

Report No. 1750/1
October 2013

**PRELIMINARY
GEOENVIRONMENTAL INVESTIGATION
of land at
GOLDTHORPE COLLIERY**

**Prepared for
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Goldthorpe Colliery - Summary of Geoenvironmental Issues

The site is located approximately 11km east of Barnsley town centre (NGR SE 470 043), and occupies an area of 4.3 hectares, comprising rough grass land.

Lithos were commissioned by Sir Robert Ogden CBE LLD to provide a preliminary geoenvironmental appraisal of the site. It is understood that the site is to be redeveloped for residential use. A proposed site layout is not currently available.

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

Issue	Remarks
Former uses	Farmland, then spoil heaps and a railway yard associated with the former Goldthorpe Colliery. The Colliery itself extended over a much wider area to the east, and closed in 1994. Much of the former colliery land to the east is currently being redeveloped with housing by Ben Bailey Homes.
Hazardous Gas	The closest known landfill site is located about 400m to the north. There is the potential for deep made ground beneath the site. The rate of gas generation within most made ground tends to be low, resulting in small concentrations and flows. Nonetheless, a programme of gas monitoring should be completed.
Mining	The shallowest coal seam is the Highgate coal (c. 0.5m thick), about 40m below the site. The next shallowest seam is the Shafton coal (c. 1.0m to 1.9m), about 20m below the Highgate coal. It is considered unlikely that the site will be affected by surface instability due to collapse of unrecorded shallow mineworkings. There are mineworkings in deeper coal seams, but any ground movement associated with these should have stopped by now.
Flooding & Drainage	The site lies within Flood Zone 1. Soakaways are unlikely to provide a suitable means of surface water disposal.
Anticipated Ground Conditions	Moderately deep made ground (probably between 1m and 3m thick) is anticipated. No Drift is expected, and therefore underlying natural ground is likely to comprise residual soil (firm clay) over weathered bedrock.
Anticipated Contamination	Former use of the site (part of a colliery, with railway sidings) will almost certainly have resulted in some ground contamination.
Preparatory Works	General site clearance. Potential re-working/re-engineering of made ground.
Anticipated Foundation Solutions	Strip footings or trench fill might be possible if made ground is less than about 2m thick.
Recommendations for Ground Investigation	Twenty-five trial pits. Twelve boreholes to enable the installation of monitoring wells. Gas risk assessment involving a programme of 6 monitoring visits over a 3 month period.

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Appendix B – Drawings

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From	Date	Content
Landmark	30/09/2013	Envirocheck Report
Coal Authority	30/09/2013	Mining Report

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 Lithos Consulting Limited (Lithos). 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 Lithos prior to significant revision of the development proposals.

The report should be read in its entirety, including all associated drawings and appendices. Lithos 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 (e.g. laboratory test certificates) 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 Lithos understands are reliable. All reasonable skill, care and diligence has been applied in examining the information obtained. However, Lithos 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.

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

**PRELIMINARY
GEOENVIRONMENTAL INVESTIGATION
of land at
GOLDTHORPE COLLIERY**

1 INTRODUCTION

1.1 The Commission and Brief

- 1.1.1 Lithos Consulting Limited were commissioned by Sir Robert Ogden CBE LLD to carry out a preliminary investigation of land which formerly comprised part of Goldthorpe Colliery.
- 1.1.2 Correspondence regarding Lithos's appointment, including the brief for this investigation, is included in Appendix C. The agreed scope of works included:
- an assessment of the land use history
 - determination of the site's environmental setting
 - assessment of anticipated ground conditions, including potential contaminants
 - 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 This Preliminary Investigation comprised an inspection of historical and geological maps and information provided by the British Geological Survey, the Landmark Information Group and the Coal Authority. In addition a site walkover has been carried out by Lithos.

1.2 The Proposed Development

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

1.3 Report Format and Limitations

- 1.3.1 Standard definitions, procedures and guidance are contained within Appendix A, which includes background, generic information on assessment of the site's environmental setting.
- 1.3.2 General notes and limitations relevant to all Lithos 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.
- 1.3.3 Primary aims of this phase of investigation were to identify salient geoenvironmental issues affecting the site to enable design and costing of an appropriate intrusive investigation to satisfy the Local Planning Authority, and enable "ballpark" assessment of abnormal redevelopment costs associated with ground issues.

2 SITE DESCRIPTION

2.1 General

- 2.1.1 The site's location is shown on Drawing No. 1750/1 presented in Appendix B to this report. Site details are summarised in the Table below.

Detail	Remarks
Location	10 km east of Barnsley City Centre
NGR	SE 470 043
Area	4.3 ha (11 acres)

2.2 Site Features

- 2.2.1 A Lithos Engineer completed a walkover survey of the site on the 1st October 2013. Existing salient features at the time of the walkover survey, are presented on Drawing No. 1750/2, and summarised in the Table below.

Feature	Remarks
Current Access	Off Kingsmark Way, east of the site (currently blocked by boulders). Off Beever Road, west of the site (currently bunded).
Topography	Relatively uniform with a gentle slope towards the south of the site. A bund is present approximately 25m from the southern edge of the site. A railway cutting runs along the site's southern boundary. Land falls at about 45° from the boundary, and the cutting is about 5m lower than the site.
Approximate areas	15m ² tarmac hardstand. 60m ² concrete slabs and hardstand. 50,000m ² grass, shrubbery and small trees.
Nature of boundaries	North - Improvised fences and hedges. East - Tall trees, and open boundary. South - Steep slope to railway cutting. Heavily overgrown shrubbery and small trees. West - 2.5m metal security fences.
Surrounding land uses	North - Allotment gardens, with terraced housing beyond. East - Kingsmark Way, Public sports grounds, and housing development. South - Disused railway cutting, with allotments and small holdings beyond. West - Beever Road, with Telephone exchange and building aggregate & supply yard.

- 2.2.2 A selection of site photographs are included on Drawing No. 1750/3.
- 2.2.3 Trodden footpaths throughout suggest members of the public frequently access the site.
- 2.2.4 Fly-tipping (including building materials) can be seen across the site and there is evidence of bonfires.

3 SITE HISTORY

- 3.1 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 1892 have been examined. These plans are presented in Appendix D to this report.
- 3.2 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.

Date	Site	Surrounding Land
1892	Open farmland. Wooded areas central and on the south east boundary of site.	Roads approximately 200m north and 50m south of site.
1906	No significant changes.	Road to north now referred to as Doncaster road. Railway under construction along southern boundary. Terrace housing developed northwest of site. Recreational allotments and sports fields north and north east of site.
1930	Allotments in West of site. Colliery 'tip' in centre of site.	Further development of housing north, south, and northwest boundary of site. Colliery shown immediately east of site, includes buildings, engine house, locomotive loading structure, and shaft. Road developed along eastern boundary of site.
1962	Railway sidings shown in the south. Colliery spoil heap extends to cover approximately 30% of site.	Housing development south of site.
1981	Expansion of railway sidings in south of site. Spoil heap now labelled as ' Tip (disused) '.	Warehouse developed adjacent to western boundary of site.
1993	No significant changes.	Telephone exchange developed 20m west of site.
1994	Railway sidings in south of site no longer shown.	Goldthorpe Colliery closed.
1995	No significant changes.	Colliery no longer marked.

- 3.3 Review of Reports issued by AIG\Encia (see Section 5) suggests that Goldthorpe Colliery Shafts Nos 1 & 2 were sunk in 1910.
- 3.4 The colliery closed in 1994.

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.

Issue	Data reviewed	
Geology	1:50,000 BGS map (Sheet 87) 1:10,000 BGS map (Sheet SE40SE) Geology of the county around Barnsley. BGS Memoir BGS Logs (SE40SE100) (SE40SE46/A)	Drift – None. Solid – Ackworth Rock (a major Coal Measures sandstone) underlies the northern half of the site. The southern half is underlain by undifferentiated Middle Coal Measures bedrock (interbedded sandstones and mudstones). Shallowest coal seam – the Highgate coal (c. 0.5m thick), about 40m below the base of the Ackworth Rock. The next shallowest seam is the Shafton coal (c. 1.0m to 1.9m), about 20m below the Highgate coal. Strata Dip - 5° NE. Faults – None within 250m.
Mining	Coal Authority BGS maps	The site is located within a Standing Advice Area (within the defined coalfield, but no known defined risks have been recorded by the Coal Authority; there may still be unrecorded issues). The site is located in the likely zone of influence of workings from 5 different seam of coal ranging from 40m to 680m below ground level. Any ground movement should have stopped by now. No mine entries are recorded within 20m of the site. See also Section 4.2.
Quarrying	Landmark Report Historical OS Plans	None at or within 50m of the site.
Radon	BRE Report BR211	Less than 1% of dwellings above the action level – no measures required.
Hydrogeology	Landmark Report	Source Protection Zone? No. Secondary A Aquifer (Solid). Abstractions? None within 250m. Pollution incidents? None.
Hydrology	Landmark Report	Nearest surface water feature - Open Beck at 180m South, flowing southwards. Abstractions – None within 250m. Pollution incidents? None. Discharge consents? None.
Flood Risk	Environment Agency	The site lies in Flood Zone 1, where the risk of flooding from rivers or the sea is classified as low. The site area is greater than 1 hectare Flood Zone 1, therefore a Flood Risk Assessment, focused on the management of surface water run-off, will be required. Development that increases the amount of impermeable surfaces can result in an increase in surface water run-off, which in turn can result in increased flood risk both on site and elsewhere within the catchment.

4.2 Geology & Mining

- 4.2.1 There are four known mine entries associated with the former Goldthorpe Colliery; all located to the east, beyond the current area of interest, and summarised below:

Entry	Location	Details	Treatment
Goldthorpe Shaft 1 (CA ref 446404-001)	80m to east. E. 446839 N. 404140	63.1m deep 4.27m diameter Worked Shafton	Filled April 1973. Vented concrete cap 1977.
Goldthorpe Shaft 2 (CA ref 446404-002)	130m to east. E. 446885 N. 404127	66.7m deep 3.66m diameter Worked Shafton	Filled April 1973. Vented concrete cap 1977.
Bella Adit (CA ref 447404-001)	570m to east E. 447322 N. 404160	Gradient of 1:9m to north-west. 3.7m x 4.9m diameter tunnel	Backfilled to a stopping at 420m in 1995. Capped and vented.
Un-named Shaft 3 (CA ref 447404-002)	South of main colliery area (exact location unknown)	unknown	unknown

- 4.2.2 Records for Goldthorpe Colliery Shaft Nos 1 & 2 indicate an alternating sequence of clay shale, bind and clunch (chalky limestone), and hard sandstone to approximately 30m depth where the 0.45m thick Highgate Coal seam was encountered. Below this, the records indicate a further alternating sequence down to approximately 60m depth where the Shafton Coal seam was encountered with a thickness of 1.57m.

- 4.2.3 AIG (see Section 5) obtained information from SYMAS report regarding the depth and timing of workings in the five coal seams:

Seam	Depth (m)	Thickness (m)	Timing
Shafton	60	1.55	Over 50 years
Newhill	280	1.52	1970's to south
Meltonfield	305	1.15	1960's to south-west
Barnsley	450	1.7	1904 to 1933
Parkgate	700	1.45	Over 50 years

- 4.2.4 Given the anticipated depth to the shallowest coal seam (the Highgate at about 30m), it is considered unlikely that the site will be affected by ground movement associated with any unrecorded shallow mineworkings.

4.3 Landfills

- 4.3.1 Known or suspected areas of landfill in the vicinity of the proposed development site are summarised below:

Location	NGR (proximity to site)	Remarks	Source of data
Lidget Lane, Thurnscoe	SE 465 047 (400m north)	Type of waste and closure dates are undisclosed. The area is now occupied by 'Phoenix Park' used for recreation. Approximately 50 hectares in size.	Landmark OS plans Local Authority

- 4.3.2 Historical OS plans first show excavations within the vicinity of the landfill site in 1956. Excavations are still marked on the 1991 OS plan but by 2013, the site has been redeveloped as Phoenix Park (recreation area).

4.4 Other Issues

- 4.4.1 A Local Authority Air Pollution Control (now revoked) was issued by Barnsley MBC to British Coal 240m East of the site for coal, coke and coal product processes.

4.5 Land Contamination - Part IIA & Planning

- 4.5.1 Local Authorities have responsibilities with respect to land contamination in the context both of Part IIA of the Environmental Protection Act 1990, and Planning.
- 4.5.2 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.

Planning

- 4.5.3 As of 27th March 2012, Planning Policy Statement (PPS23) was replaced by the National Planning Policy Framework. The NPPF includes the following with respect to contamination and site investigation:
- 4.5.4 Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner.
- 4.5.5 Planning policies and decisions should 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.
- 4.5.6 Annex 2 of the NPPF states that all investigations of land potentially affected by contamination should be carried out in accordance with established procedures (such as BS10175 - 2011, Code of Practice for the Investigation of Potentially Contaminated Sites).

This Site

- 4.5.7 Given the presence of a Secondary A Aquifer (Coal Measures bedrock) below the site and the lack of any significant drift deposits, the environmental setting of the site is considered to be of moderate sensitivity.
- 4.5.8 Whilst current use of the site is considered unlikely to have given rise to any significant ground and groundwater contamination, former use (part of a colliery, with railway sidings) will almost certainly have resulted in some contamination.
- 4.5.9 However, it is considered that the site should be suitable for the proposed use, subject to the comments made in Section 6.

5 PREVIOUS INVESTIGATION FINDINGS

5.1 General

5.1.1 Lithos have extracts of the following reports:

- Geoenvironmental Report for Goldthorpe Colliery. Report 2500/1, issued by AIG Consultants to Ben Bailey Homes in June 2002.
- Addendum Geoenvironmental Report for Goldthorpe Colliery. Report 2500/2, issued by AIG Consultants to Ben Bailey Homes in June 2002.
- Summary Geoenvironmental Appraisal for Goldthorpe Colliery. Report 2500/3, issued by Encia Consulting to the Ogden Group of Companies in June 2003.
- Remediation Strategy for Goldthorpe Colliery. Report 9060/1, issued by Encia Consulting to Ben Bailey Homes in March 2005.
- Verification Report for the Remediation & Site Preparatory Works at Goldthorpe Colliery. Report 9060/2, issued by Encia Consulting to Ben Bailey Homes in July 2006.

5.1.2 The above reports considered the main colliery site (adjacent to and east of the area of current interest), and also the southern third of the current area of interest; a total area of about 15 hectares.

5.1.3 Land to the east is currently being redeveloped with housing by Ben Bailey Homes.

5.2 Summary of Findings

5.2.1 A detailed review of findings of the above AIG\Encia Reports is beyond the scope of this Desk Study. However, key findings were:

- AIG's ground investigation in April & May 2002 comprised 111 trial pits, 5 cable percussion boreholes, and 10 rotary probe holes.
- Report 2500/1 considered the former main colliery site (c. 10 ha) which had outline planning consent for residential development.
- Trial pits typically encountered 1m to 3m of made ground over stiff clay, over weathered bedrock.
- Probeholes PH101 to PH107 were drilled to determine the presence of shallow mineworkings and encountered a sequence of interbedded mudstones and sandstones with sporadic thin coal seams. AIG concluded that the site was not underlain at shallow depth by any workable seams of coal.
- Report 2500/2 considered the southern third (c. 1.5 ha) of the current area of interest, and a plateau of colliery spoil to the east of the former main colliery site (about 400m east of the area current interest).
- AIG Exploratory holes located in the southern third of the current area of interest, were: TPs 101 to 103, 161, 162, 173 to 177; BHs 101 & 102 (drilled through the 8m high spoil tip present in 2002); and PHs 107 & 108.
- Report 2500/3 considered the restoration of the site to a 'soft-end' use (Moyhahan).
- Encia Remediation carried out remediation and preparatory works, on behalf of Ben Bailey Homes, between January and July 2006.

5.3 Lithos Comments

5.3.1 Prior to finalising design of a ground investigation for the current area of interest, it would be worthwhile reviewing in more detail the findings of AIG\Encia Reports; especially ground conditions recorded in those exploratory holes located in the south.

6 GROUND INVESTIGATION DESIGN

6.1 Preliminary Conceptual Site Model

- 6.1.1 Historical plans show the site to have been occupied by a spoil heap (labelled as 'tip' on historical OS plans), and a railway sidings in the south.
- 6.1.2 Made ground which is likely to be present on site as a result of tipping represents a potential source of organic and/or inorganic contamination. The most significant receptors are future residents, vegetation and the underlying Secondary A Aquifer (Middle Coal Measures).
- 6.1.3 Potential pollutant linkages are shown on a preliminary conceptual site model, presented as Drawing No 1750/4 in Appendix B to this report. Clearly the conceptual model will be subject to modification in light of data arising from the proposed intrusive ground investigation.

6.2 Investigation Strategy

- 6.2.1 The preliminary conceptual site model has used as a basis for design of an appropriate ground investigation, the scope of which is summarised below.

Exploratory Holes	Purpose
Thirty Trial Pits	To determine the general nature of soils underlying the site, including the: • nature, distribution and thickness of made ground • nature, degree and extent of contamination • proportion of undesirable elements eg biodegradable matter etc • suitability of the ground for founding structures and highways
Twelve Boreholes	To install monitoring wells across the site in order to: • monitor for hazardous gas. • determine groundwater levels and assess flow direction.

- 6.2.2 Proposed exploratory hole locations will be selected to provide a representative view of the strata beneath the site and to target potential areas of interest identified in Section 4 above. A nominal 40m grid spacing is proposed. Additional exploratory locations should be scheduled as necessary in light of the ground conditions actually encountered.
- 6.2.3 The number of representative samples taken should be reflective of the geological complexity actually encountered, but in general about 3 samples should be taken from most exploratory holes.
- 6.2.4 The investigation will be undertaken in general accordance with:
 - BS5930:1999 "Code of practice for site investigation"
 - BS10175:2011 "Code of practice for the identification of potentially contaminated sites".
 - "Technical Aspects of Site Investigation" – EA R&D Technical Report P5-065/TR (2000)
 - "Development of appropriate soil sampling strategies for land contamination" – EA R&D Technical Report P5-066/TR (2001)
- 6.2.5 Representative soil samples of natural and any man-made ground, should be taken during the works. The number of soil samples taken should be reflective of the geological complexity actually encountered, but in general about 3 samples should be taken from most exploratory holes.
- 6.2.6 The in-situ shear strengths of any cohesive soils encountered should be determined by use of a hand-held shear vane.

- 6.2.7 Routine geotechnical soils analysis (moisture content, Atterberg limits, pH, water soluble sulphate) should be scheduled on about 10 samples, with some compaction testing on samples of made ground to assess suitability for use in earthworks ground improvement.
- 6.2.8 Potential contaminants associated with the potential tipped material and former railway sidings on site include:
- Petroleum Hydrocarbons (TPHs)
 - Polycyclic Aromatic Hydrocarbons (PAHs)
 - Asbestos
 - Ethylene Glycol – former railway sidings (south) only.
- 6.2.9 Appropriate chemical analyses based on the findings of this Report should be allowed for. This is likely to comprise 15 samples for a suite including heavy metals, asbestos identification, ethylene glycol, TPH and PAH. In the event that ground contamination is more significant or different to that anticipated, it might be necessary to carry out additional chemical testing.
- 6.2.10 Twelve boreholes should be advanced to the base of made ground to enable the installation of monitoring wells. Ideally, about 4 of these wells would have a response zone sealed in the underlying natural strata, especially if this is found to be granular.
- 6.2.11 The generation potential of possible gas sources (landfill, made ground and deep mineworkings) is considered likely to be Very Low. Therefore, in accordance with CIRIA Report C665, it would be prudent to initially allow for 6 visits over a 3 month period. A hazardous gas risk assessment will be issued on completion of monitoring.
- 6.2.12 On completion of the fieldwork and laboratory testing a comprehensive bound, factual and interpretative report should be issued. This should contain detailed engineering records, laboratory test results, copies of all relevant correspondence and drawings of the site. The report should also include qualitative risk assessment with respect to both controlled waters and human health.

7 CONCLUSIONS & RECOMMENDATIONS

7.1 General

- 7.1.1 It is understood that Sir Robert Ogden CBE LLD 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. This report provides an assessment of geoenvironmental issues and implications associated with residential redevelopment of the site.

7.2 Mining and Quarrying

- 7.2.1 This site is located within a Standing Advice Area (within the defined coalfield, but no known defined risks have been recorded by the Coal Authority; there may still be unrecorded issues).
- 7.2.2 However, given the anticipated depth to the shallowest coal seam (the Highgate at about 30m), it is considered unlikely that the site will be affected by ground movement associated with any unrecorded shallow mineworkings.
- 7.2.3 There are mineworkings in deeper coal seams, but any ground movement associated with these should have stopped by now.
- 7.2.4 The only known mine entries in the vicinity all lie in excess of 50m beyond the site's eastern boundary.

7.3 Hazardous Gas

- 7.3.1 Information from historical OS plans, and the Local Authority indicates that a former landfill, approximately 50 hectares in size, lies 400m north of the site. Landfilling at the site stopped at some point within the last 25 years.
- 7.3.2 Given the 400m distance, it is considered unlikely that the site will be affected by landfill gas. However, moderately deep made ground is anticipated, and the site is underlain by mineworkings at moderate depth.
- 7.3.3 The rate of gas generation within most made ground tends to be low, resulting in small concentrations and flows. Consequently, the risk from these gas sources is considered likely to be Very Low (CIRIA 665 Classification). It is therefore recommended that wells be installed in at least 12 boreholes across the site to enable a programme of gas monitoring (at least 6 visits over a 3 month period).
- 7.3.4 Information from Landmark confirms that the site is in an area where less than 1% of homes are estimated to be above the action level, and that radon protection measures are therefore not required.

7.4 Foundations

- 7.4.1 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.
- 7.4.2 Moderately deep made ground (probably between 1m and 3m thick) is anticipated.
- 7.4.3 No Drift is expected, and therefore underlying natural ground is likely to comprise residual soil (firm clay) over weathered bedrock.

- 7.4.4 Natural soils should provide sufficient bearing capacity to enable the adoption of strip footings for two storey housing, if\where made ground is less than about 2m thick.
- 7.4.5 Made ground is not generally considered a suitable founding material and foundations should be taken through it, into underlying natural in-situ strata of adequate bearing capacity. Consequently, alternative foundation solutions will be required in any areas of deep made ground (greater than about 2m).

7.5 Highway, Drainage and External Works Issues

- 7.5.1 Given the relatively level nature of the site, there should be no requirement for retaining walls, underbuild, tanking etc.
- 7.5.2 It is recommended that the developer contact Yorkshire Water Services with respect to capacity in existing foul and surface water sewers in the vicinity of the development area.
- 7.5.3 Given anticipated ground conditions, soakaways are considered unlikely to provide a viable solution for the disposal of surface water.

7.6 Contamination

- 7.6.1 The presence of made ground on site, associated with tipping from the adjacent colliery and the former railway sidings, are likely to have given rise to some contamination.

7.7 Further Investigation

- 7.7.1 Whilst the site is considered suitable for its current, the proposed change in use will require intrusive investigation.
- 7.7.2 This would include:
- Machine-excavated trial pits to determine near surface ground conditions including depth to bedrock, the presence of obstructions, groundwater and stability.
 - Geotechnical soils analysis to enable foundation recommendations.
 - Chemical testing on soil and if necessary groundwater, samples to assess the significance of contamination, if any, as a result of former industrial land use.
 - Boreholes to enable the installation of monitoring wells.
 - Gas monitoring and risk assessment.
- 7.7.3 An appropriate ground investigation strategy is presented in Section 6.2.
- 7.7.4 Prior to finalising design of a ground investigation for the current area of interest, it would be worthwhile reviewing in more detail the findings of AIG\Encia Reports; especially ground conditions recorded in those exploratory holes located in the south.

APPENDIX A
GENERAL NOTES

01 - Environmental Setting

General

Third party information obtained from the British Geological Survey (BGS), the Coal Authority, the Local Authority etc is presented in the "Search Responses" Appendix of this Geoenvironmental Report.

Geology, Mining & Quarrying

In order to establish the geological setting of a site, Lithos refer to BGS maps for the area, and the relevant geological memoir. Further information is sourced from the Local Authority and by reference to current and historical OS plans. A coal mining report is obtained from the Coal Authority (CA).

In July 2011, the CA formalised their requirements in relation to planning applications and introduced some new terminology. The CA, using its extensive records has prepared plans for all coalfield Local Planning Authorities, which effectively refines the defined coalfield areas into areas of higher risk (known as the Coal Mining Development **Referral Area**) and lower risk (known as the **Standing Advice Area**). The Coal Mining Development Referral Areas contain a range of specific mining legacy risks to the surface, including mine entries; shallow coal workings; workable coal seam outcrops; mine gas; geological features; and previous surface mining sites. The Standing Advice Area is the remainder of the defined coalfield. In this area no known defined risks have been recorded; although there may still be unrecorded issues.

Landfills

Lithos obtain data from the Landmark Information Group, the Environment Agency and the Local Authority with respect to known areas of landfilling within 250m of the proposed development site. Reference is also made to historical OS plans, which are inspected for evidence of backfilled quarries, railway cuttings, colliery spoil tips etc.

Radon

Radon is a colourless, odourless gas, which is radioactive. It is formed in strata that contain uranium and radium (most notably granite), and can move through fissures eventually discharging to atmosphere, or the spaces under and within buildings. Where radon occurs in high concentrations, it can pose a risk to health.

In order to assess potential risks associated with radon gas, Lithos refer to BRE Report BR211, 2007: "Radon: guidance on protective measures for new buildings", and to information from the BGS / HPA (Health Protection Agency) radon potential dataset provided by the Landmark Information Group. The level of protection needed is site-specific and is determined by reference to the maps contained in Annex A of BR211. These maps are derived from the Radon Atlas of England and Wales (2007), and indicate the highest radon potential within each 1km grid square.

Each 1km grid square is classified on the basis of the percentage of existing homes within that grid square estimated to have radon concentrations above the Action Level (average annual radon concentration of 200 Bq.m⁻³), as follows:

- unshaded grid squares where less than 3% of homes are estimated to be above the Action Level, and no radon protection is required in new dwellings
- light grey shaded grid squares where between 3% & 10% of homes are estimated to be above the Action Level, and basic radon protection is required in new dwellings
- dark grey shaded grid squares where greater than 10% of homes are estimated to be above the Action Level, and full radon protection is required

Sites where either basic or full radon protective measures are required (i.e. where greater than 3% of homes are estimated to be above the Action Level) are referred to as Radon Affected Areas.

BR211 provides a preliminary indication of the measures required for a particular site, as the Annex A maps indicate the highest geological radon potential within each 1km grid square, but in many cases the radon potential varies considerably within the grid square. The Landmark information is more site-specific and therefore may allow the adoption of a lower level of protection than that indicated in the Annex A maps. Alternatively, a BR211 Radon Report can be obtained from the BGS in order to provide more site-specific information.

It should be noted that in July 2010 the Health Protection Agency (HPA) published new advice (Document RCE-15: "Limitation of Human Exposure to Radon"), in which they recommend that all new buildings, extensions, conversions & refurbished buildings in the UK include (at least) basic radon protective measures. The HPA also widened the definition of Radon Affected Areas to include areas where greater than 1% of homes are estimated to be above the Action Level.

Hydrogeology

Lithos obtain information from the Environment Agency (EA) and the Landmark Information Group with respect to:

- groundwater quality
- recorded pollution incidents
- licensed groundwater abstractions

From April 2010 the EA's Groundwater Protection Policy uses aquifer designations that are consistent with the Water Framework Directive. These designations reflect the importance of aquifers in terms of groundwater as a resource (drinking water supply), but also their role in supporting surface water flows and wetland ecosystems. The aquifer designation data is based on geological mapping provided by the British Geological Survey. The maps are split into two different type of aquifer designation:

- Superficial (Drift) - permeable unconsolidated (loose) deposits. For example, sands and gravels.
- Bedrock - solid permeable formations e.g. sandstone, chalk and limestone.

The maps display the following aquifer designations:

Principal Aquifers: These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.

Secondary Aquifers: These include a wide range of rock layers or drift deposits with an equally wide range of water permeability and storage. Secondary aquifers are subdivided into two types:

Secondary A - permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers;

Secondary B - predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.

Generic Notes – Geoenvironmental Investigations



Secondary Undifferentiated - has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.

Unproductive Strata: These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

Note: The maps only display the principal and secondary aquifers as coloured areas. All uncoloured areas on the bedrock designation map will be unproductive strata. However, for uncoloured areas on the superficial (drift) designation map it is not possible to distinguish between areas of unproductive strata and areas where no drift is present. To do this, it is necessary to consult the published geological survey maps.

For the purposes of our Groundwater Protection Policy the following default position applies, unless there is site specific information to the contrary:

- if no superficial (drift) aquifers are shown, the bedrock designation is adopted;
- in areas where the bedrock designation shows unproductive strata (the uncoloured areas) the superficial designation is adopted;
- in all other areas, the more sensitive of the two designations is used (e.g. if secondary drift overlies principal bedrock, an overall designation of principal is assumed)

The EA have also designated Source Protection Zones, which are based on proximity to a groundwater source (springs, wells and abstraction boreholes). The size of a Source Protection Zone is a function of the aquifer, volume of groundwater abstracted and the effective rainfall, and may vary from tens to several thousand hectares.

Hydrology

Lithos obtain information from the Environment Agency and the Landmark Information Group with respect to:

- surface water quality
- recorded pollution incidents
- licensed abstractions (groundwater & surface waters)
- licensed discharge consents
- site susceptibility to flooding

The EA have set **water quality** targets for all rivers. These targets are known as River Quality Objectives (RQOs). The water quality classification scheme used to set RQO planning targets is known as the River Ecosystem scheme. The scheme comprises five classes (RE1 to RE5) which reflect the chemical quality requirements of communities of plants and animals occurring in our rivers.

General Quality Assessment (GQA) grades reflect actual water quality. They are based on the most recent analytical testing undertaken by the EA. There are six GQA grades (denoted A to F) defined by the concentrations of biochemical oxygen demand, total ammonia and dissolved oxygen.

The susceptibility of a site to **flooding** is assessed by reference to a Flood Map on the Environment Agency's website. These maps provide show natural floodplains - areas potentially at risk of flooding if a river rises above its banks, or high tides and stormy seas cause flooding in coastal areas.

There are two different kinds of area shown on the Flood Map:

1. Dark blue areas could be flooded by the sea by a flood that has a 0.5% (1 in 200) or greater chance of happening each year, or by a river by a flood that has a 1% (1 in 100) or greater chance of happening each year
2. Light blue areas show the additional extent of an extreme flood from rivers or the sea. These outlying areas are likely to be affected by a major flood, with up to a 0.1% (1 in 1000) chance of occurring each year.

These two colours show the extent of the natural floodplain if there were no flood defences or certain other manmade structures and channel improvements

The maps also show all flood defences built in the last five years to protect against river floods with a 1% (1 in 100) chance of happening each year, or floods from the sea with a 0.5% (1 in 200) chance of happening each year, together with some, but not all, older defences and defences which protect against smaller floods.

The Agency's assessment of the likelihood of flooding from rivers and the sea at any location is based on the presence and effect of all flood defences, predicted flood levels, and ground levels.

It should also be noted that as the floodplain shown is the 1 in 100 year (or 1 in 200 year as appropriate), areas outside this may be flooded by more extreme floods (e.g. the 1 in 1000 year flood). Also, parts of the areas shown at risk of flooding will be flooded by lesser floods (e.g. the 1 in 5 year flood). In some places due to the shape of the river valley, the smaller floods will flood a very similar extent to larger floods but to a lesser depth.

If a site falls within a floodplain, it is recommended that a flood survey be undertaken by a specialist consultant who can advise on appropriate mitigating measures; ie raising slab levels, provision of storage etc.

COMAH & Explosive Sites

Lithos obtain information from the Landmark Information Group with respect to COMAH or explosive sites within 1km of the proposed development site. Lithos's report refers to any that are present, and recommends that the Client seeks further advice from the HSE.

Areas around COMAH sites (chemical plants etc) are zoned with respect to the implementation of emergency plans. The HSE are a statutory consultee to the local planning authority for all COMAH sites. The COMAH site may have to revise its emergency action plan if development occurs. This might be quite straightforward or could entail significant expenditure. Consequently, the COMAH site may object to a proposed development (although it is the Local Authority who have final say, and they are likely to place more weight on advice from the HSE).

Preliminary Conceptual Ground Model

The site's environmental setting (and proposed end use) is used by Lithos to assess the significance of any contamination encountered during the subsequent ground investigation

Assessment of contaminated land is based on an evaluation of pollutant linkages (source-pathway-receptor). Contaminants within the near surface strata represent a potential source of pollution. The environment (most notably groundwater), site workers and end users are potential targets.

Potential pollutant linkages are shown on a preliminary conceptual site model, presented as a Drawing in an Appendix to this Geoenvironmental Report. The preliminary model is revised in light of data arising from the subsequent ground investigation.

APPENDIX B
DRAWINGS



Reproduced from OS Explorer map 1:25,000 scale by permission of Ordnance Survey® on behalf of The Controller of Her Majesty's Stationery Office. © Crown copyright. All rights reserved. Licence number 100049696.



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www.lithos.co.uk
Tel 0845 680 9781

CLIENT

OGDEN GROUP

JOB TITLE

GOLDTHORPE COLLIERY

DRAWING TITLE

SITE LOCATION PLAN

DRAWN

GLM

DATE

10 10 2013

CHECKED

REG

DATE

23 10 2013

STATUS

FOR COMMENT ☐

DRAFT ☐

FOR APPROVAL ☐

FINAL ☒

SCALE

1:25,000

SHEET

A4

DRAWING NO.

1750/1

REVISION



NOTES

- LONG GRASS, WEEDS, AND SHRUBS
- PREDOMINANTLY TREE GROWTH
- SUB BASE RUBBLE
- TARMAC
- CONCRETE SLAB
- APPROXIMATE SITE BOUNDARY

REV.	DESCRIPTION	DATE
------	-------------	------

info@lithos.co.uk
www.lithos.co.uk
Tel 0845 680 9781

CLIENT

OGDEN GROUP

JOB TITLE

GOLDTHORPE COLLIERY

DRAWING TITLE

SITE FEATURES

DRAWN GLM	DATE 10/10/2013	STATUS FOR COMMENT ☐ FOR APPROVAL ☐ DRAFT ☒ FINAL ☐
CHECKED REG	DATE 23/10/2013	

SCALE 1:1250	SHEET A3	DRAWING NO. 1750/2	REVISION
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NOTES

APPROXIMATE SITE BOUNDARY

LOCATION & ORIENTATION OF PHOTOGRAPH

REV.	DESCRIPTION	DATE

LITHOS CONSULTING

info@lithos.co.uk
www.lithos.co.uk

Tel 0845 680 9781

CLIENT

OGDEN GROUP

JOB TITLE

GOLDTHORPE COLLIERY

DRAWING TITLE

SITE PHOTOGRAPHS

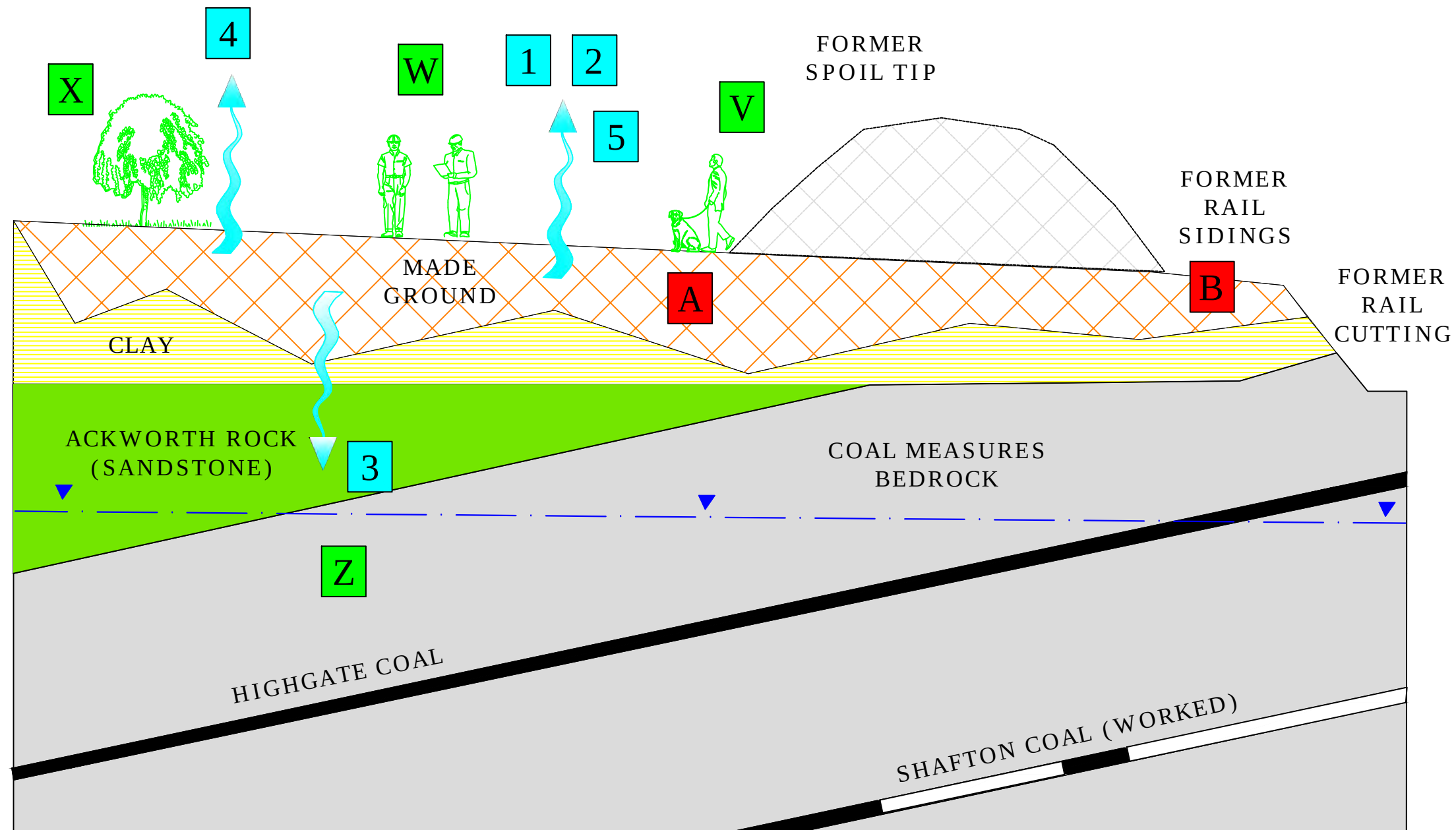
DRAWN GLM	DATE 10/10/13	STATUS FOR COMMENT ☐
CHECKED RJH	DATE 23/10/2013	FOR APPROVAL ☐
		DRAFT ☐
		FINAL ☒

SCALE NTS	SHEET A3	DRAWING NO. 1750/3	REVISION
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NORTH

THE SITE

SOUTH



SOURCES

- A** MADE GROUND
- B** LEAKAGE \ SPILLAGE (FUEL etc FROM RAILWAY)

PATHWAYS

- 1** DERMAL CONTACT
- 2** INGESTION \ INHALATION
- 3** LEACHING OF CONTAMINANTS
- 4** UPTAKE BY PLANTS
- 5** MIGRATION OF GAS

RECEPTORS

- V** END USERS (RESIDENTS)
- W** SITE WORKERS
- X** VEGETATION
- Z** GROUNDWATER

NOTES

REV.	DESCRIPTION	DATE
------	-------------	------



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Tel 0845 680 9781

CLIENT

OGDEN GROUP

JOB TITLE

GOLDTHORPE COLLIERY

DRAWING TITLE

PRELIMINARY CONCEPTUAL SITE MODEL

DRAWN	DATE	STATUS
GLM	10 10 2013	FOR COMMENT ☐
CHECKED	DATE	FOR APPROVAL ☐
REG	23 10 2013	DRAFT ☐
		FINAL ☒

SCALE	SHEET	DRAWING NO.	REVISION
Not to scale	A3	1750/4	

APPENDIX C
COMMISSION

002/1750/REG

18th September 2013

Mr P Cooper
Cooper Consulting Engineers
Unit B Ground Floor
Global Business Park
Global Avenue
Millshaw
Leeds
LS11 8PR



Please reply to
45 High Street
South Milford
North Yorkshire
LS25 5AF

T 0845 680 9781
E info@lithos.co.uk

Dear Paul

Former Goldthorpe Colliery & Adjacent Land

Further to your recent invitation, please find below our proposal for undertaking a geotechnical and environmental desk study appraisal of the above land. It is understood that the site consists of a single parcel of land of approximately 4.3 hectares and is currently rough grassland.

Brief examination of the relevant geological map suggests the site is underlain by Ackworth Rock in the north and Middle Coal Measures in the south. This site is located within a Standing Advice Area (within the defined coalfield, but no known defined risks have been recorded by the Coal Authority; there may still be unrecorded issues), and therefore we will obtain a mining report.

An Envirocheck report will be obtained from Landmark, and historical Ordnance Survey plans will be reviewed in order to determine whether any past land uses have had any effect on the proposed development. In addition we will visit site to undertake a walkover survey.

The report will include preliminary recommendations with respect to mining, foundations, contamination and hazardous gas. Our report will be in a format familiar to Barnsley Metropolitan Borough Council, and therefore suitable for submission in support of an outline planning application.

It is anticipated, allowing for receipt of statutory search information that a final bound report will be available within 3 weeks of receiving your written instruction to proceed. Our lump sum fee for provision of this report is **£***** plus VAT.

As discussed, when working for AIG\Encia I looked at part of this site and adjacent land to the east (currently being developed by Ben Bailey Homes). For an additional fee of £495 we could include review of relevant data contained within AIG\Encia reports (copies of which we still have).

This work will be undertaken in accordance with our Standard Terms and Conditions, a copy of which are enclosed.

It is hoped the above is sufficient for your present needs. However, should you require any further information, please contact the undersigned.

Yours sincerely

A handwritten signature in dark ink, appearing to read "Mark Perrin", written in a cursive style.

Mark Perrin
Director
for and on behalf of
LITHOS CONSULTING LIMITED

Terms and Conditions for the Appointment of Lithos Consulting Limited

V002.10

1 DEFINITIONS AND INTERPRETATION

- 1.1 In this Agreement, unless the context otherwise requires, the following words and expressions have the following meanings:

"Agreement" shall mean these Terms (entitled "Terms and Conditions for the Appointment of Lithos Consulting"), the Proposal, any document recording the Client's unequivocal acceptance of the Proposal and any other documents or parts of other documents expressly referred to in any of the foregoing;

"Client" shall mean the party for whom the Services are being provided by Lithos;

"Documents" shall mean all documents of any kind and includes plans, drawings, reports, programmes, specifications, Bills of Quantities, calculations, letters, e-mails, faxes, memoranda, films and photographs (including negatives), or any other form of record prepared or provided or received by, or on behalf of Lithos, and whether in paper form or stored electronically or on disk, or otherwise;

"Lithos" shall mean Lithos Consulting Limited whose registered office is at 45 High Street, South Milford, North Yorkshire, LS25 5AF.

"Intellectual Property" includes all rights to, and any interests in, any patents, designs, trade marks, copyright, know-how, trade secrets and any other proprietary rights or forms of intellectual property (protectable by registration or not) in respect of any technology, concept, idea, data, programme or other software (including source and object codes), specification, plan, drawing, schedule, minutes, correspondence, scheme, programme, design, system, process logo, mark, style, or other matter or thing, existing or conceived, used, developed or produced by any person;

"Parties" shall mean the Client and Lithos

"Project" shall mean the project described in the Proposal and any enquiry from the Client on which Lithos has based its Proposal;

"Proposal" means the offer document prepared by Lithos in response to an enquiry or otherwise, in connection with the proposed provision of the Services;

"Services" means the work and services relating to the Project to be provided by Lithos pursuant to the Agreement and as set out in the Proposal and shall include any additions or amendments thereto made in accordance with these Terms;

"Terms" means these terms entitled "Lithos Consulting Terms of Appointment";

- 1.2 Words importing the singular only shall also include the plural and vice versa, where the context requires.
- 1.3 Words importing persons or parties shall include firms, corporations and any organisation having legal capacity and vice versa, where the context requires; and words importing a particular gender include all genders.
- 1.4 The sub-headings to the clauses of these Terms are for convenience only and shall not affect the construction of the Agreement.
- 1.5 A reference to legislation includes that legislation as from time to time amended, re-enacted or substituted and any Orders in Council, orders, rules, regulations, schemes, warrants, by-laws, directives or codes of practice issued under any such legislation.
- 1.6 In the event of conflict between the documents forming part of the Agreement, the Proposal shall prevail, followed by the Terms.

2 APPOINTMENT

- 2.1 The Client agrees to engage Lithos and Lithos agrees to provide the Services in accordance with the provisions of the Agreement.

3 OBLIGATIONS OF LITHOS

- 3.1 Lithos shall perform the Services using the reasonable standard of skill and care normally exercised by similar professional Environmental firms in performing similar services under similar conditions.
- 3.2 Lithos shall use all reasonable endeavours to perform the Services in accordance with all relevant environmental and safety legislation.

4 OBLIGATIONS OF THE CLIENT

- 4.1 Throughout the period of this Agreement the Client shall afford to Lithos or procure the affording to Lithos of access to any site where access is required for the performance of the Services.
- 4.2 The Client accepts responsibility for ensuring that Lithos is notified in writing of all special site and/or plant conditions, including without prejudice to the generality of the foregoing, the existence and precise location of all underground services, cables, pipes, drains or underground buildings, constructions or any hazards known or suspected by the Client, which the Client shall clearly mark on the ground or identify on accurate location plans supplied to Lithos prior to the commencement of the Services. The Client shall also inform Lithos in writing of any relevant operating procedures including any site safe operating procedures and any other regulations relevant to the carrying out of the Services. The Client shall indemnify Lithos against all costs, claims, demands and expenses arising as a result of any non-disclosure in this respect, including but not limited to indemnification against any action brought by the owner of the land or otherwise.
- 4.3 If the Client discovers any conflict, defect or other fault in the information or designs provided by Lithos pursuant to the Agreement, he will advise Lithos in writing of such defect, conflict or other fault and Lithos shall have the right to rectify the same or where necessary, to design the solution for rectification of any works carried out by others pursuant the conflicting, defective or in any other way faulty information or designs.

5 INTELLECTUAL PROPERTY

- 5.1 The copyright in all Intellectual Property prepared by or on behalf of Lithos in connection with the Project for delivery to the Client shall remain vested in Lithos.
- 5.2 The Client shall have a non-exclusive licence to copy and use such Intellectual Property for purposes directly related to the Project. Such licence shall enable the Client to copy and use the Intellectual Property but solely for its own purposes in connection with the Project and such use shall not include any licence to reproduce any conceptual designs or professional opinions contained therein nor shall it include any license to amend any drawing, design or other Intellectual Property produced by Lithos.
- 5.3 Should the Client wish to use such Intellectual Property in connection with any other works or for any other purpose not directly related to the Project or wish to pass any Intellectual Property to any third party, it must obtain the prior written consent of Lithos. The giving of such consent shall be at the discretion of Lithos and shall be upon such terms as may be required by Lithos. Lithos shall not be liable for the use by any person of such Intellectual Property for any purpose other than that for which the same were prepared by or on behalf of Lithos.
- 5.4 Ownership of any proposals submitted to the Client that are not subsequently confirmed as part of the Services to be provided for the Client remain with Lithos and such proposals must not be used as the basis for any future work undertaken by the Client or a third party and no liability can be accepted howsoever arising from such proposals.
- 5.5 In the event of the Client being in default of payment of any fees or other amounts due, Lithos may suspend further use of the licence on giving 2 days' notice of the intention to do so. Use of the licence may be resumed on receipt of the outstanding amounts

6 TITLE

- 6.1 Lithos shall transfer only such title or rights in respect of the Documents as it has, and if any part is purchased from a third party Lithos shall transfer only such title or rights as that party had and has transferred to Lithos.
- 6.2 Title in the Documents shall remain with and shall not pass to the Client until the amount due under the invoice(s) (including interest and costs) has been paid in full.
- 6.3 Until title passes, the Client shall hold the Documents as bailee for Lithos and shall store or mark them so that they can at all times be identified as the property of Lithos.
- 6.4 At any time before title passes (save and except where payment is not due), but only after prior consultation with the Client, Lithos may without any liability to the Client repossess and use or sell all or any part of the Documents and by doing so terminate the right of the Client to use, sell or otherwise deal in the Documents.
- 6.5 Lithos may maintain an action for the price of the Documents notwithstanding that title in them has not passed to the Client.

7 CONFIDENTIALITY

- 7.1 Lithos undertakes not to divulge or disclose to any third party without the written consent of the Client information which is designated confidential by the Client or which can reasonably be considered to be confidential and arises during the performance of the Services unless required to do so by law or necessary in the proper performance of its duties in relation to the Project, or in order to make full frank and proper disclosure to its insurers or intended insurers, or to obtain legal or accounting advice.

- 7.2 Subject to the above, Lithos shall be permitted to use information related to the Services it provides in connection with the Project for the purposes of marketing its services and in proposals for work of a similar type.

8 THIRD PARTIES

- 8.1 The Agreement or any part thereof or any benefit or interest thereunder may not be assigned by the Client without the prior written consent of Lithos. The giving of such consent shall be at the discretion of Lithos and Lithos will only agree to an assignment on its terms and in return for payment of a fee by the Client to Lithos to cover Lithos's legal and other costs associated with any assignment.
- 8.2 The Agreement shall not confer and shall not purport to confer on any third party any benefit or any right to enforce any term of this Agreement for the purposes of the Contracts (Rights of Third Parties) Act 1999 or otherwise.
- 8.3 Lithos will consider and may consent to any request from the Client for Lithos to enter a collateral warranty with a third party with regard to the Services provided under the Agreement. The giving of such consent shall be at the discretion of Lithos and Lithos will only enter a collateral warranty on its terms and in return for payment of a fee by the Client to Lithos to cover Lithos's legal and other costs associated with any collateral warranty.

9 INSURANCE

- 9.1 Lithos warrants to the Client that there is in force a policy of Professional Indemnity insurance covering its liabilities for negligence under this Agreement, with a limit of indemnity of £5,000,000 (FIVE MILLION POUNDS) in the aggregate. This policy is annually renewable and whilst renewal is not automatic, Lithos agrees to use reasonable endeavours to maintain such insurance at all times until six years from the date of the completion (or termination) of the Services under the Agreement, provided such insurance is available at commercially reasonable rates having regard, inter alia, to premiums required and policy terms obtainable.
- 9.2 If for any period such insurance is not available at commercially reasonable rates, Lithos shall forthwith inform the Client and shall obtain in respect of such period such reduced level of Professional Indemnity insurance as is available and as would be fair and reasonable in the circumstances for Lithos to obtain.

10 LIMITATIONS ON LIABILITY

- 10.1 Unless otherwise agreed in writing, Lithos's liability under or in connection with the Agreement whether in contract, tort, negligence, breach of statutory duty or otherwise (other than in respect of personal injury or death) shall be limited to and shall not exceed the lesser of either five million pounds in the aggregate or 10 times the total value of invoices issued to the Client for consultancy work instructed under the Agreement.
- 10.2 No action or proceedings under or in respect of the Agreement whether in contract, tort, negligence, under statute or otherwise shall be commenced against Lithos after the expiry of a period of six years from the date of the completion (or termination) of the Services under the Agreement.
- 10.3 Whilst Lithos will scan all potential exploratory locations with a Cable Avoidance Tool, Lithos shall not be liable for any damage to underground services, cables, pipes, drains or underground buildings, constructions and the like which were either not marked on site or for which accurate plans were not provided.
- 10.4 Lithos shall not be liable for the cost of rectifying any defect, conflict or other fault in the information or designs provided by Lithos or for the cost of designing a solution for and rectifying any subsequent works carried out by others pursuant to the conflicting, defective or in any other way faulty information or designs, unless Lithos has been advised in writing of the same by the Client and has been given the opportunity to rectify the same or where necessary, to design the solution for rectification of any subsequent works carried out by others pursuant to the same.

11 PAYMENT

- 11.1 Invoices for services rendered will be submitted for payment in accordance with the Proposal.
- 11.2 The due date for payment is the date of the invoice and the final date for payment is 28 days from the date of the invoice.
- 11.3 If the Client disputes the amount included for payment in an invoice a written notice must be served on Lithos by the Client not later than 14 days before the final date for payment. If no notice is given the amount due shall be the amount stated in the invoice.
- 11.4 In the event of failure on the part of the Client to pay any monies in accordance with the foregoing payment provisions, Lithos will be entitled to charge interest on any monies owed to it by the Client, such interest to be at a rate of 8% above the base rate of a clearing bank from time to time calculated from the final date for payment to the date of actual payment on a compound basis.

12 DELAY

- 12.1 Lithos will comply with any timescale agreed for completion of the Services unless delayed or prevented by circumstances beyond its reasonable control and in the event of any such circumstances arising Lithos undertakes to complete the Services within a reasonable period, but will not be liable to the Client for any delay as a result.

13 TERMINATION

- 13.1 The Agreement may be determined by either party in the event of the other making a composition or arrangement with its creditors, becoming bankrupt, or being a company, making a proposal for a voluntary arrangement for a composition of debts, or has a provisional liquidator appointed, or has a winding-up order made, or passes a resolution for voluntary winding-up (except for the purposes of a bona fide scheme of amalgamation or reconstruction), or has an administrator or an administrative receiver appointed to the whole or any part of its assets. Notice of determination must be given to the party which is insolvent by the other party.
- 13.2 If for any reason the performance of the Services by Lithos is suspended for a period in excess of three calendar months then Lithos shall be entitled to determine its appointment in respect of the Services by seven days written notice to the Client.
- 13.3 If the Client shall fail to pay in full any sum due under the terms of the Agreement by the final date for payment for that sum and no effective notice of intention to withhold payment has been issued, Lithos may serve written notice on the Client demanding payment within 14 days of such notice. If the Client shall fail to comply with such notice, Lithos shall be entitled to terminate its employment under the Agreement forthwith.
- 13.4 Any determination of the appointment of Lithos howsoever caused shall be without prejudice to the right of Lithos to require payment for all services performed up to the date of such determination including but not limited to payment of a fair and reasonable proportion of any figure identified in the Proposal or otherwise for fees in respect of a particular service which Lithos has started, but not completed.

14 NOTICES

- 14.1 Any notice provided for in the Agreement shall be in writing and shall be deemed to be properly given if delivered by hand or sent by first class post to the address of the relevant party as may have been notified by each party to the other or, in the absence of notification, to the address of Lithos set out above or to the registered address of the Client.
- 14.2 Such notice shall be deemed to have been received on the day of delivery if delivered by hand or on the second working day after the day of posting if sent by first class post.

15 ENTIRE AGREEMENT

- 15.1 The Agreement constitutes the complete and entire agreement between the Client and Lithos with respect to the Services and supersedes any prior oral and/or written warranties, terms, conditions, communications and representations, whether express or implied and any claim against Lithos in respect of the Services can only be made in contract under the provisions of the Agreement and not otherwise under the law or tort or otherwise.
- 15.2 No amendments, modifications or variation of the Agreement shall be valid unless made in writing and agreed to by both the Client and Lithos; such agreement must be recorded in writing by at least one of the Parties.
- 15.3 Lithos will not be bound by any standard or printed terms or conditions furnished by the Client in any of its documents unless Lithos specifically states in writing separately from such documents that it intends such terms and conditions to apply.

16 DISPUTES AND GOVERNING LAW

- 16.1 The Agreement shall be governed by and construed in accordance with English law and the Parties irrevocably and unconditionally submit to the jurisdiction of the English Courts.
- 16.2 Where the Housing Grants, Construction and Regeneration Act 1996 applies, any dispute between the Parties may be referred to adjudication in accordance with The Scheme for Construction Contracts Regulations 1998 or any amendment or modification thereof being in force at the time of the dispute, as applicable to England, Wales, Scotland and Northern Ireland.

TJG/130925.sle.C1G(P2)

25 September 2013

Mr M Perrin
Lithos Consulting Limited
45 High Street
SOUTH MILFORD
North Yorkshire
LS25 5AF

Dear Mr Perrin

**FORMER GOLDTHORPE COLLIERY - PHASE II RESIDENTIAL
GEOTECHNICAL & ENVIRONMENTAL DESK STUDY APPRAISAL**

Further to your letter dated 18 September addressed to Cooper Consulting Engineers, I confirm our acceptance of your quotation in the sum of £ (plus VAT).

Your invoice should be addressed to Sir Robert Ogden Estates and sent to me at the Ogden Group.

Yours sincerely



T J GARNETT
MANAGING DIRECTOR - PROPERTY

Direct Line: 01423 411413
Email: sarahedmondson@ogdengroup.co.uk

c.c. Mr J C Garnett
Mr P Cooper, Cooper Consulting Engineers
Mr J Dunbavin, ID Planning

APPENDIX D
HISTORICAL OS PLANS



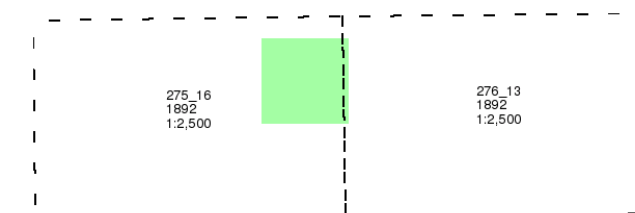
Yorkshire

Published 1892

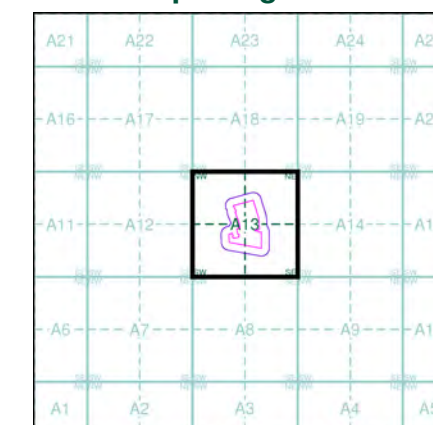
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

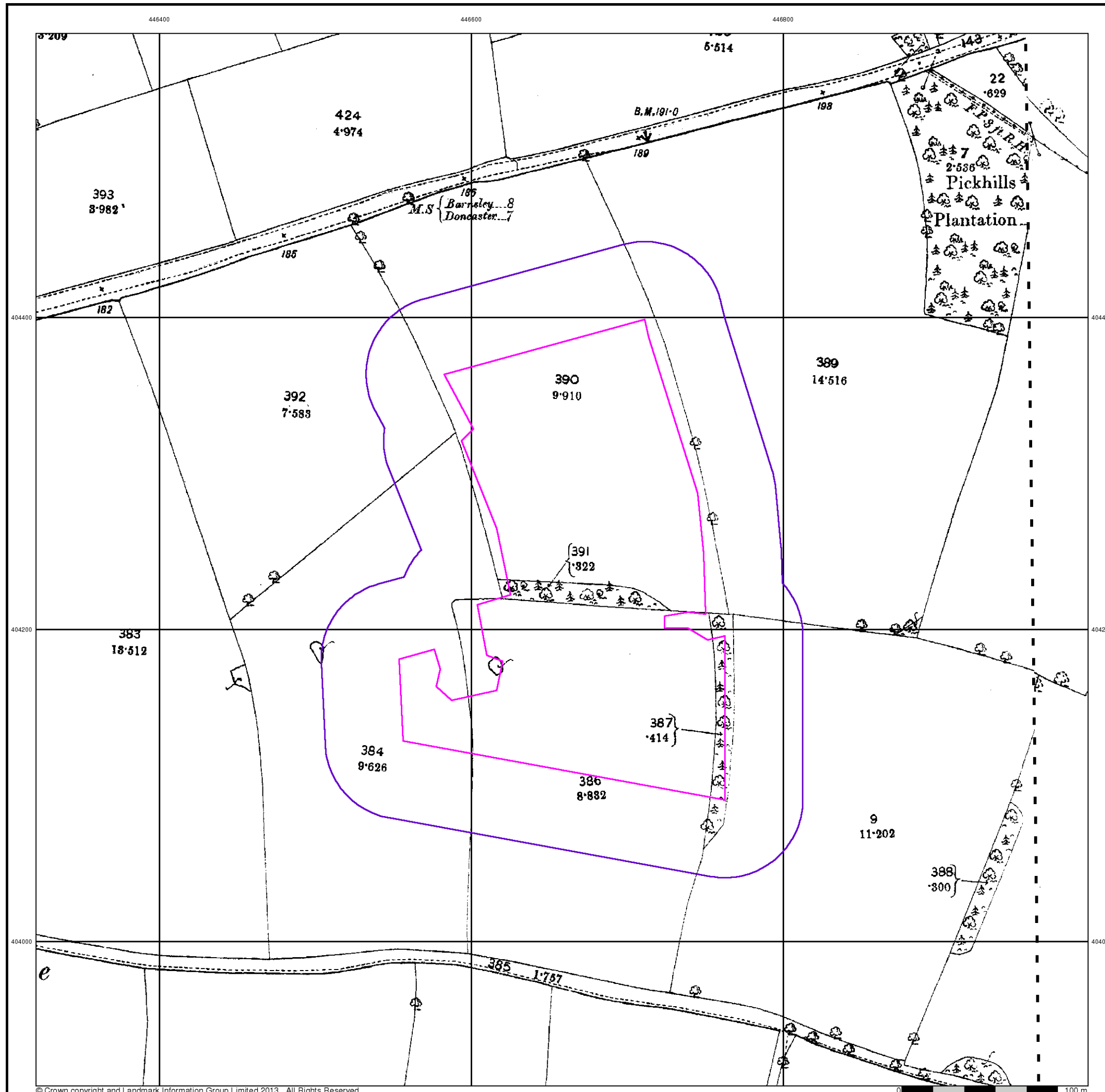
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Customer Ref: 1750/1/GLM
National Grid Reference: 446670, 404230
Slice: A
Site Area (Ha): 4.11
Search Buffer (m): 50

Site Details

Site at 447000, 404300



Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk





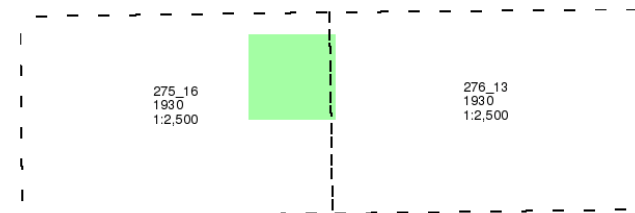
Yorkshire

Published 1930

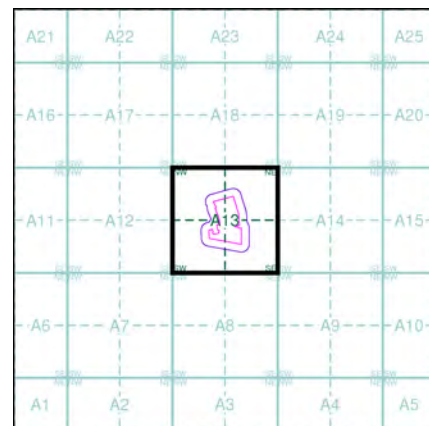
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The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

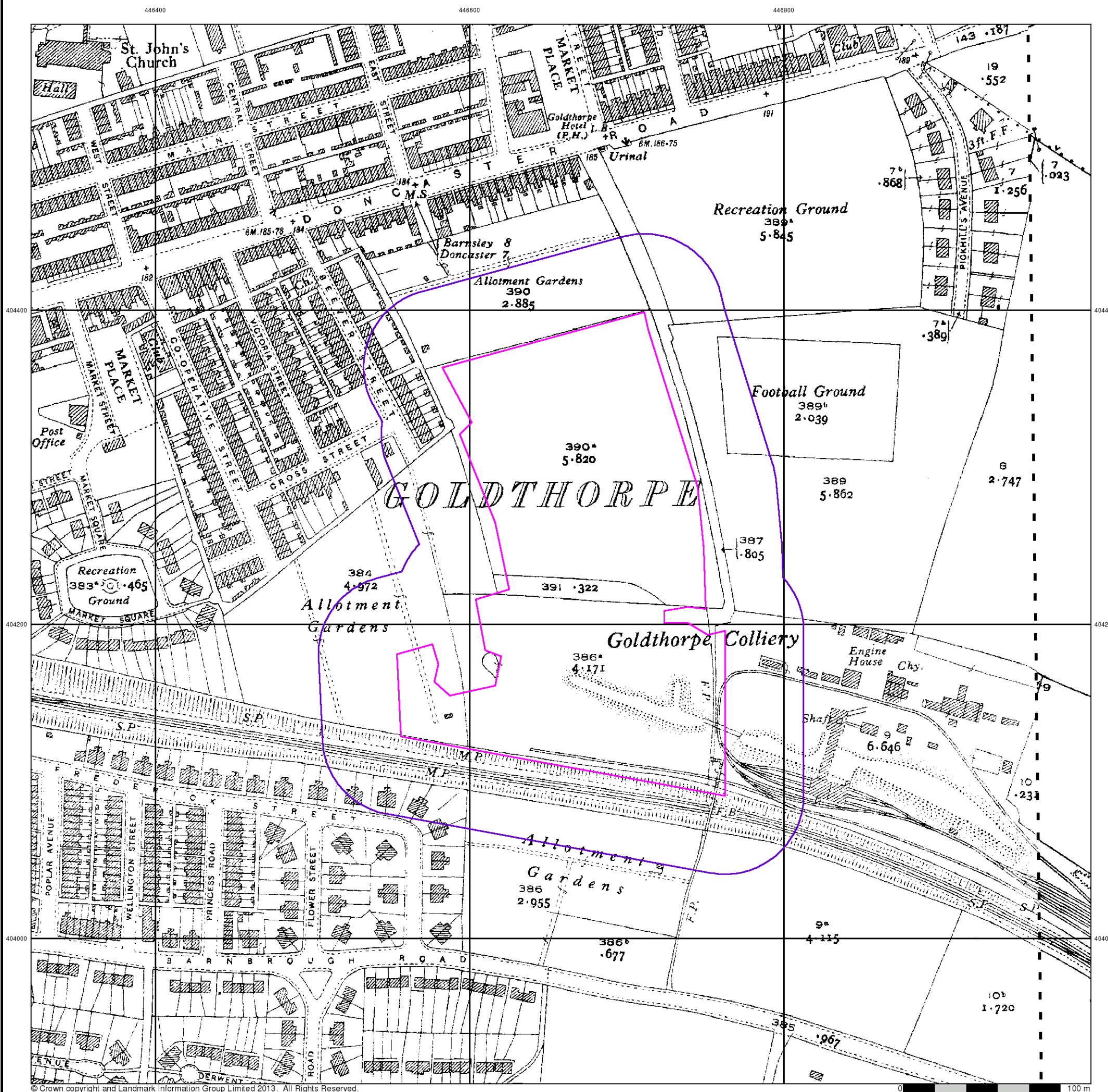
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Customer Ref: 1750/1/GLM
National Grid Reference: 446670, 404230
Slice: A
Site Area (Ha): 4.11
Search Buffer (m): 50

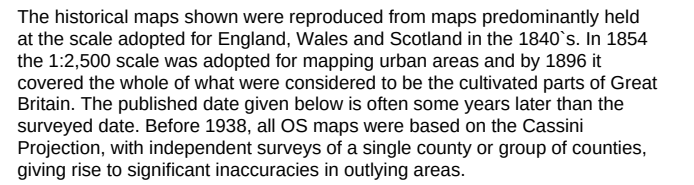
Site Details

Site at 447000, 404300



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SE4604
1962
1:2,500

SE4603
1962
1:2,500



Site at 447000, 404300





Large-Scale National Grid Data

Published 1993

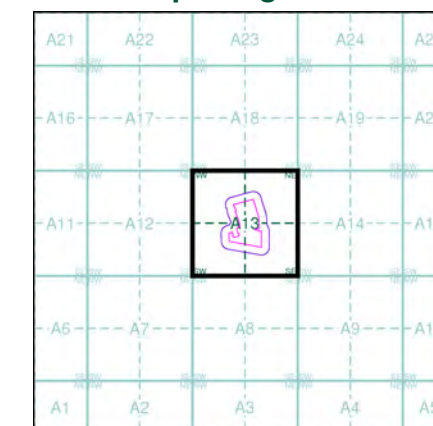
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

IE4604NW	IE4604NE
993	993
1:1,250	1:1,250
SE4604SE	
1993	
1:1,250	
IE4603NW	IE4603NE
993	993
1:1,250	1:1,250

Historical Map - Segment A13



Order Details

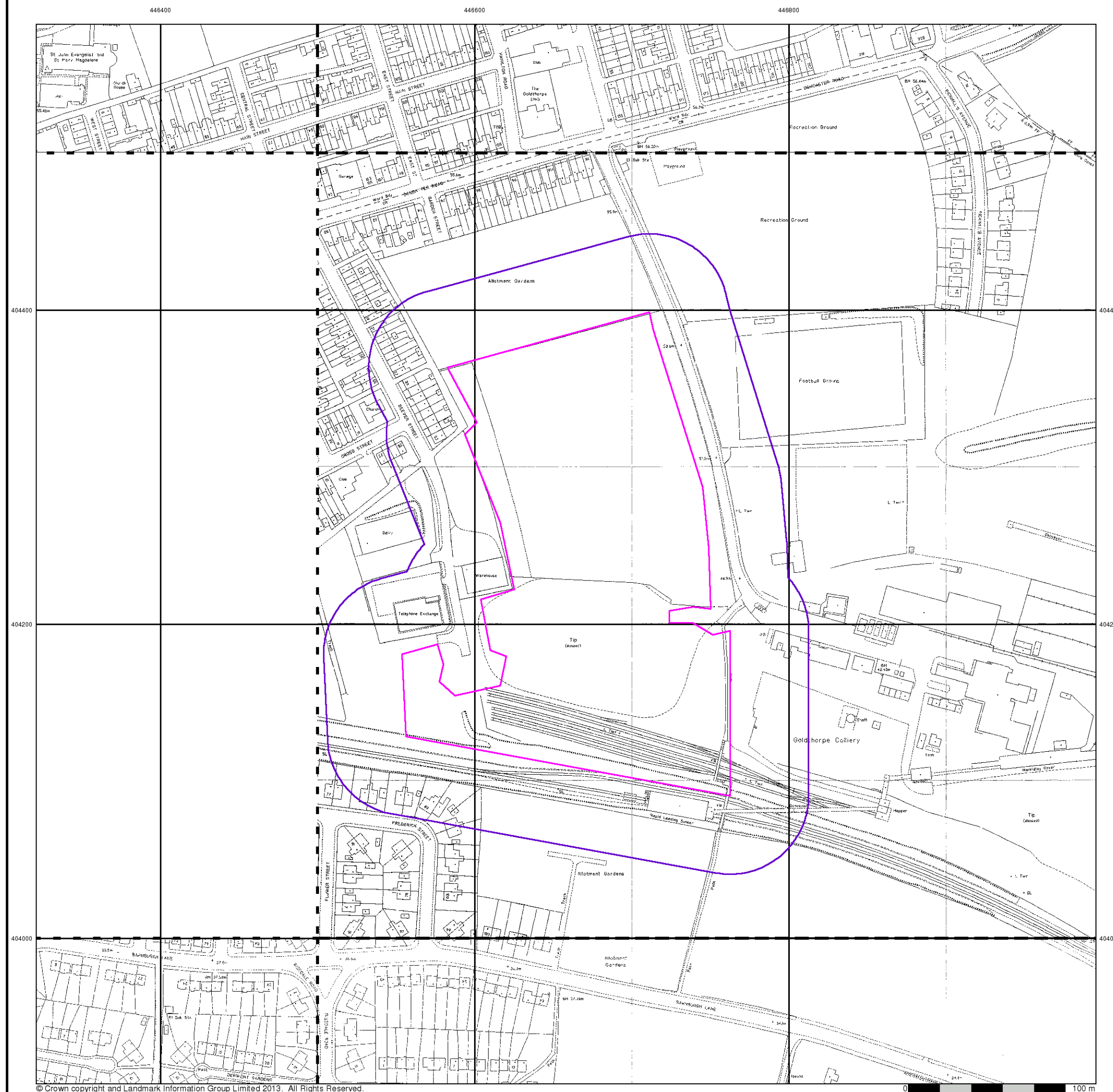
Order Number: 49600160_1_1
Customer Ref: 1750/1/GLM
National Grid Reference: 446670, 404230
Slice: A
Site Area (Ha): 4.11
Search Buffer (m): 50

Site Details

Site at 447000, 404300



Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



APPENDIX E
SEARCH RESPONSES

The COAL AUTHORITY

Issued by:

The Coal Authority, Property Search Services, 200 Lichfield Lane, Berry Hill, Mansfield, Nottinghamshire, NG18 4RG

Website: www.groundstability.com Phone: 0845 762 6848 DX 716176 MANSFIELD 5

**LANDMARK INFORMATION GROUP
LIMITED
SOWTON INDUSTRIAL ESTATE
ABBEY COURT
UNIT 5/7 EAGLE WAY
EXETER
DEVON
EX2 7HY**

Our reference: **51000377170002**
Your reference: **49600160_2|**
Date of your enquiry: **30 September 2013**
Date we received your enquiry: **30 September 2013**
Date of issue: **30 September 2013**

This report is for the property described in the address below and the attached plan.

Non-Residential Coal Authority Mining Report

SITE AT GOLDTHORPE, SOUTH YORKSHIRE,

This report is based on and limited to the records held by, the Coal Authority, and the Cheshire Brine Subsidence Compensation Board's records, at the time we answer the search.

Coal mining	See comments below
Brine Compensation District	No

Information from the Coal Authority

Underground coal mining

Past

The property is in the likely zone of influence from workings in 5 seams of coal at 40m to 680m depth, and last worked in 1979.

Any ground movement from these coal workings should have stopped by now.

Present

The property is not in the likely zone of influence of any present underground coal workings.

Future

The property is not in an area for which the Coal Authority is determining whether to grant a licence to remove coal using underground methods.

The property is not in an area for which a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area that is likely to be affected at the surface from any planned future workings.

However, reserves of coal exist in the local area which could be worked at some time in the future.

No notice of the risk of the land being affected by subsidence has been given under section 46 of the Coal Mining Subsidence Act 1991.

Mine entries

There are no known coal mine entries within, or within 20 metres of, the boundary of the property.

Records may be incomplete. Consequently, there may exist in the local area mine entries of which the Coal Authority has no knowledge.

Coal mining geology

The Authority is not aware of any evidence of damage arising due to geological faults or other lines of weakness that have been affected by coal mining.

Opencast coal mining

Past

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

Present

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

Future

The property is not within 800 metres of the boundary of an opencast site for which the Coal Authority is determining whether to grant a licence to remove coal by opencast methods.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

Coal mining subsidence

There are 3 claim(s) within 50 metres of the property boundary that do not match the property address. These are shown on the attached plan.

The Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

If further subsidence damage claims information is required in addition to that provided in this report, the Authority need to manually search their records. For further advice on how to order this additional information visit www.groundstability.com or telephone 0845 7626 848.

Mine gas

There is no record of a mine gas emission requiring action by the Coal Authority within the boundary of the property.

Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

Withdrawal of support

The property is in an area for which notices of entitlement to withdraw support were published in 1946, 1982.

The property is not in an area for which a notice has been given under section 41 of the Coal Industry Act 1994, revoking the entitlement to withdraw support.

Working facilities orders

The property is not in an area for which an Order has been made under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

Payments to owners of former copyhold land

The property is not in an area for which a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Information from the Cheshire Brine Subsidence Compensation Board

The property lies outside the Cheshire Brine Compensation District.

Additional Remarks

This report is prepared in accordance with the Law Society's Guidance Notes 2006, the User Guide 2006 and the Coal Authority and Cheshire Brine Board's Terms and Conditions 2006. The Coal Authority owns the copyright in this report. The information we have used to write this report is protected by our database right. All rights are reserved and unauthorised use is prohibited. If we provide a report for you, this does not mean that copyright and any other rights will pass to you. However, you can use the report for your own purposes.

Location map



Approximate position of property



Enquiry boundary

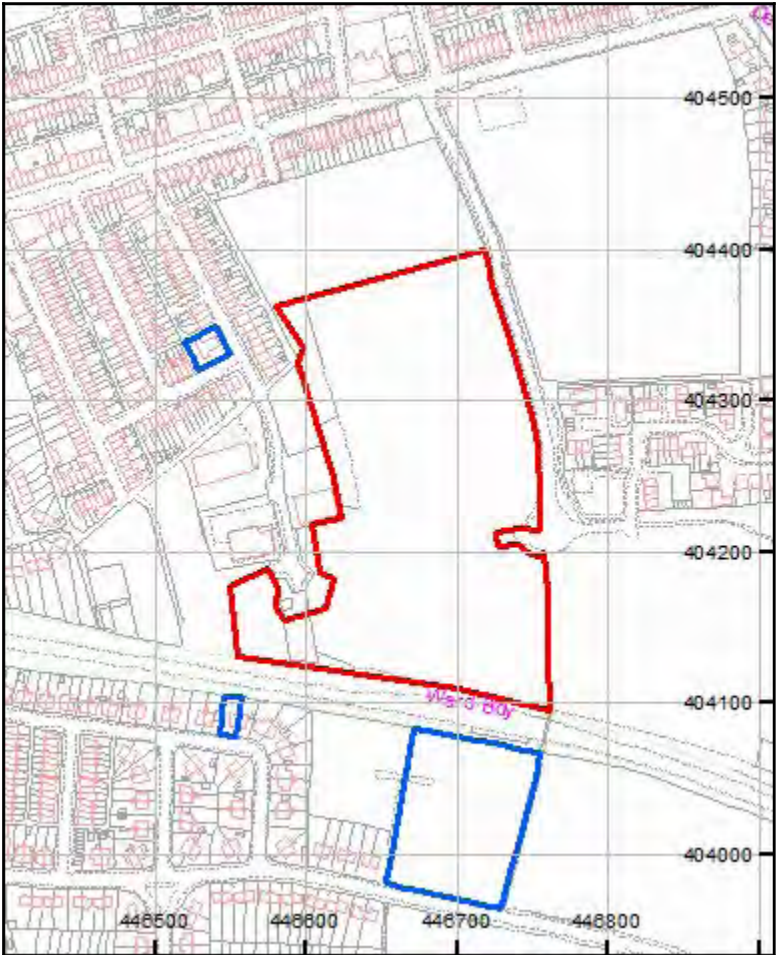
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Key

Approximate position of enquiry boundary shown



Coal Claims



Envirocheck[®] Report:

Datasheet

Order Details:

Order Number:

49600160_1_1

Customer Reference:

1750/1/GLM

National Grid Reference:

446670, 404230

Slice:

A

Site Area (Ha):

4.11

Search Buffer (m):

500

Site Details:

Site at 447000, 404300

Client Details:

Mr G Morton
Lithos Consulting Ltd
45 High Street
South Milford
North Yorkshire
LS25 5AF

Prepared For:

Lithos Consulting
Job no.1750
Goldthorpe Colliery

Report Section	Page Number
Summary	-
Agency & Hydrological	1
Waste	4
Hazardous Substances	-
Geological	5
Industrial Land Use	10
Sensitive Land Use	11
Data Currency	12
Data Suppliers	16
Useful Contacts	17

Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination. For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.

In the attached datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

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Radon Potential dataset Copyright Notice

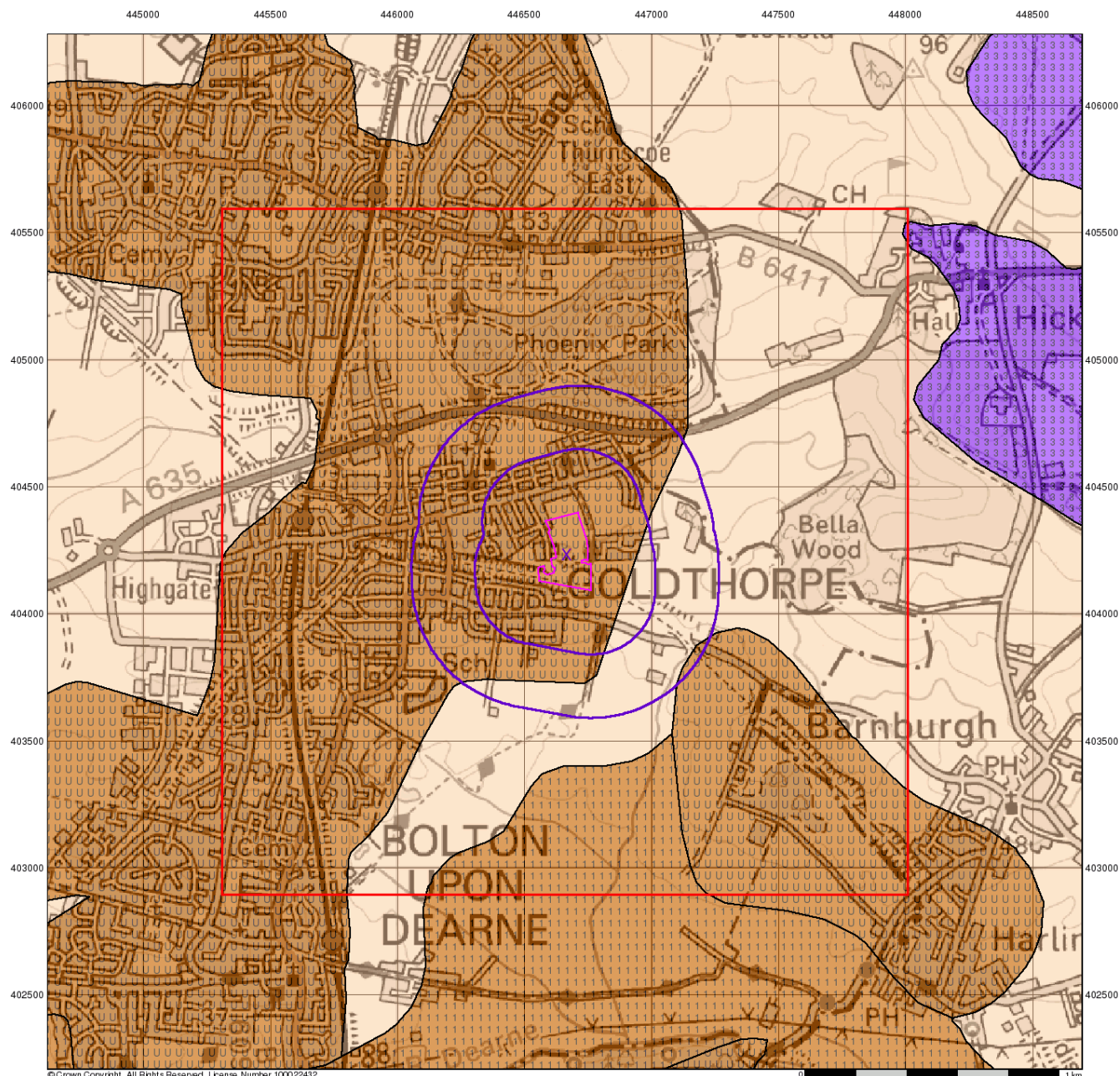
Information supplied from a joint dataset compiled by The British Geological Survey and the Health Protection Agency.

Report Version v47.0

Data Type	Page Number	On Site	0 to 250m	251 to 500m (*up to 1000m)
Agency & Hydrological				
Contaminated Land Register Entries and Notices				
Discharge Consents	pg 1			1
Enforcement and Prohibition Notices				
Integrated Pollution Controls				
Integrated Pollution Prevention And Control				
Local Authority Integrated Pollution Prevention And Control				
Local Authority Pollution Prevention and Controls	pg 1		1	1
Local Authority Pollution Prevention and Control Enforcements				
Nearest Surface Water Feature	pg 1		Yes	
Pollution Incidents to Controlled Waters	pg 1			1
Prosecutions Relating to Authorised Processes				
Prosecutions Relating to Controlled Waters				
Registered Radioactive Substances				
River Quality	pg 1			1
River Quality Biology Sampling Points				
River Quality Chemistry Sampling Points				
Substantiated Pollution Incident Register				
Water Abstractions	pg 2			(*3)
Water Industry Act Referrals				
Groundwater Vulnerability	pg 2	Yes	n/a	n/a
Bedrock Aquifer Designations	pg 2	Yes	n/a	n/a
Superficial Aquifer Designations			n/a	n/a
Source Protection Zones				
Extreme Flooding from Rivers or Sea without Defences				n/a
Flooding from Rivers or Sea without Defences				n/a
Areas Benefiting from Flood Defences				n/a
Flood Water Storage Areas				n/a
Flood Defences				n/a
Waste				
BGS Recorded Landfill Sites				
Historical Landfill Sites				
Integrated Pollution Control Registered Waste Sites				
Licensed Waste Management Facilities (Landfill Boundaries)				
Licensed Waste Management Facilities (Locations)	pg 4			1
Local Authority Recorded Landfill Sites	pg 4			1
Registered Landfill Sites				
Registered Waste Transfer Sites				
Registered Waste Treatment or Disposal Sites				

Data Type	Page Number	On Site	0 to 250m	251 to 500m (*up to 1000m)
Hazardous Substances				
Control of Major Accident Hazards Sites (COMAH)				
Explosive Sites				
Notification of Installations Handling Hazardous Substances (NIHHS)				
Planning Hazardous Substance Consents				
Planning Hazardous Substance Enforcements				
Geological				
BGS 1:625,000 Solid Geology	pg 5	Yes	n/a	n/a
BGS Estimated Soil Chemistry	pg 5	Yes	Yes	Yes
BGS Recorded Mineral Sites	pg 8		2	
BGS Urban Soil Chemistry				
BGS Urban Soil Chemistry Averages				
Brine Compensation Area			n/a	n/a
Coal Mining Affected Areas	pg 8	Yes	n/a	n/a
Mining Instability	pg 8	Yes	n/a	n/a
Man-Made Mining Cavities				
Natural Cavities				
Non Coal Mining Areas of Great Britain				n/a
Potential for Collapsible Ground Stability Hazards	pg 8	Yes		n/a
Potential for Compressible Ground Stability Hazards	pg 8	Yes		n/a
Potential for Ground Dissolution Stability Hazards				n/a
Potential for Landslide Ground Stability Hazards	pg 8	Yes	Yes	n/a
Potential for Running Sand Ground Stability Hazards	pg 9	Yes		n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 9	Yes		n/a
Radon Potential - Radon Affected Areas			n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a
Industrial Land Use				
Contemporary Trade Directory Entries (50m)	pg 10		2	n/a
Fuel Station Entries				

Data Type	Page Number	On Site	0 to 250m	251 to 500m (*up to 1000m)
Sensitive Land Use				
Areas of Adopted Green Belt	pg 11		2	1
Areas of Unadopted Green Belt				
Areas of Outstanding Natural Beauty				
Environmentally Sensitive Areas				
Forest Parks				
Local Nature Reserves				
Marine Nature Reserves				
National Nature Reserves				
National Parks				
Nitrate Sensitive Areas				
Nitrate Vulnerable Zones	pg 11	1		
Ramsar Sites				
Sites of Special Scientific Interest				
Special Areas of Conservation				
Special Protection Areas				



Groundwater Vulnerability

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

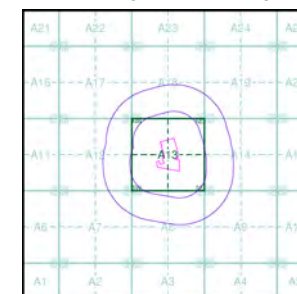
Agency and Hydrological

Geological Classes

- Major Aquifer (Highly Permeable)**
 - High (H) 1, 2, 3, U
 - Intermediate (I) 1, 2
 - Low
- Minor Aquifer (Variably Permeable)**
 - High (H) 1, 2, 3, U
 - Intermediate (I) 1, 2
 - Low
- Non Aquifer (Negligibly Permeable)**
 -
- Water or Sea**
 -
- Drift Deposit**
 -

Soil Classes

Site Sensitivity Context Map - Slice A



Order Details

Order Number: 49600160_1_1
 Customer Ref: 1750/1/GLM
 National Grid Reference: 446670, 404230
 Slice: A
 Site Area (Ha): 4.11
 Search Buffer (m): 500

Site Details

Site at 447000, 404300



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 Fax: 0844 844 9951
 Web: www.envirocheck.co.uk



General

-  Specified Site
  Specified Buffer(s)
  Bearing Reference Point
  Map ID

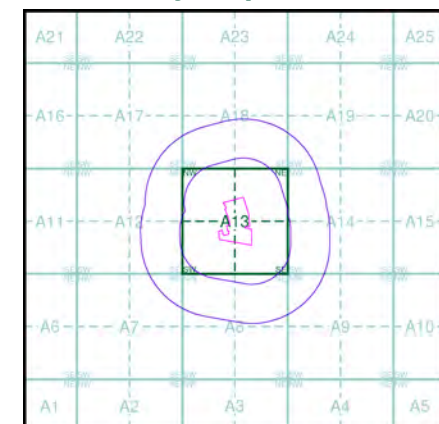
Agency and Hydrological

- | | | | |
|---|--|---|--|
|  | Contaminated Land Register Entry or Notice (Location) |  | BGS Recorded Landfill Site (Location) |
|  | Contaminated Land Register Entry or Notice |  | BGS Recorded Landfill Site |
|  | Discharge Consent |  | EA Historic Landfill (Buffered Point) |
|  | Enforcement or Prohibition Notice |  | EA Historic Landfill (Polygon) |
|  | Integrated Pollution Control |  | Integrated Pollution Control Registered Waste Site |
|  | Integrated Pollution Prevention Control |  | Licensed Waste Management Facility (Landfill Boundary) |
|  | Local Authority Integrated Pollution Prevention and Control |  | Licensed Waste Management Facility (Location) |
|  | Local Authority Pollution Prevention and Control |  | Local Authority Recorded Landfill Site (Location) |
|  | Local Authority Pollution Prevention and Control Enforcement |  | Local Authority Recorded Landfill Site |
|  | Pollution Incident to Controlled Waters |  | Registered Landfill Site |
|  | Prosecution Relating to Authorised Processes |  | Registered Landfill Site (Location) |
|  | Prosecution Relating to Controlled Waters |  | Registered Landfill Site (Point Buffered to 100m) |
|  | Registered Radioactive Substance |  | Registered Landfill Site (Point Buffered to 250m) |
|  | River Network or Water Feature |  | Registered Waste Transfer Site (Location) |
|  | River Quality Sampling Point |  | Registered Waste Transfer Site |
|  | Substantiated Pollution Incident Register |  | Registered Waste Treatment or Disposal Site (Location) |
|  | Water Abstraction |  | Registered Waste Treatment or Disposal Site |
|  | Water Industry Act Referral | | |

Hazardous Substances

- Geological**
 - ▼ BOS Recorded Mineral Site
 - Industrial Land Use**
 - ★ Contemporary Trade Directory Entry
 - ★ Fuel Station Entry
 - ✚ COMAH Site
 - ✚ Explosive Site
 - ✚ NIHS Site
 - ✚ Planning Hazardous Substance Consent
 - ✚ Planning Hazardous Substance Enforcement

Site Sensitivity Map - Slice A



Order Details

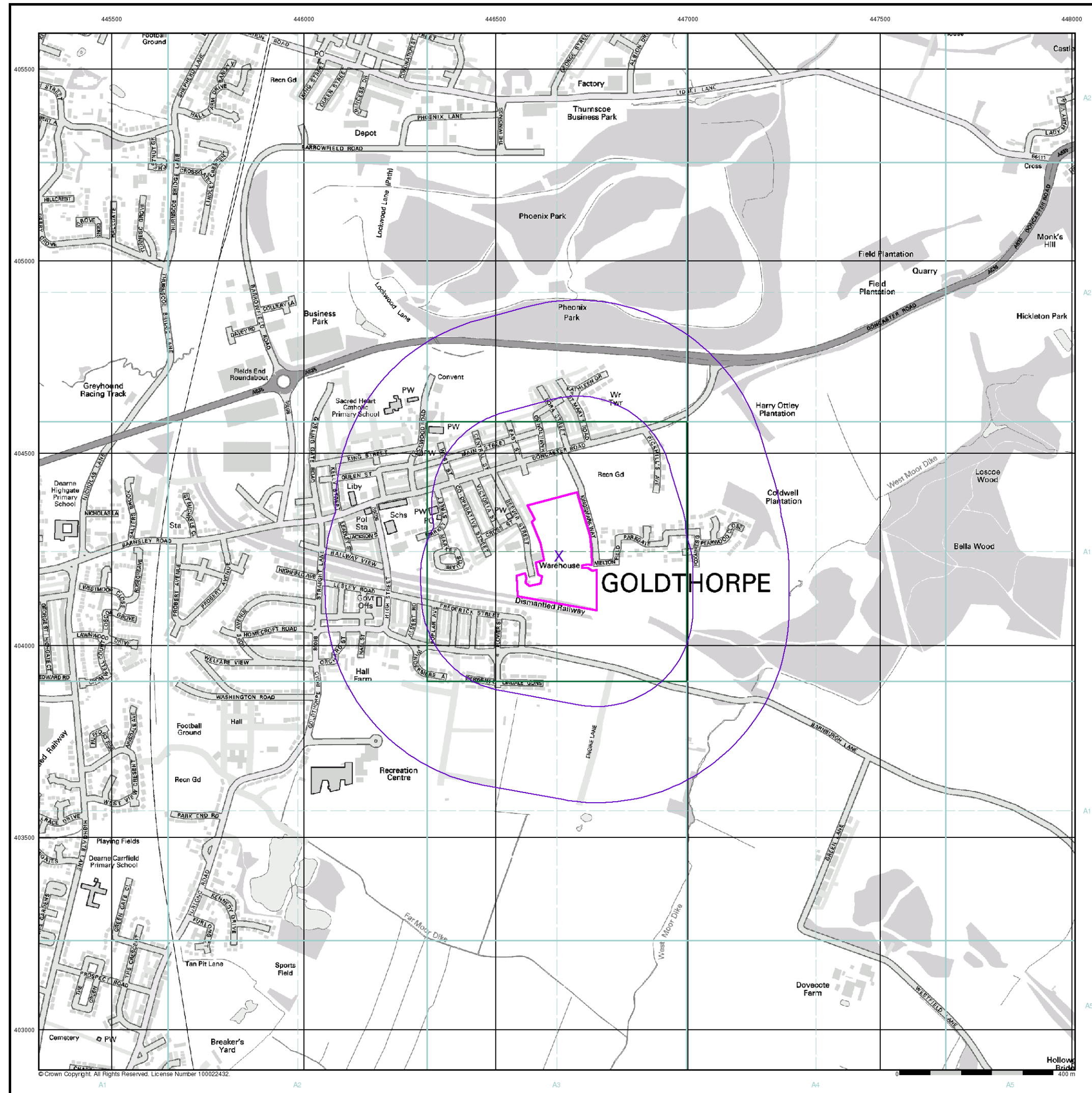
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Customer Ref: 1750/1/GLM
National Grid Reference: 446670, 404230
Slice: A
Site Area (Ha): 4.11
Search Buffer (m): 500

Site Details

Site at 447000, 404300

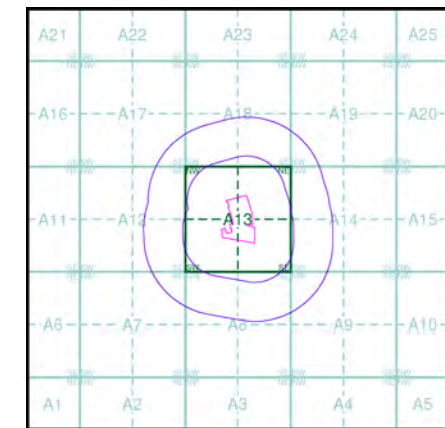


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Fax: 0844 844 9951
Web: www.envirocheck.co.uk



- General**
- Specified Site
 - Specified Buffer(s)
 - Bearing Reference Point
- Agency and Hydrological (Flood)**
- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
 - Flooding from Rivers or Sea without Defences (Zone 3)
 - Area Benefiting from Flood Defence
 - Flood Water Storage Areas
 - Flood Defence

Flood Map - Slice A



Order Details

Order Number: 49600160_1_1
Customer Ref: 1750/1/GLM
National Grid Reference: 446670, 404230
Slice: A
Site Area (Ha): 4.11
Search Buffer (m): 500

Site Details

Site at 447000, 404300