is unacceptable risk, assessed on the basis of the current use and the relevant circumstances of the land. It is not directed to assessing risks in relation to a future use of the land that would require a specific grant of planning permission. This is primarily a task for the planning system, which aims to control development and land use in the future.

National Planning Policy Framework 2012

5.2.3 This site is being considered for redevelopment and therefore potential contamination issues have to be considered to ensure compliance with the Town & Country Planning Act 1990 and the National Planning Policy Framework 2012 (NPPF).

5.2.4 In accordance with Paragraph 121 of the NPPF 2012, the local Planning Authority should also ensure that:

- "The site is suitable for its new use taking account of ground conditions and land instability, including from natural hazards or former activities such as mining, pollution arising from previous uses and any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation;

- After remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and adequate site investigation information, prepared by a competent person, is presented."

5.2.5 The developer is therefore responsible for demonstrating that the land is suitable for the proposed development, or can be made so by remedial action. The developer should commission an adequate investigation and risk assessment to determine:

- whether the land in question is already affected by contamination, via a conceptual site model;
- whether the development proposed will create new pollutant linkages; and
- what action is needed to break plausible pollutant linkages, avoid new ones, deal with any unacceptable risks and enable safe development and future occupancy of the site and neighbouring land.

This Site

5.2.6 Current and former uses of the site are considered unlikely to have given rise to any significant ground and groundwater contamination. The site should be suitable for the proposed use, subject to the comments made in Section 7.

6 GROUND INVESTIGATION DESIGN

6.1 Investigation Strategy

6.1.1 The preliminary conceptual site model was used as a basis for design of an appropriate ground investigation, the scope of which is summarised below. Careful consideration was given to the preliminary conceptual site model and historical features.

Initial Ground Investigation Strategy

Exploratory holes	Purpose
Trial pits	To determine the general nature of soils underlying the site, including the: • nature, distribution and thickness of any made ground • suitability of the ground for founding structures and highways • potential for abandoned shallow mine / quarry workings
Probeholes	To check for the presence of voids or broken ground associated with possible unrecorded shallow mine workings. To install monitoring wells across the site in order to determine groundwater levels and monitor for hazardous gas, should mine workings be encountered.

7 CONCLUSIONS AND RECOMMENDATIONS

7.1 General

7.1.1 It is understood that Persimmon Homes are considering acquisition of the site with a view to redevelopment with housing.

7.1.2 The main issues considered in this report, and in particular in Sections 3 and 4, are based on a review of historical data and available information. The report provides an assessment of geoenvironmental issues and implications for the current and proposed use of the site, together with issues associated with residential redevelopment of the site.

7.2 Contamination

7.2.1 The historical plans show that the site has been occupied by agricultural land until the present day, a land use which is not likely to have caused significant ground contamination. It is standard practice to carry out chemical testing of topsoil to allow an assessment of its suitability for re-use.

7.3 Mining and Quarrying

7.3.1 The Lower Penistone coal seam is shown to outcrop within the southern part of the site and underlie much of the site at shallow depth. The Coal Authority state that they believe there is coal at or close to the surface which may have been worked at some time in the past. Therefore, further investigation is required to assess the potential risk from unrecorded mineworkings.

7.3.2 Two areas of quarrying were recorded prior to 1893; these lay 110m to the north of site and 150m west of the site. The quarries were for sandstone, including Penistone Flags. There is no evidence on the historical plans to indicate that the site has been affected by quarrying; however, given the proximity of the quarries, the possibility of localised, unrecorded areas of quarrying cannot be ruled out.

7.4 Hazardous Gas

7.4.1 As noted above, further investigation is required to assess the potential risk from unrecorded mineworkings. Should mineworkings be encountered during the additional investigation, gas monitoring will be required.

7.5 Foundations

7.5.1 At present, no geotechnical ground investigation data is available and consequently it is only possible to estimate the ground conditions. Before firm foundation recommendations can be given, it will be necessary to undertake an appropriate ground investigation. However, tentative recommendations are provided below.

7.5.2 The published geological data suggests that ground conditions are likely to comprise clay and weathered Coal Measures rock. No significant made ground is anticipated.

7.5.3 Weathered rock or stiff clays should provide sufficient bearing capacity to enable the adoption of reinforced strip footings for two storey housing. Reinforcement may be necessary to allow for variation in the rock weathering profile and in the density of granular deposits and thus to limit differential settlement between these and the surrounding deposits.

7.5.4 Alternative foundation solutions will be required in any areas of deep made ground (greater than about 1.5m).

7.5.5 Where rock is encountered at shallow depth foundations on rock should be placed entirely on rock and not partially on rock and partially on residual soil. This may, depending on surface gradient, necessitate significant over deepening of foundations.

7.6 Highway, Drainage and External Works Issues

7.6.1 Ground conditions are likely to comprise clay and weathered Coal Measures rock. Soakaways are therefore unlikely to represent an effective means of dispersing storm water.

7.7 Further Investigation

7.7.1 Whilst the site is considered suitable for its current and proposed use, the proposed change in use will require intrusive investigation. An appropriate ground investigation strategy is presented in Section 6.