



CIVIL & STRUCTURAL ENGINEERING

GEOENVIRONMENTAL DESK STUDY REPORT

Proposed Office Building for James Durrans & Sons Ltd Saville Lane, Penistone

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1

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Humphreys Teal Partnership Architects, Saville Lane, Penistone, Proposed Site Plan. Job No. 1078, Drg No. 2, Rev C, Dated March 2012 for James Durrans & Sons Limited.

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CONFIDENTIALITY STATEMENT

This report is addressed to and may be relied upon by the following:

James Durrans & Sons Limited
Phoenix Works
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This report has been prepared for the sole use and reliance of the above named party. This report shall not be relied upon or transferred to any other parties without the express written authorisation of JPG (Leeds) Limited. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party.

DOCUMENT HISTORY

VERSION	PURPOSE/DESCRIPTION	DATE
1	Final – For issue to Client	May 2012



EXECUTIVE SUMMARY

Site Address	Saville Lane, Penistone
NGR	Approximate NGR 423174E, 403378N
Current Site Use & Proposed Development	The site is situated on a south facing slope and comprises three terraces. The site is occupied by a works; the area for development comprises mostly buildings, roadways and car parks. It is proposed to re-develop the site with a four storey office building.
Site History	The initial development on the site was the construction of an embankment associated with a Mill Race in the eastern part of the site; this is shown on the 1892 plan. Earthworks are shown in the western part of the site on the 1959 plan and additional earthworks are shown in this area on the 1967 plan. A building is shown on the northern boundary of the site on the 1903 plan; further buildings are shown along this northern boundary on the 1959 plan. An electricity sub-station, at the same location, is shown on the 1967 plan.
Site Setting	Geology – The GroundSure (GS) report states that there is no made ground or drift deposits present on the site. The underlying bedrock is shown to comprise Lower Coal Measures strata of mudstone, siltstone and sandstone. Mining – The site is not affected by shallow or opencast coal mining. Hydrogeology – The underlying bedrock is classified as a Secondary A Aquifer. There is one recorded groundwater abstractions within 1km of the site. The site does not lie within an Environment Agency (EA) Groundwater Source Protection Zone. Hydrology – The nearest surface water feature is the River Don, which is located adjacent to the southern boundary of the site. There is one active discharge consent to controlled surface water and one recorded surface water abstraction within 500m of the site. Flooding – Information on the Environment Agency website and presented in the GS report, indicates that the site lie within Zone 2 and Zone 3 floodplains. Landfill – There are records of four historical landfill sites within 1km of the site. Radon Risks – The site is not in a radon affected area, as less than 1% of properties are above the action level for radon gas. It is recommended that Building Control should be consulted during the design process to advise on the requirement for basic radon protective measures.
Environmental Risk Assessment	On the basis of the proposed end use and known history of the site, the following potential pollutant linkages may be present: • Development and maintenance workers and site end users, i.e. employees could come into contact with soils containing elevated concentrations of potential contaminants and hazardous gases/soil vapours. • Underlying groundwater could become contaminated due to the leaching and migration of mobile contaminants. • Buildings and services could be affected by potential contaminants in the made ground and natural ground; and • Plants in landscape areas could be affected by phytotoxic elements within the made ground and natural ground. These linkages are based on current site conditions and do not consider exposure pathways following any remediation of the site. If the site can be shown to pose no "significant harm" or pollution to controlled waters, then the site can be considered to be uncontaminated. In lieu of any chemical testing, ground contamination information, or implementation of mitigation measures, the site should be considered to be moderate risk with respect to contamination.
Preliminary Engineering Assessment	Foundations – Based on the information presented in the GS report and on the geological plan, ground conditions are likely to comprise mudstone, siltstone and sandstone bedrock at shallow depth. Made ground and drift deposits are reported not to be present on the site. However, as a consequence to the terraced nature of the site, the presence of made ground, probably comprising re-worked natural strata, is considered likely. Due to the split level nature of the proposed development, piled retaining structures are likely to be required for part of the development. The piled retaining structures will found in the underlying bedrock. The selection of foundation type for the remainder of the structure will be governed by the thickness of any made ground and the strength and settlement characteristics of the underlying natural strata, which will need to be confirmed. If the underlying natural strata is unsuitable, i.e. too weak or compressible, then consideration could be given to the



	adoption of deeper trenchfill foundations. If further poor ground is encountered or high load areas are required, then, consideration could be given to ground treatment options, e.g. vibro-stone columns, or a deeper foundation solution, e.g. piles. Ground Floor Construction – If a large thickness of made ground is present, then a suspended ground floor slab or ground improvement for a ground bearing slab will be required. Groundwater - It may be expected that shallow perched groundwater will be encountered within the shallow natural strata. The presence of groundwater will need to be assessed as part of any ground investigation. Obstructions – The presence of obstructions in the made ground should be anticipated, particularly at the locations of historical structures. A former Mill Race may underlie part of the site. Excavations – Excavations through any made ground may be unstable in the long term and temporary side support is likely to be required. Roads, Pavements and Hardstanding Surfaces - It is recommended that at this stage a conservative bearing value for the sub-grade is used, until the nature of the sub-grade can be physically assessed. Chemical Attack on Buried Concrete - Samples of any made and natural ground should be obtained and submitted to the laboratory for testing in order to assess the sulphate content and acidity and hence the concrete class required for buried concrete.
Further Work Required	It is recommended that a ground investigation is carried out in order to further assess the potential environmental and geotechnical constraints to development and should comprise the following: • Window sample boreholes with in situ tests to provide geotechnical information in order to assess the nature of the sub-surface and confirm the depth and distribution of any made ground. • Cable percussive boreholes with rotary coring follow-on and in-situ testing to obtain geotechnical information from greater depth. • Installation and monitoring of gas and groundwater monitoring wells. • Chemical analysis and geotechnical testing of soil and water samples. • Monitoring of gas and groundwater wells for hazardous gases.
This sheet is intended as a summary only of the assessment of the site in relation to ground condition. It does not provide a definitive engineering analysis.	



1.0 INTRODUCTION

1.1 Instruction

JPG (Leeds) Limited (JPG) has been instructed on behalf of James Durrans & Sons Limited to carry out a geoenvironmental desk study for a proposed office development on land off Saville Lane, Penistone.

1.2 Objectives

The main objective of the geoenvironmental desk study is to identify potential geotechnical and environmental issues that may represent constraints to the proposed re-development of the site.

1.3 Scope of Works

The scope of works for the desk study included the following:

- Site inspection and description.
- Review of any previous reports provided.
- Review of contemporary and historical Ordnance Survey publications.
- Consultations with regulatory authorities where appropriate.
- Review of geological publications (including hydrology, hydrogeology and soil survey publications where appropriate).
- Review the risk from past coal mining.
- Review of the radon status of the site.
- An environmental database search.
- Outline environmental risk assessment.
- Preliminary recommendations with respect to foundations, ground floor and pavement design.
- Recommendations for further work where appropriate.
- Presentation of the findings in a tabular non-technical summary.

1.4 Location

The site is located in Thurlstone, approximately 2km to the west of Penistone. The approximate centre of the site is located at NGR 423174, 403378. A site location plan is given at Figure 1 in Appendix A.



1.5 Site Description and Topography

The James Durrans & Sons Ltd works is located immediately to the south of the Manchester Road in Thurlstone near Penistone.

The area of the site proposed for development is located just to the south of the main office and the factory building known as the Phoenix Works. The site includes existing buildings, roadways and car parks.

Entrance to the site is made from the Manchester Road on to Saville Lane, which initially falls at a steep gradient and then falls gently to the west. The entrance to the site is narrow, being only 4.3m wide, but the road width increases further west. The road is 5.6m wide between the mill building and the laboratory building.

The western part of the site is occupied by car parks, which are formed on two separate levels.

The higher level car park forms the north west corner of the site and has a tarmac surface. A sloping concrete driveway connects the higher to the lower level car park. An earth slope with a cover of mature trees separates the two car parks.

The lower car park has a rough gravel surface and forms much of the southern and eastern part of the site. The surface of the car park slopes gently down to the south and west. The southern boundary line of the site trends south west to north east and is formed by a post and rail fence. The southern boundary overlooks a further slope which falls towards the River Don, which is approximately 6m below.

The site is located on a south facing slope for which three terraces are present.

Saville Lane forms the highest terrace of the development site with an approximate level of 214m AOD.

The middle level of the site is approximately 3m lower at a level of 211m AOD and is occupied by a building and roadway. The building was an office and laboratory which is built into the slope, such that the roof is only just above the level of Saville Lane. The building is a brick, single storey structure which is connected to a further structure to the east. This is a two storey building which was used as a shower facility. This building probably has a basement over part of its footprint, as it is constructed across the slope.

The base level terrace, which is used as a car park, is around 2.5m lower at a level of approximately 208.5 m AOD.

A number of services are present on site which is summarised as follows:

- Site entrance - gas main.
- Saville Street - Water main, sewers; street lighting.
- Paddock – two gas mains.
- South of Phoenix Works – gas main and drains.
- Site road adjacent to the office – road gullies, sewers and water mains.



- Overhead electric cables enter site from the south and connect to an above ground transformer on poles before cables are located underground to connect to the sub-station.
- West end of office and laboratory – electric sub-station with cables buried in the roadways.
- Engineers building – Outside, bunded diesel tank.
- South east of shower block – drain discharges to River Don.

The eastern margin of the site is formed by a small paddock. This area is bound to the north, east and south by a dry stone wall. The western boundary is formed by the shower block building. The north boundary wall includes an area of partial collapse of stone. There is an entrance gate in the south west corner and a narrow doorway entrance with steps in the north west corner. The paddock area has a grassed surface. The gate to the paddock is 1.7m wide and the entrance is formed by a steep concrete drive.

A garage building is located in the north east corner of the site, on Saville Lane. The garage includes a workshop area and contains some lawnmowers.

An above ground, bunded diesel fuel tank is located immediately east of the Engineers building. It appears that the tank is re-filled from the above road level, via a pipe which is partly above and below ground.

There is a soil cutting face exposed in the central southern area of the site. The face slope is cut at approximately 45 degrees and formed of dark grey gravelly sandy clay with cobbles of sandstone, brick and concrete.

An aerial photograph of the site is presented as Figure 2 and selected photographs of the site are presented in Appendix B.

1.6 Development Proposals

It is proposed to redevelop the site with a four-storey split level office building. A proposed site layout plan has been made available which is referenced below and a copy is presented in Appendix A.

- Humphreys Teal Partnership Architects, Saville Lane, Penistone, Proposed Site Plan. Job No. 1078, Drg No. 02, Rev C, Dated March 2012 for James Durrans & Sons Limited.

1.7 Previous Reports

There are no previous reports available for the site.

1.8 Limitations

The general limitations to the nature of the investigation are outlined in Appendix F.



2.0 SITE HISTORY

Historical plans for the site were obtained from GroundSure (GS). These have been reviewed in order to establish any former uses of the site and identify any potentially contaminative historical uses, or potential geotechnical constraints to the proposed development.

A summary of the relevant map information is presented in Table 2 and copies of relevant plans are presented in Appendix C.

Table 2 – Summary of Relevant Historical Map Information

Date(s) & Scale	Feature
1850 1:10,560	The west of the site is shown to comprise open fields and the east of the site is shown to comprise woodland. Beyond the site, a river is shown to the south and open fields are shown to the west. Buildings are shown to the north and further woodland is shown to the east. The town of Thurlstone is shown to the north east. Plumpton and Plumpton Mill (woollen) are shown beyond the fields to the west of the site and Hornthwaite and Hornthwaite Sandstone Quarry are shown beyond the river and fields to the east.
1891-1892 1:10,560 & 1892 1:2,500	More detail is shown on the 1892 plan. The western part of the site is shown to comprise an open field, a row of trees are shown along its southern boundary. The eastern part of the site is shown to comprise woodland, a Mill Race, on an embankment oriented east north east to west south west, is shown in the south west part of the site. Beyond the river to the south of the site is a Pumping Station (Penistone Water Works). Hornthwaite and an old quarry are shown to the east of the Pumping Station. The town of Thurlstone is shown to the north east of the site; development is also shown to the north and west of the site. Phoenix Works (Blacking) is shown immediately north of the site and a quarry is shown approximately 100m to the north west of the site.
1903-1904 1:10,560 & 1906 1:2,500	In the western part of the site, the trees along the southern boundary of the site are no longer shown. In the eastern part of the site, a rectangular building is shown on the northern boundary of the site. Beyond the site, the old quarry at Hornthwaite is no longer shown and a timber yard is shown to the east of the site.
1929-1932 1:10,560	A field boundary oriented west south west to east north east, is shown to cross the western part of the site. No significant changes are shown beyond the site.
1938 1:10,560	A second field boundary oriented south west to north east is shown adjacent to the southern boundary of the western part of the site. No significant changes are shown beyond the site.
1948, 1951 1:10,560	No significant changes are shown on or beyond the site.
1959 1:2,500	In the western part of the site, an embankment is shown oriented south west to north east. A track is shown along the crest of this embankment and buildings are shown along the eastern part of the northern boundary of the site, adjacent to Saville Lane. Trees are shown along the eastern part of the southern boundary of the site, adjacent to the River Don. Beyond the site to the south, the Pumping Station is now shown to be a works. The timber yard to the east of the site is no longer shown. Further development is shown in Thurlstone to the north and east of the site.
1967 1:10,560 & 1968 1:2,500	Further earthworks are shown in the centre and the southern part of the site. An electricity sub-station is shown along the northern boundary of the site. Beyond the site, a large rectangular building has been built adjacent to the western boundary of the site. Further development has also taken place to the north of the site in Thurlstone. The quarry to the north west of the site is now shown to be disused.



1987 1:10,000 & 1988, 1992 1:2,500	No significant changes are shown on or beyond the site.
2002 1:10,000	No significant changes are shown on the site. Beyond the site, a second large rectangular building is shown adjacent to the western boundary of the site.
2012 1:10,000 & 1:1,250	No significant changes are shown on or beyond the site.
2012 1:1:250	The depot on site is no longer shown. The site is shown to be undeveloped; office buildings are shown immediately west and north of the site and a housing development is shown beyond the offices to the north. No significant changes are shown beyond the site.



3.0 SITE SETTING

3.1 Geology

The GroundSure (GS) report and the following geological publications have been consulted:

- Geological Survey of England and Wales, Yorkshire Sheet 73SE, 1:10,560 Scale, dated 1932.

The GS report states that there is no made ground or drift deposits present on the site. The underlying bedrock is shown to comprise Lower Coal Measures strata of mudstone, siltstone and sandstone. The Grenoside Sandstone is shown to outcrop close to the northern boundary of the site.

The nearest fault, oriented north north west to south south east, is shown approximately 227m to the east of the site.

A borehole data pack, which includes historical borehole information, has been obtained from the BGS. A copy of this data pack is presented in Appendix E.

3.2 Mining

A Coal Mining Report has been obtained from the Coal Authority, which states the following:

- The property is not within the zone of likely physical influence on the surface from past underground coal workings.
- The property is not in the likely zone of influence of any present underground coal workings.
- The property is not in an area for which the Coal Authority has granted or is determining whether to grant a licence to remove 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.
- There are no known coal mine entries within, or within 20 metres of, the boundary of the property.
- There is no evidence of damage arising due to geological faults or other lines of weakness that have been affected by coal mining.
- The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.
- The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.
- The property is not within 800m of the boundary of an opencast site for which the Coal Authority is determining whether to grant or has granted a licence to remove coal by opencast methods.



A copy of the Coal Mining Report is presented in Appendix D.

3.3 Hydrogeology

The bedrock underlying the site is classified as a Secondary A Aquifer. These are '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'.

There is one groundwater abstraction licence within 1km of the site. This is located approximately 984m to the south west of the site at Eckland Bridge Works for use as general cooling.

The site does not lie within an Environment Agency Groundwater Source Protection Zone.

3.4 Hydrology

The nearest surface water feature is the River Don which is located adjacent to the southern boundary of the site.

There is one active discharge consent to controlled surface water within 500m of the study site. This is located approximately 400m to the east of the site on Thurlstone Road and is for the discharge of sewage (combined sewer overflow) to the River Don.

There is one recorded surface water abstraction within 1km of the site. This is located approximately 837m to the west of the site. The water is obtained from the River Don for use as general cooling.

Information on the EA website and presented in the GS report indicates that the southern part of the site lies within Zone 2 and Zone 3 floodplains. Based on the Zone 3 assessment, the annual probability of the site flooding is estimated to be 1 in 100.

There are no flood defences, areas benefiting from flood defences or areas used for flood storage within 250m of the site.

The BGS have indicated that the site is located in an area with a very high susceptibility to flooding due to the underlying geological conditions.

This classification is based on the limited geological information available to the BGS for the site at the present time. The susceptibility and the risk of groundwater flooding occurring at the site should be re-assessed based on site specific information.

A flood risk assessment may be required by the Local Authority as part of any planning application for the site.



3.5 Pollution Incidents

There is one Environment Agency recorded pollution incident within 250m of the site. This occurred on 5 October 2001 and was located 34m to the west of the site. The pollutant was crude sewage, the impact to water was "minor" and there were no impacts to land or air.

3.6 Landfill and Waste

The GS report includes information on active and former landfill sites supplied by the Environment Agency, Landmark, Local Authority and the BGS.

There are records of four former landfill sites within 1km of the site; four of these are registered at two locations. Details of these are summarised in Table 3.6 below.

Table 3.6 Summary of Former Landfill Sites

Distance & Direction	Address	Waste Type	Waste Licence	Site Reference/Landfill Licence	Operator
665m North East	Thurlstone Road, Penistone	Household	Yes	20B261(33), 4400/B261. (117)B	-
667m North East	Thurlstone Road, Penistone	Industrial/Commercial/Liquid Sludge	-	-	Penistone Urban District Council
848m East	Stottercliffe Road, Penistone	Inert/Industrial	Yes	20B60(10), 4400/B60, WD20 B60	Penistone Urban District Council
880m North East	T.A. Centre, Thurlstone Road, Penistone	Inert/Commercial	Yes	4400/(33), WD20 B261	A Gill
960m East	Stottercliffe Road, Penistone	Difficult	-	37AAHDAL	-
967m North East	Adj. T.A. Centre, Thurlstone Road, Penistone	Non-Hazardous	-	37AAKLAL	-

There no records of any operational or non-operational waste treatment, transfer or disposal sites within 500m of the site.

3.7 Environmental Permits, Incidents and Registers

There are no records of any historic Integrated Pollution Control (IPC) authorisations, Part A(1) or Integrated Pollution Prevention Control (IPPC) authorised activities within 500m of the site.

There are records of two Part A(2) or Part B permitted activities (potential to cause air pollution) within 500m of the site. Both of these are current, the current permits are summarised in Table 3.7 below.



Table 3.7 Permitted Activities with Current Permits

Distance & Direction	Address	Process	Permit Type
18m North West	James Durrans & Sons, Leapings Lane, Thurlstone	Coal/Coke/Gypsum/Carbon	B
160m East	James Durrans & Sons Ltd, Phoenix Works, Penistone	Coating & Enamelling	B

There are no records of Water Industry Referrals (potentially harmful discharges to the public sewer) or Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the site.

There are no active List 1 or List 2 Dangerous Substances Inventory Sites or Category 3 or 4 Radioactive Substances Licences within 500m of the site.

There are no recorded Control of Major Accidents Hazard (COMAH), Notification of Installations Handling Hazardous Substances (NIHHS) or sites determined as Contaminated Land under Part IIA EPA 1990 within 500m of the site.

3.8 Radon Risks

The site is not in a radon affected area, as less than 1% of properties are above the action level for radon gas. In the past, no radon protective measures would have been necessary in the construction of new dwellings or extensions in these areas.

However, based on recent research into the health effects of radon gas, the Health Protection Agency have made recommendations to the Government that consideration should be given to the installation of radon protective measures in all new buildings.

They have recommended that UK Building Regulations and Standards should be changed to ensure that all new property incorporates the basic materials and measures necessary to reduce indoor radon concentrations. This would also apply to new extensions and to any other changes to property where the Building Regulations and Standards apply. It should be noted that changes to the Building Regulations relating to this matter have not yet been made. It is recommended that the advice of Building Control should be obtained during the design process.

3.9 Other Information

There are no sites determined as Contaminated Land under Section 78R of the Environmental Protection Act 1990 within 500m of the site.

There are no petrol or fuel sites within 500m of the site.



4.0 ENVIRONMENTAL RISK ASSESSMENT

4.1 Introduction

The presence of contaminated materials on a site is generally only of concern if an actual or potentially unacceptable risk exists. Within the context of current UK legislation i.e. Part 2A of the Environmental Protection Act 1990, implemented through Section 57 of the Environment Act 1995, the interpretation of a "significant risk" is termed to be one where:

- Significant harm is being caused, or there is a significant possibility of such harm being caused, (where harm is defined as harm to health of living organisms or other interference with the ecological systems of which they form a part and, in the case of man, includes harm to his property); and/or
- Pollution of controlled waters is being caused.

The potential for harm to occur requires three conditions to be satisfied:

- Presence of substances (potential contaminants/pollutants) that may cause harm (Sources).
- The presence of a receptor which may be harmed, e.g. the water environment or humans, buildings, fauna and flora (Receptors).
- The existence of a linkage between the Source and the Receptor (The Pathway).

In order to assess the contamination risk at the site, the above rationale has been applied and is discussed in the context of Contamination Sources and Potential Pollutant Linkages.

4.2 Potential Sources

Based on a review of the historical maps, the initial development on the site was the construction of an embankment associated with a Mill Race in the eastern part of the site; this is shown on the 1892 plan. Earthworks are shown in the western part of the site on the 1959 plan and additional earthworks are shown in this area on the 1967 plan.

A building is shown on the northern boundary of the site on the 1903 plan; further buildings are shown along this northern boundary on the 1959 plan. An electricity sub-station, at the same location, is shown on the 1967 plan.

During the site walkover, a bunded above ground diesel tank was located in the south west part of the site, adjacent to the River Don.

Immediately north of the site is the Phoenix Works (Blacking), this was constructed in 1863.



Based on the above, the following potentially contaminative sources may be present on the site:

- Made ground associated with the buildings and earthworks.
- Made ground and natural ground beneath the above ground fuel storage tank and associated pipework.
- Hazardous gases and soil vapours associated with the made ground and natural ground.

Reference has been made to CLR 8 'Potential Contaminants for the Assessment of Land', March 2002, published by the EA.

Potential contaminants which could be present on and beneath the site are listed below:

- Metals, metalloids and their compounds.
- Polycyclic Aromatic Hydrocarbons (PAH).
- Poly-Chlorinated Biphenyls (PCB).
- Hydrocarbons (fuel/oil).
- Hazardous Gases/Soil Vapours.

4.3 Potential Pathways

Based on the available information and the proposed redevelopment of the site for a commercial end use, the following potential exposure pathways will require consideration, both during the redevelopment works and on completion of the construction:

- Ingestion and dermal contact with contaminated soil and groundwater.
- Inhalation of hazardous gases/soil vapours.
- Leaching/migration of contaminants from soil into groundwater via surface and groundwater flow.
- Permeation of water supply pipes and other services by organic and aggressive contaminants.
- Uptake of contaminants by planting in landscape areas.

4.4 Potential Receptors

The potential receptors considered are:

- Development workers and future maintenance workers involved in excavations, e.g. foundations or where services are being installed or repaired following development.
- Future end users of the site (e.g. employees).
- The underlying groundwater.
- Buildings and services.
- Planting in landscape areas.



4.5 Pollutant Linkage Assessment

A potential pollutant linkage assessment has been completed and is summarised in the Conceptual Site Model which is presented as Figure 3 in Appendix A. This is based on the proposed redevelopment of the site for commercial end use.

On the basis of the proposed end use and known history of the site, the following potential pollutant linkages may be present:

- Development and maintenance workers and site end users, i.e. employees could come into contact with soils containing elevated concentrations of potential contaminants and hazardous gases/soil vapours.
- Underlying groundwater could become contaminated due to the leaching and migration of mobile contaminants.
- Buildings and services could be affected by potential contaminants in the made ground and natural ground; and
- Plants in landscape areas could be affected by phytotoxic elements within the made ground and natural ground.

These are based on current site conditions and do not consider exposure pathways following any remediation of the site.

If the site can be shown to pose no "significant harm" or pollution to controlled waters, then the site can be considered to be uncontaminated.

4.6 Risk Classification

Based on the potential pollutant linkages present on the site, the site should be considered to be **moderate risk with respect to contamination**. This designation will be largely dependent on the nature of any made ground present on or adjacent to the site.

In order to fully assess and classify the risks to human health, groundwater, surface water and buildings/services, a Phase 2 Intrusive Investigation, including chemical testing of soils and groundwater and gas monitoring will be required.



5.0 PRELIMINARY ENGINEERING ASSESSMENT

5.1 Development Proposals

It is proposed to re-develop the site with a four-storey split level office building. A proposed site layout plan has been made available which is referenced below and a copy is presented in Appendix A.

- Humphreys Teal Partnership Architects, Saville Lane, Penistone, Proposed Site Plan. Job No. 1078, Drg No. 02, Rev.C, Dated March 2012 for James Durrans & Sons Limited.

5.2 Foundations

Based on the information presented in the GS report and on the geological plan, ground conditions are likely to comprise mudstone, siltstone and sandstone bedrock at shallow depth.

Made ground and drift deposits are reported not to be present on the site.

However, as a consequence to the terraced nature of the site, the presence of made ground, probably comprising re-worked natural strata, should not be discounted.

Due to the split level nature of the proposed development, significant piled retaining structures are likely to be required for part of the development; these should be incorporated into the foundation design.

The piled retaining structures will found in the underlying bedrock.

The selection of foundation type for the remainder of the structure will be governed by the thickness of any made ground and the strength and settlement characteristics of the underlying natural strata, which will need to be confirmed.

If the underlying natural strata is unsuitable, i.e. too weak or compressible, then consideration could be given to the adoption of deeper trenchfill foundations.

If further poor ground is encountered or high load areas are required, then, consideration could be given to ground treatment options, e.g. vibro-stone columns, or a deeper foundation solution, e.g. piles.

5.3 Ground Floor Construction

Due to the likely presence of made ground across the site, it would normally be recommended that a suspended ground floor slab should be utilised.

Where ground bearing slabs are required it will be necessary to carry out ground improvement in order to achieve the required bearing capacity.



5.4 Groundwater

It may be expected that shallow perched groundwater will be encountered within the shallow natural strata. The presence of groundwater will need to be assessed as part of any ground investigation.

5.5 Obstructions

The presence of obstructions in the made ground should be anticipated, particularly at the locations of historical structures. These may influence the implementation of any foundation solution and may have to be broken out and removed prior to the commencement of construction.

The historical maps show that part of a Mill Race was located immediately to the east of the site. A part of the Mill Race is also shown further west near Plumpton Mills which suggests the two parts were connected and that the line of the channel cuts through the subject site. It is recommended that further searches are carried out to assess the line of the channel with respect to the site and the potential impact for earthworks and foundations.

5.6 Excavations

Excavations through any drift deposits may be unstable in the long term and temporary side support is likely to be required.

5.7 Roads, Pavements and Hardstanding Surfaces

It is recommended that at this stage, a conservative bearing value for the sub-grade is used, until the nature of the sub-grade can be physically assessed.

5.8 Chemical Attack on Buried Concrete

Samples of made and natural ground should be obtained and submitted to the laboratory for testing in order to assess the sulphate content and acidity and hence the concrete class required for buried concrete to the latest standard.



6.0 FURTHER INVESTIGATIONS

It is recommended that a ground investigation is carried out in order to further assess the potential environmental and geotechnical constraints to development and should comprise the following:

- Window sample boreholes with in situ tests to provide geotechnical information in order to assess the nature of the sub-surface and confirm the depth and distribution of any made ground.
- Cable percussive boreholes with rotary coring follow-on and in-situ testing to obtain geotechnical information from greater depth.
- These boreholes will facilitate the installation of gas and groundwater monitoring wells.
- Chemical analysis of soil and water samples in order to determine the concentrations of potential contamination on the site.
- Geotechnical testing to classify materials and inform foundation design and chemical testing to assess the nature and extent of any contamination on the site and determine the Aggressive Chemical Environment for Concrete classification.
- Monitoring of gas and groundwater wells for hazardous gases, methane, carbon dioxide, and oxygen and flow rate to the requirements of the Local Authority.

R Mew
BSc MSc FGS CGeol
For and on behalf of JPG (Leeds) Limited

May 2012



Appendix A Figures/Drawings

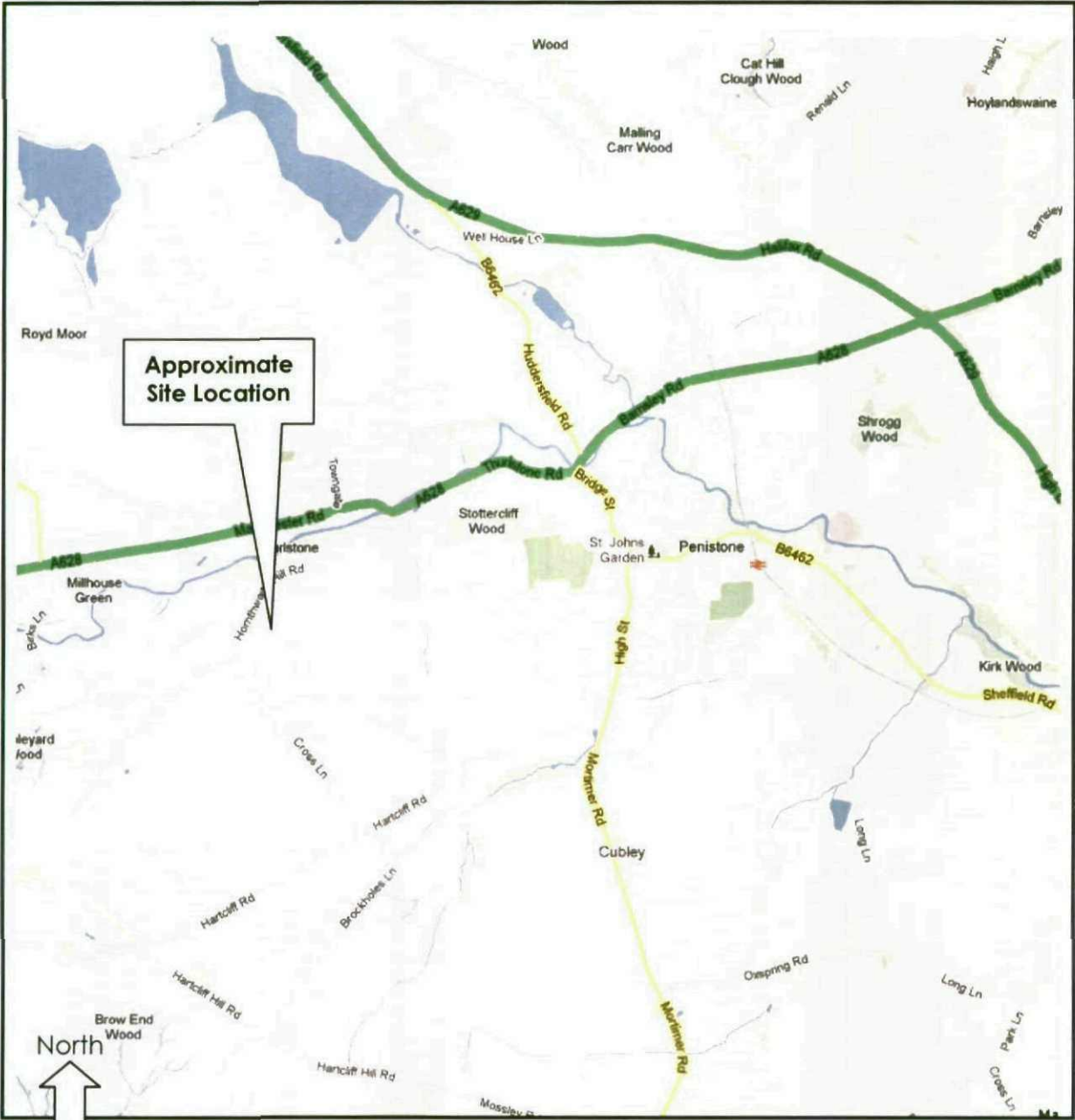


Figure 1 – Site Location Plan

Site	Proposed Office Development, Saville Lane, Penistone
Client	James Durrans & Sons Limited
Job Number	4478
Scale	NTS

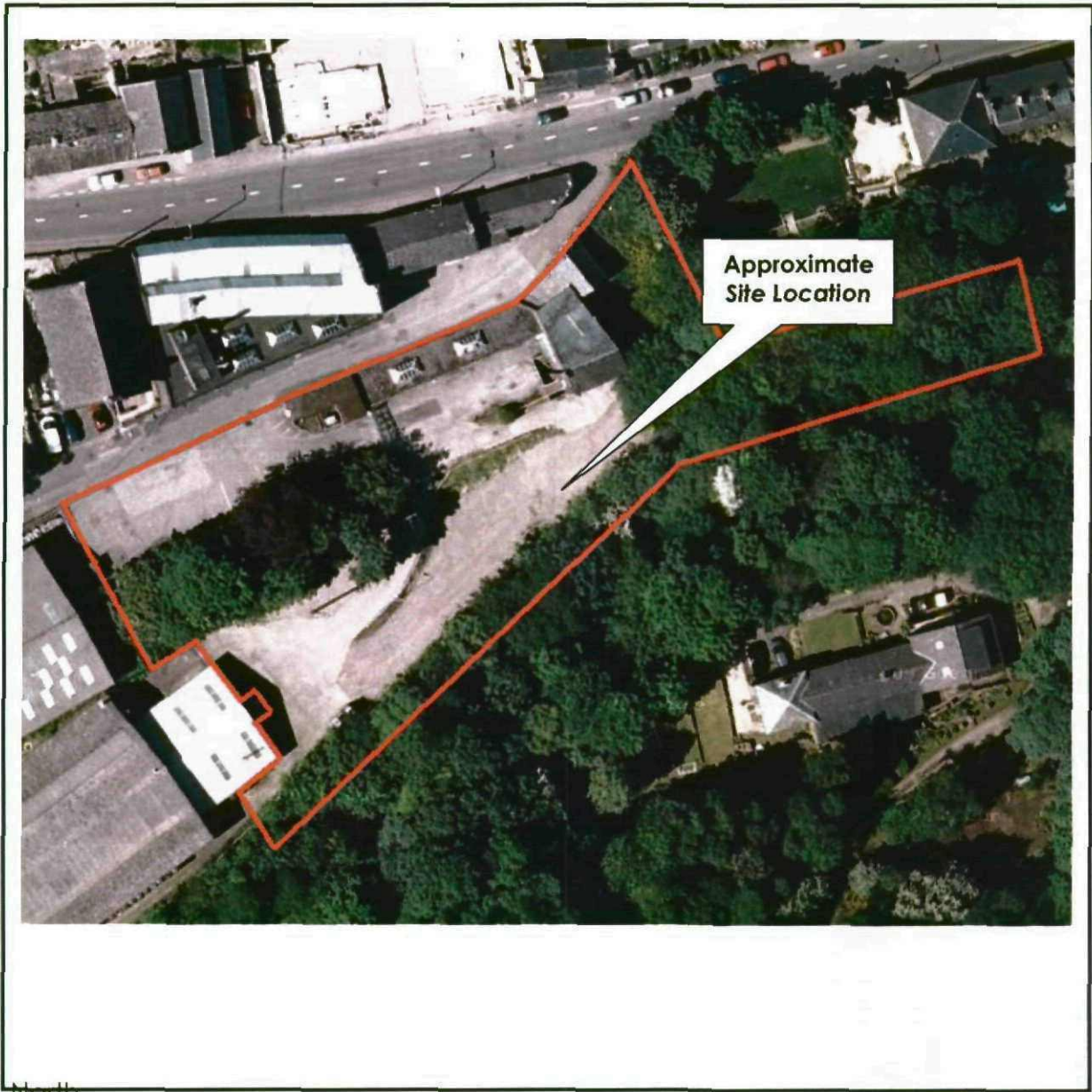


Figure 2 – Aerial Photograph

	Proposed Office Development, Saville Lane, Penistone
Client	James Durrans & Sons Limited
Job Number	4478
Scale	NTS

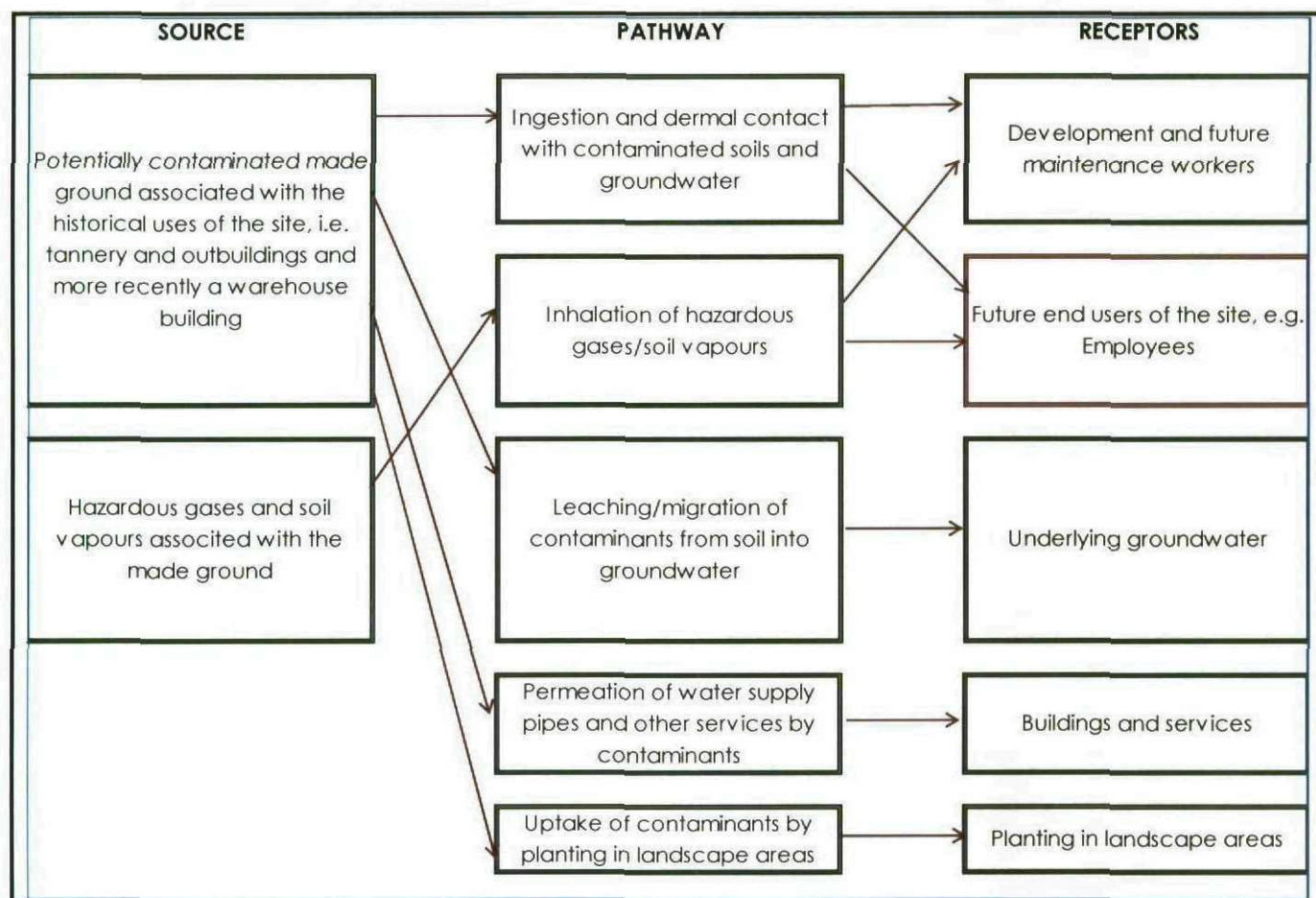
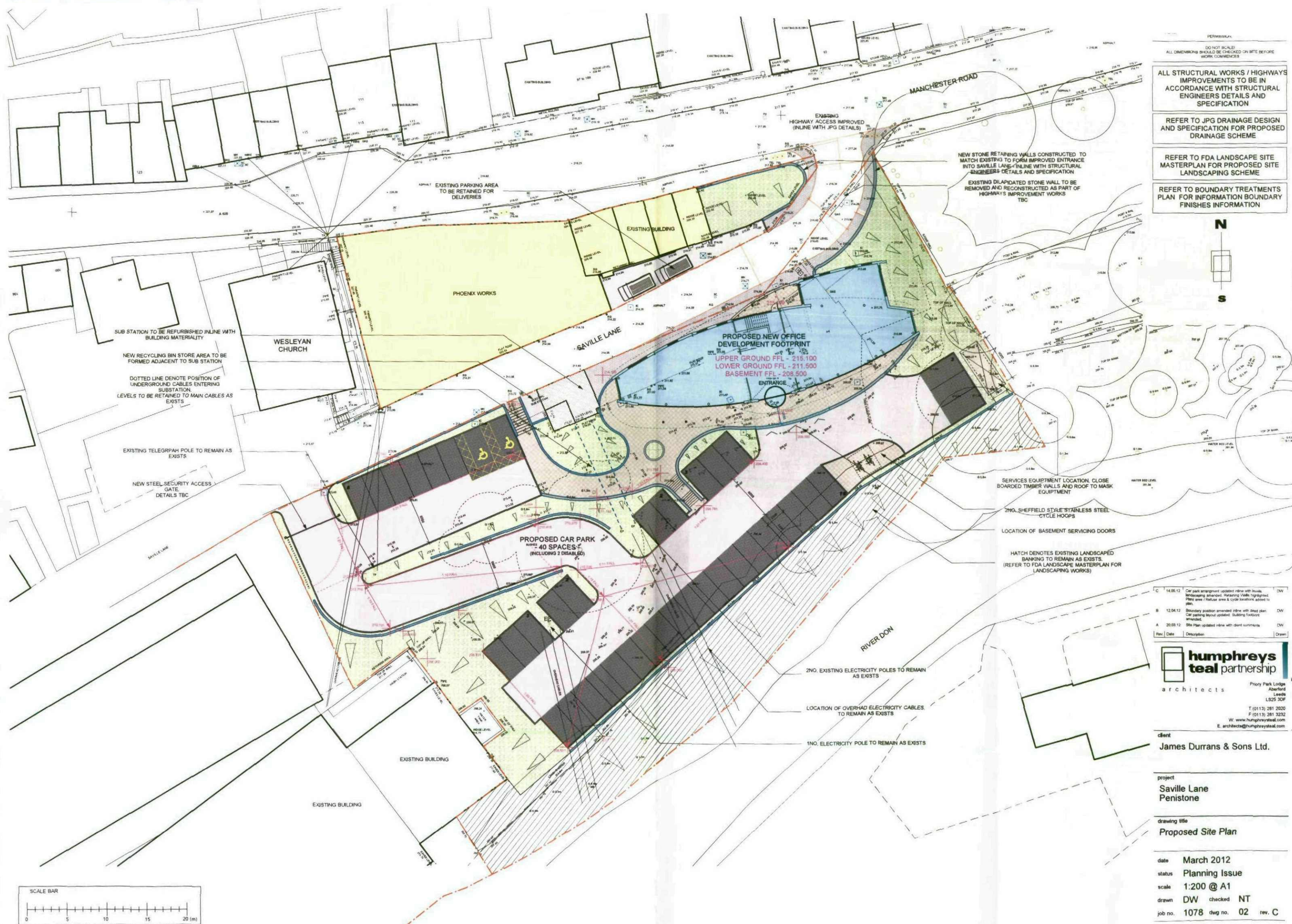


Figure 3 – Conceptual Site Model

Site	Proposed Office Development, Saville Lane, Penistone
Client	James Durrans & Sons Limited
Job Number	4478



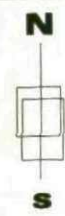
PERMISSIONS
DO NOT SCALE!
ALL DIMENSIONS SHOULD BE CHECKED ON SITE BEFORE
WORK COMMENCES

ALL STRUCTURAL WORKS / HIGHWAYS
IMPROVEMENTS TO BE IN
ACCORDANCE WITH STRUCTURAL
ENGINEERS DETAILS AND
SPECIFICATION

REFER TO JPG DRAINAGE DESIGN
AND SPECIFICATION FOR PROPOSED
DRAINAGE SCHEME

REFER TO FDA LANDSCAPE SITE
MASTERPLAN FOR PROPOSED SITE
LANDSCAPING SCHEME

REFER TO BOUNDARY TREATMENTS
PLAN FOR INFORMATION BOUNDARY
FINISHES INFORMATION



SUB STATION TO BE REFURBISHED INLINE WITH
BUILDING MATERIALITY

NEW RECYCLING BIN STORE AREA TO BE
FORMED ADJACENT TO SUB STATION

DOTTED LINE DENOTE POSITION OF
UNDERGROUND CABLES ENTERING
SUBSTATION
LEVELS TO BE RETAINED TO MAIN CABLES AS
EXISTS

EXISTING TELEGRAPH POLE TO REMAIN AS
EXISTS

NEW STEEL SECURITY ACCESS
GATE
DETAILS TBC

NEW STONE RETAINING WALLS CONSTRUCTED TO
MATCH EXISTING TO FORM IMPROVED ENTRANCE
INTO SAVILLE LANE - INLINE WITH STRUCTURAL
ENGINEERS DETAILS AND SPECIFICATION

EXISTING DILAPIDATED STONE WALL TO BE
REMOVED AND RECONSTRUCTED AS PART OF
HIGHWAYS IMPROVEMENT WORKS
TBC

PROPOSED NEW OFFICE
DEVELOPMENT FOOTPRINT
UPPER GROUND FFL - 215.100
LOWER GROUND FFL - 211.500
BASEMENT FFL - 208.500
ENTRANCE

PROPOSED CAR PARK
- 40 SPACES -
(INCLUDING 2 DISABLED)

SERVICES EQUIPMENT LOCATION CLOSE
BOARDED TIMBER WALLS AND ROOF TO MASK
EQUIPMENT

ZNO SHEFFIELD STYLE STAINLESS STEEL
CYCLE HOOPS

LOCATION OF BASEMENT SERVICING DOORS

HATCH DENOTES EXISTING LANDSCAPED
BANKING TO REMAIN AS EXISTS.
(REFER TO FDA LANDSCAPE MASTERPLAN FOR
LANDSCAPING WORKS)

ZNO EXISTING ELECTRICITY POLES TO REMAIN
AS EXISTS

LOCATION OF OVERHEAD ELECTRICITY CABLES
TO REMAIN AS EXISTS

1NO. ELECTRICITY POLE TO REMAIN AS EXISTS

C	14.05.12	Car park arrangement updated inline with levels. Landscaping amended. Retaining walls highlighted. Plant area / Rail Use area & cycle locations added to plan.	DW
B	12.04.12	Boundary position amended inline with deed plan. Car parking layout updated. Building footprint amended.	DW
A	20.03.12	Site plan updated inline with client comments.	DW
Rev	Date	Description	Drawn

**humphreys
teal partnership**
architects

Priority Park Lodge
Aberford
Leeds
LS25 3DF

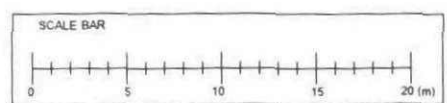
T (0113) 281 2020
F (0113) 281 3232
W www.humphreys-teal.com
E architects@humphreys-teal.com

client
James Durrans & Sons Ltd.

project
**Saville Lane
Penistone**

drawing title
Proposed Site Plan

date **March 2012**
status **Planning Issue**
scale **1:200 @ A1**
drawn **DW** checked **NT**
job no. **1078** dwg no. **02** rev. **C**





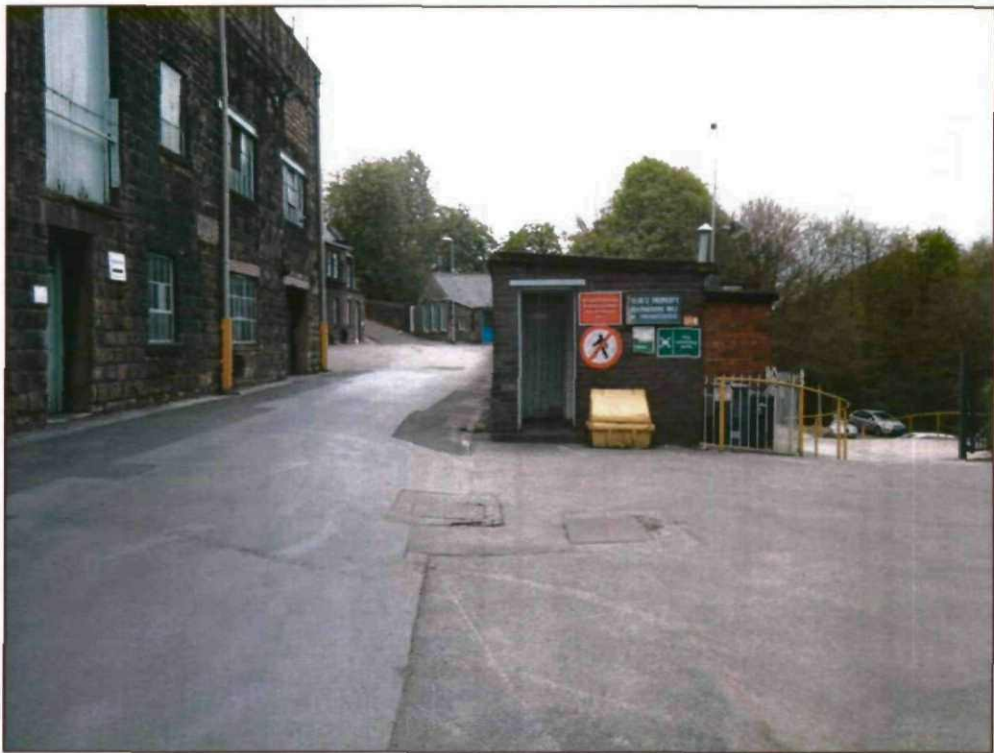
Appendix B Site Photographs



Photograph 1: View looking south west from Manchester Road to Saville Lane



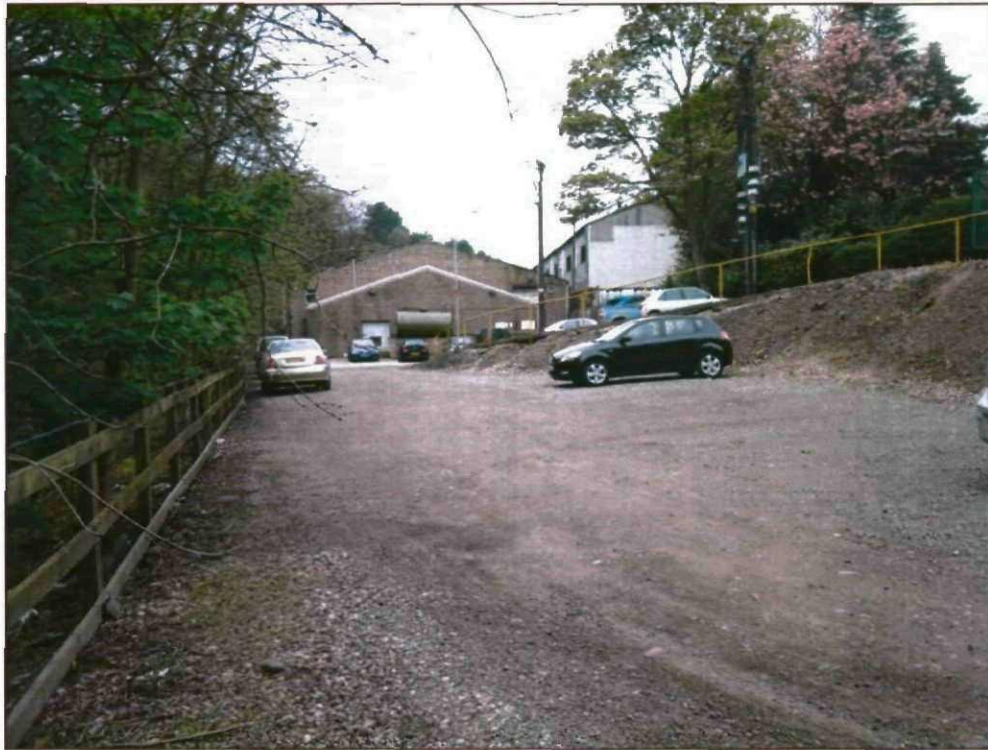
Photograph 2: View looking south at the paddock from Saville Lane



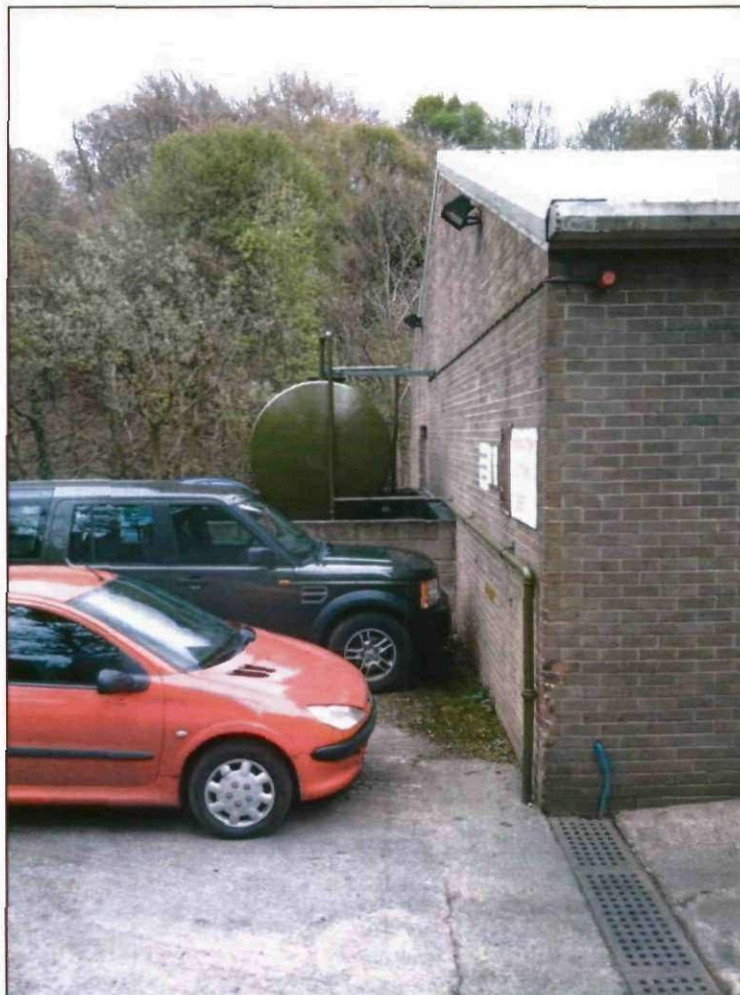
Photograph 3: View looking north east from the top of the second terrace



Photograph 4: View looking north east at the second terrace



Photograph 5: View looking south west along the bottom terrace



Photograph 6: Above ground diesel tank on the bottom terrace



Appendix C Historical Plans

Ordnance Survey® Historical Mapping Extract

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Site Details:

Saville Lane, Penistone, S36
9QU

Client Ref: 6775
Report Ref: CMAPS-CM-148076-6775-040512HIS
Grid Ref: 423174, 403378

Map Name: County Series

Map date: 1850

Scale: 1:10,560

Printed at: 1:10,560



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Grid Ref: 423174, 403378

Map Name: County Series

Map date: 1903-1904

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Printed at: 1:10,560



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Edition N/A
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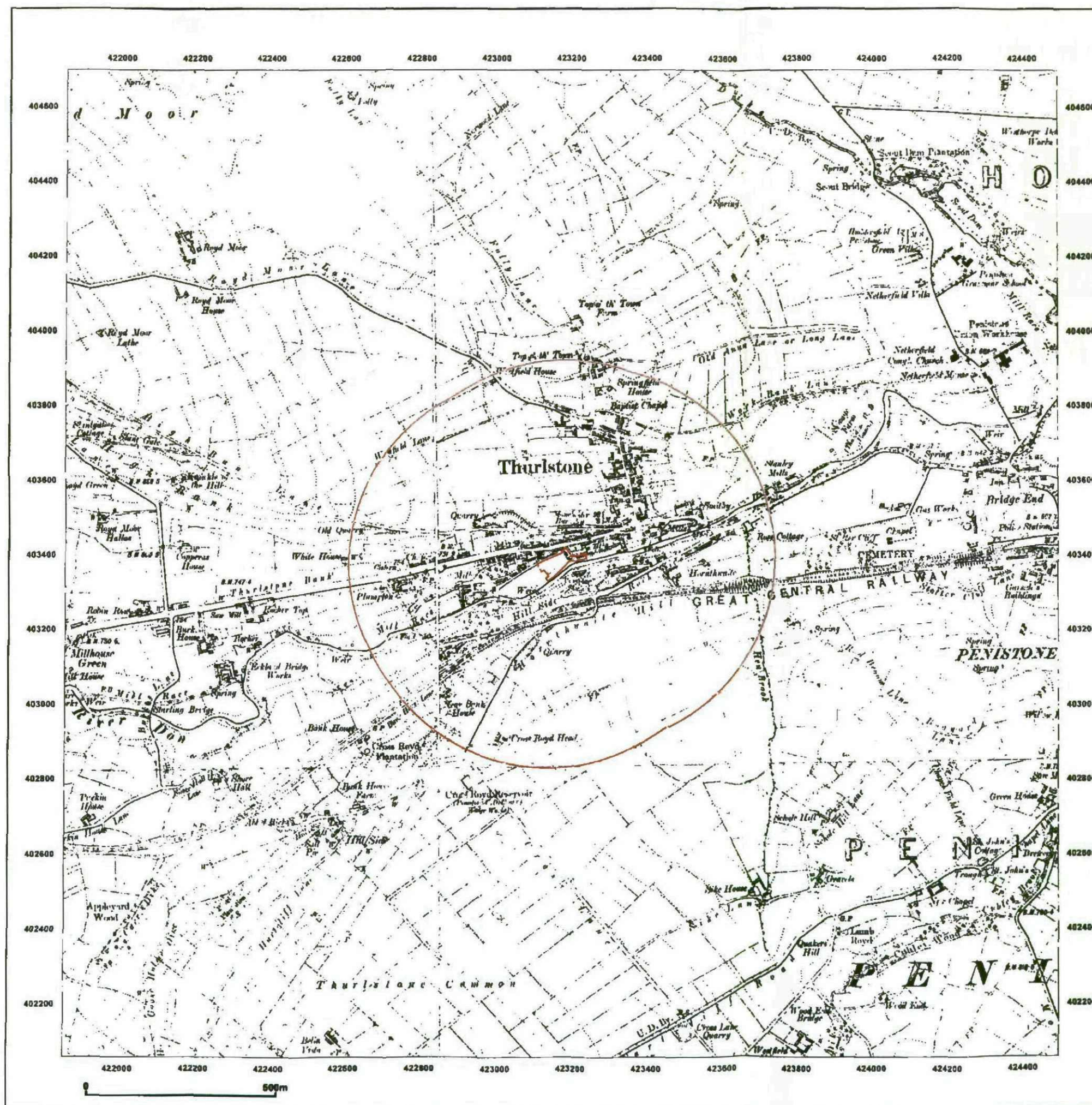
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Map Name: County Series

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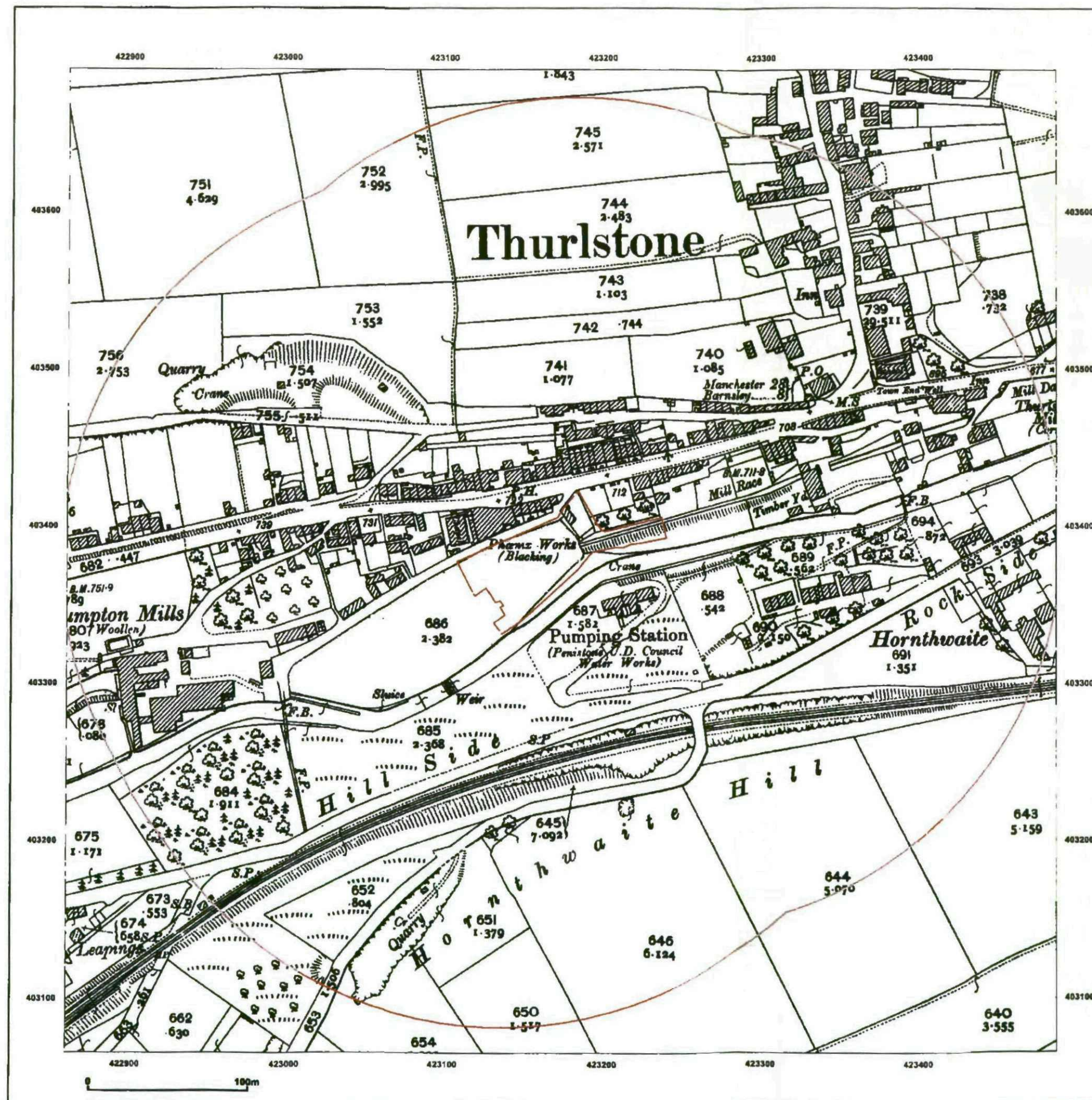
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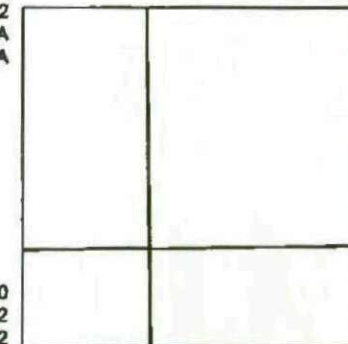
Map date: 1929-1932

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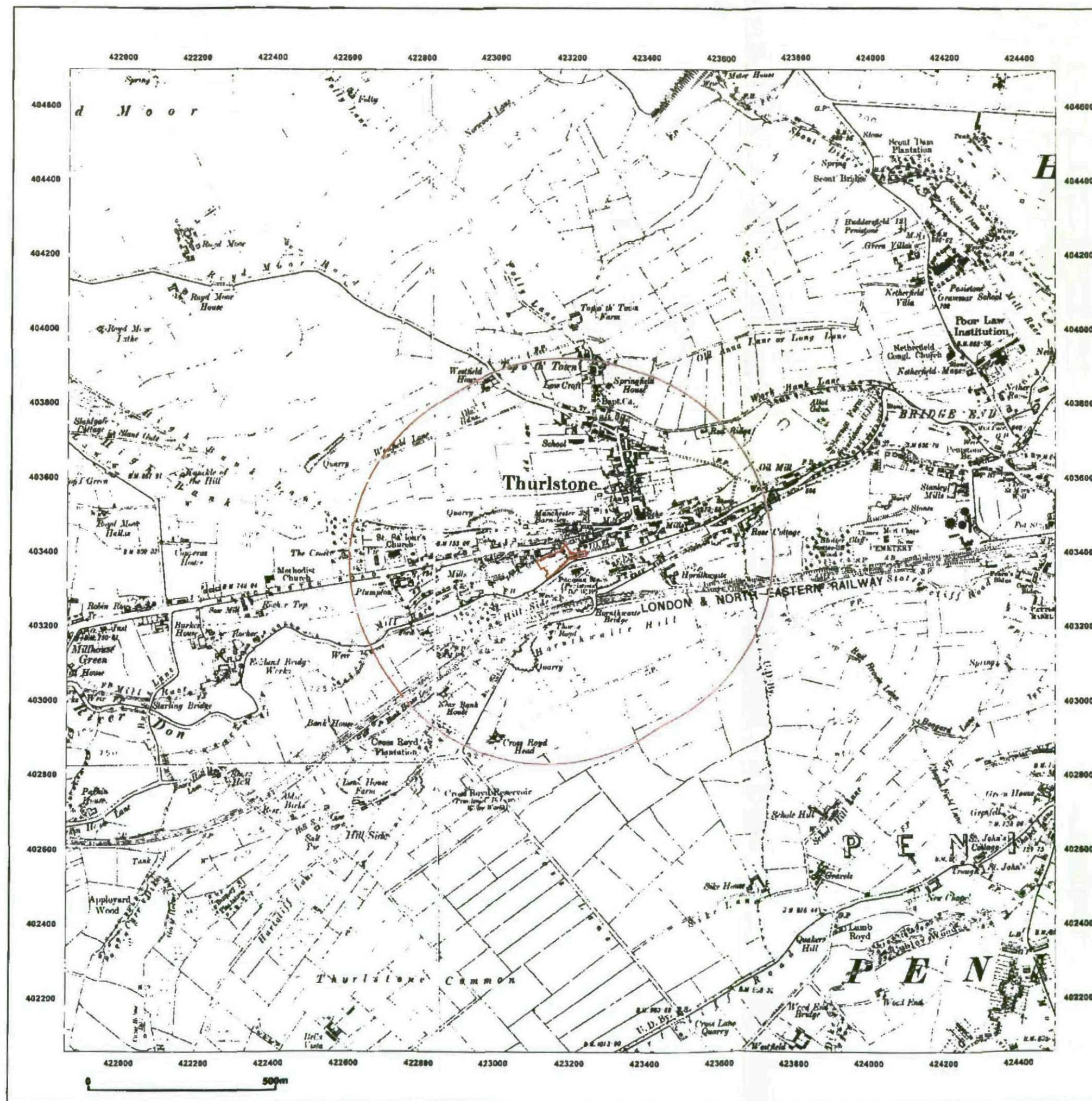
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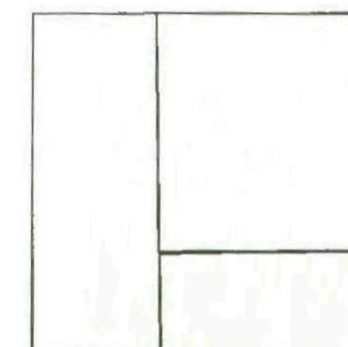
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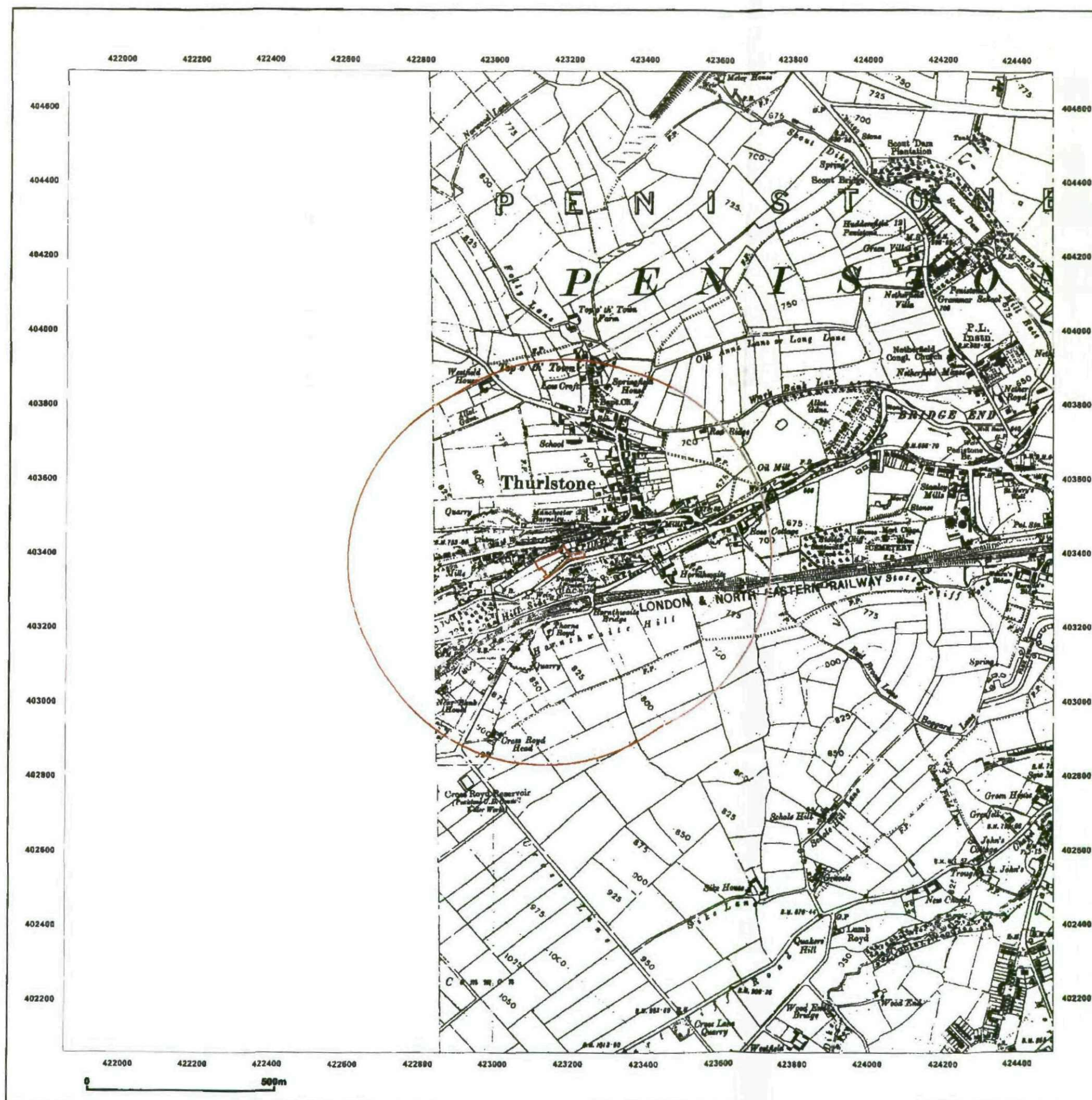


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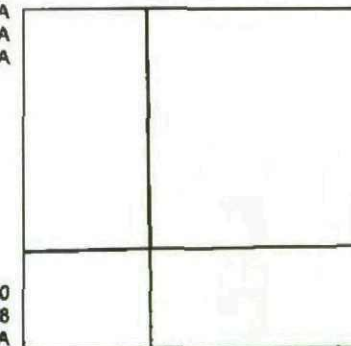
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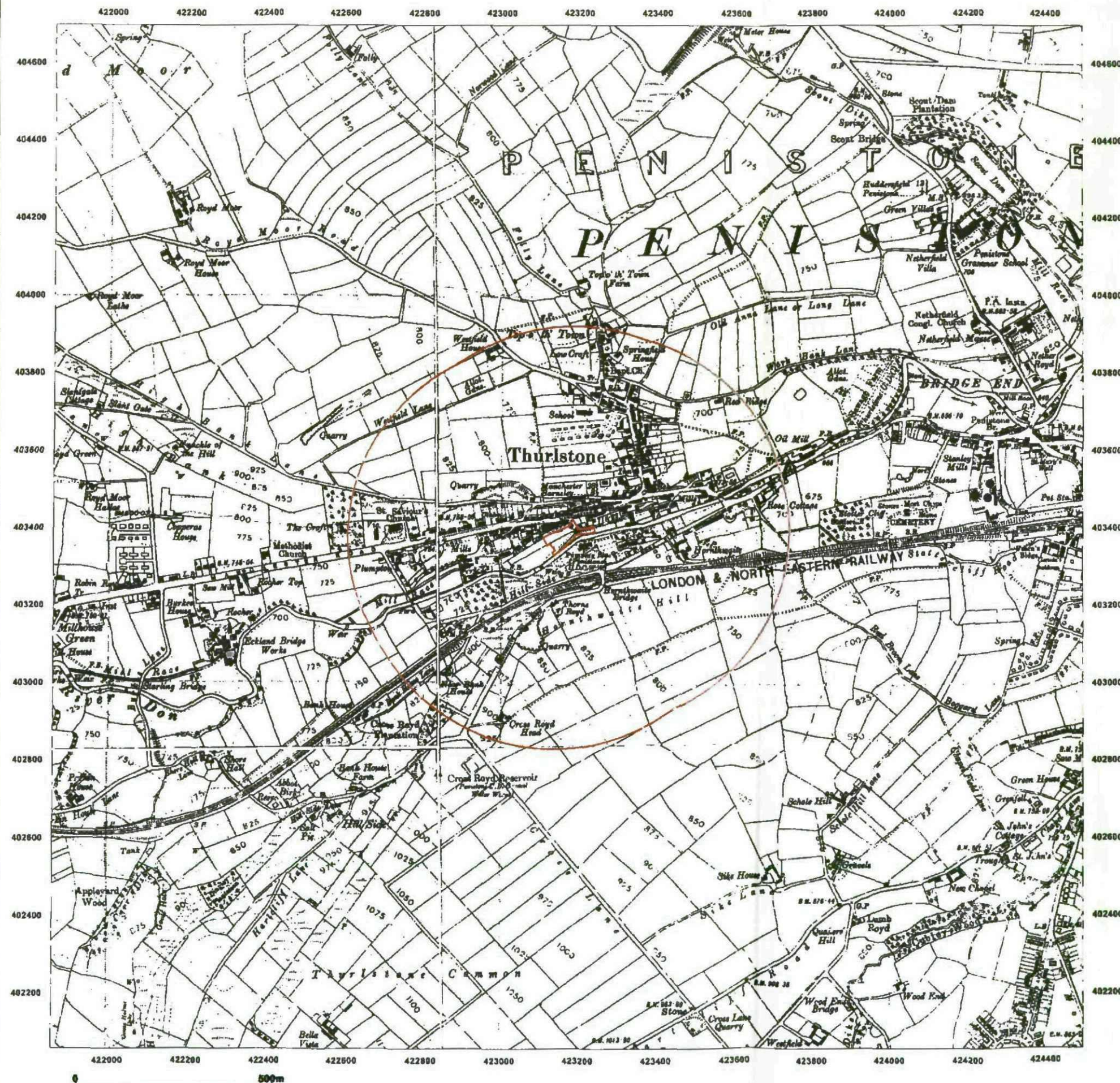
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Map Name: National Grid

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Grid Ref: 423174, 403378

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Grid Ref: 423174, 403378

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Printed at: 1:10,000



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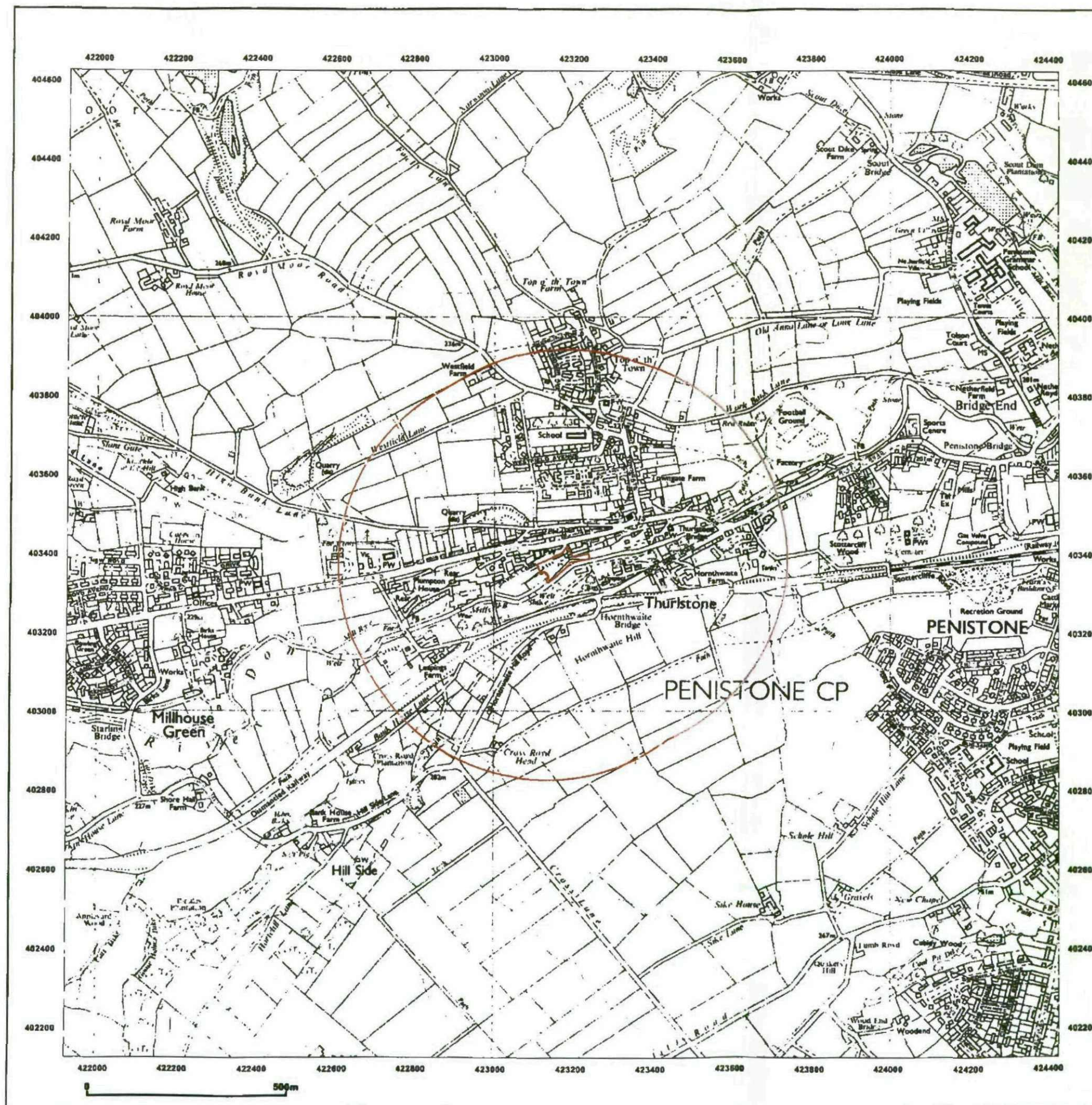
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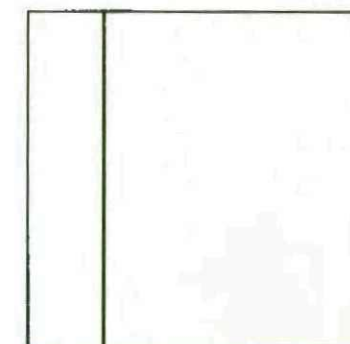
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Map Name: National Grid

Map date: 1988

Scale: 1:2,500

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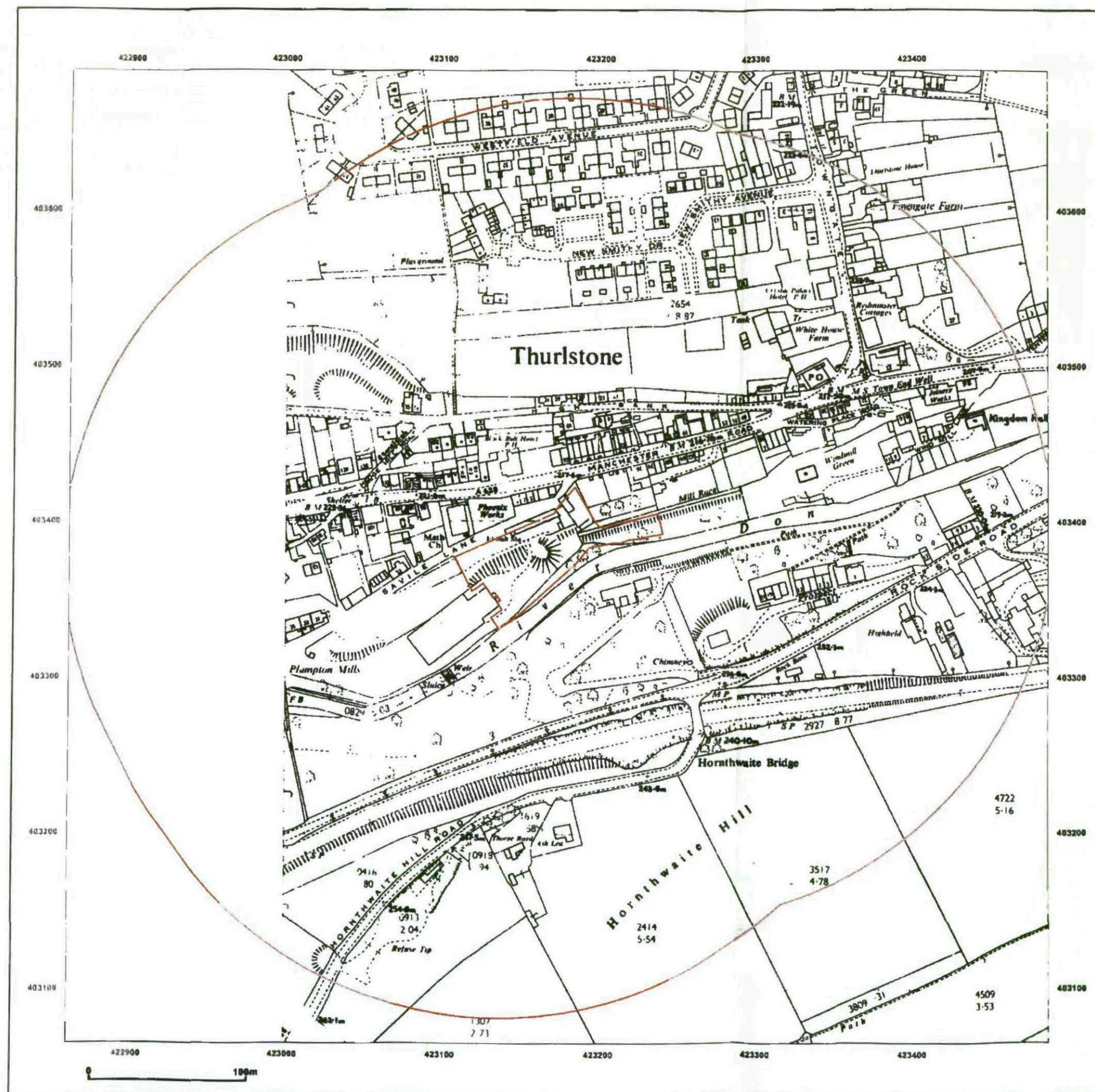


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Grid Ref: 423174, 403378

Map Name: National Grid

Map date: 1992

Scale: 1:2,500

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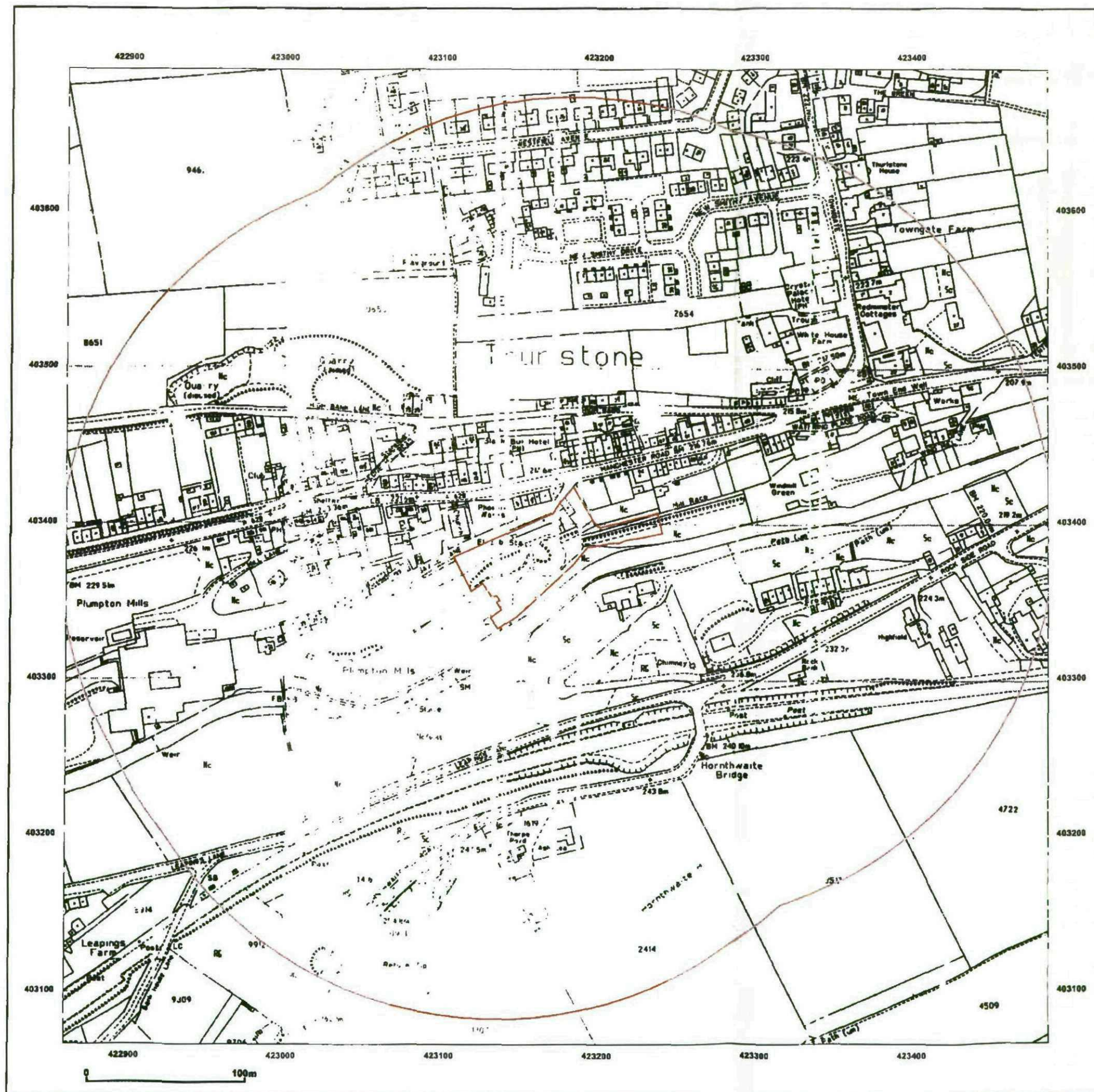


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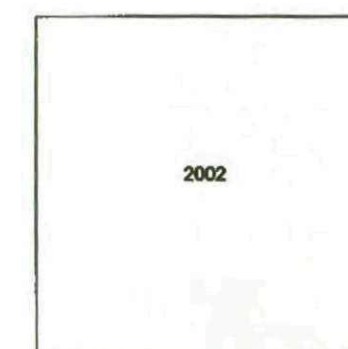
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Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000



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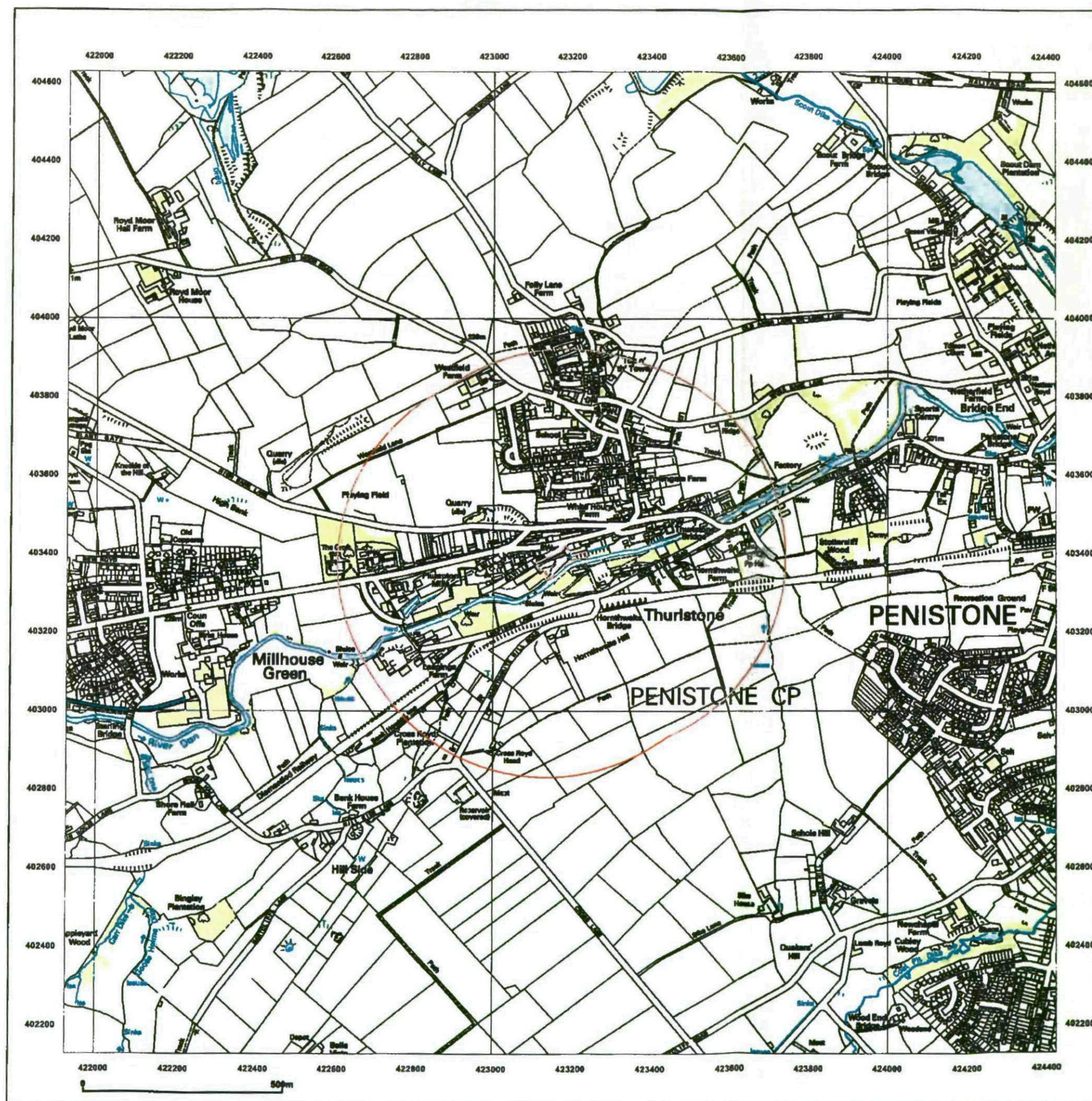


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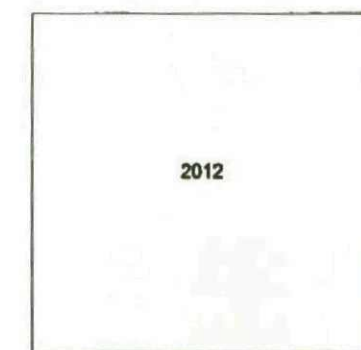
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Map Name: National Grid

Map date: 2012

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Printed at: 1:10,000



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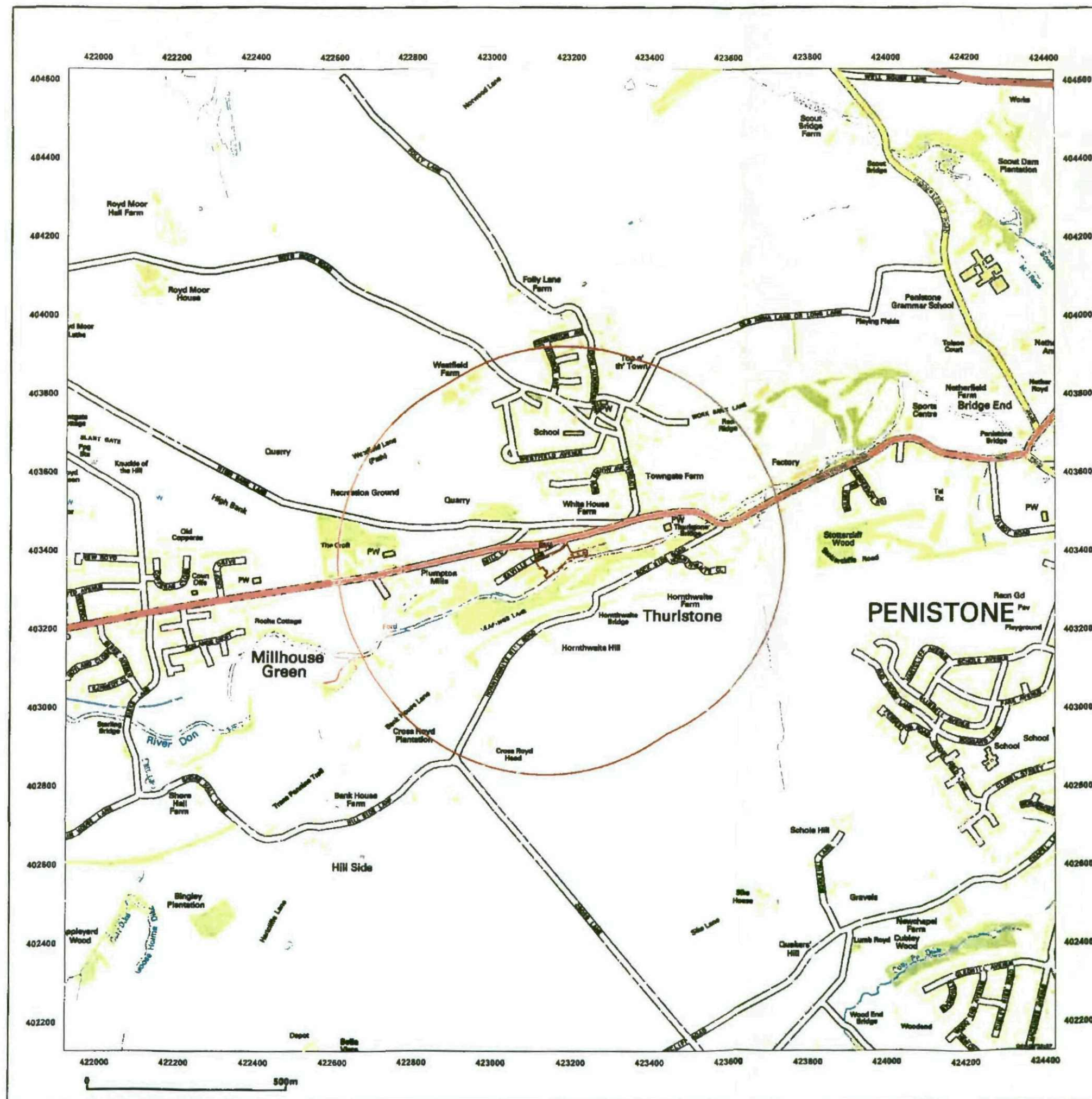


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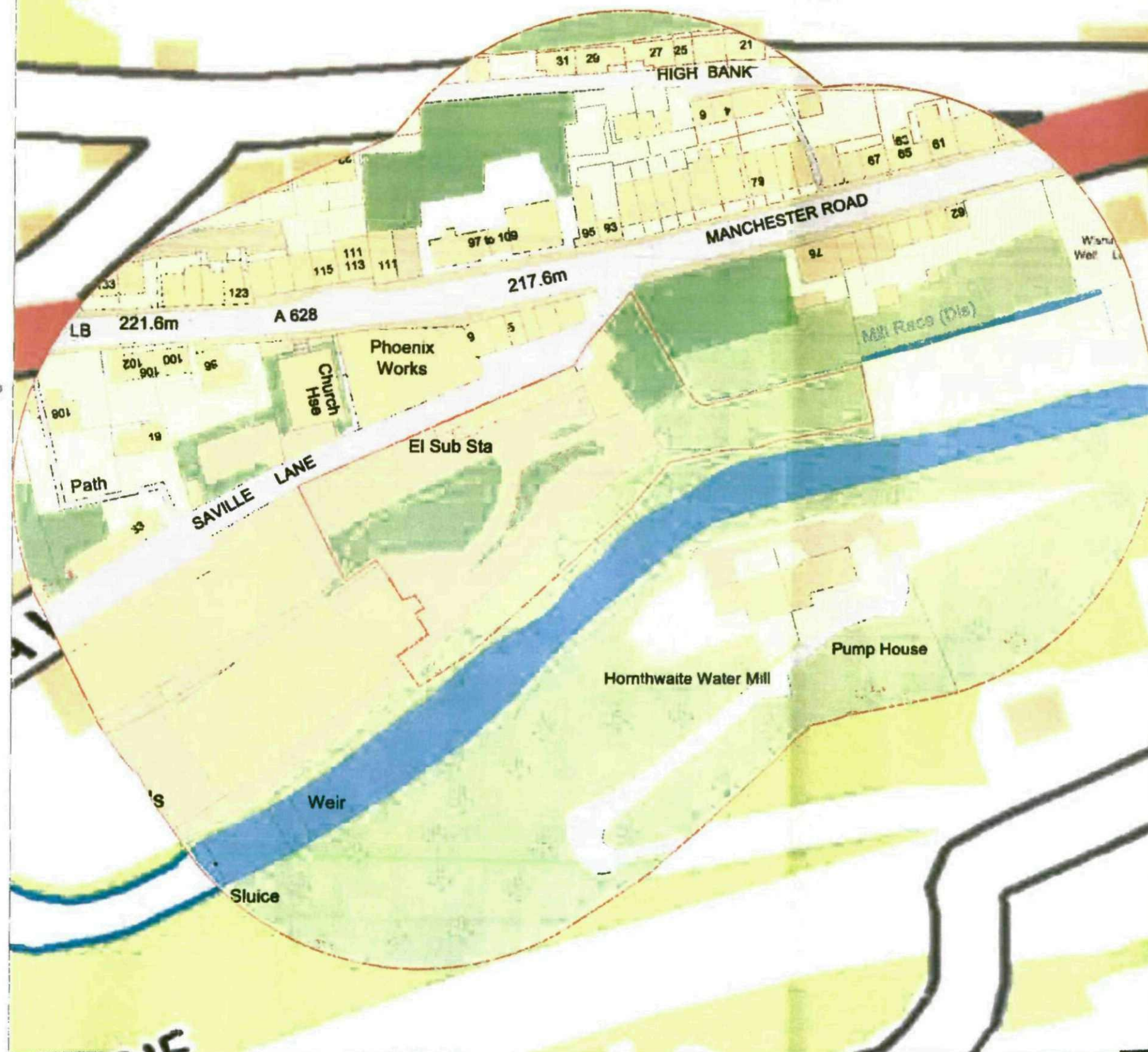
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Farm



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Grid Ref: 423174, 403378

Map Name: MasterMap

Map date: 2012

Scale: 1:1,250

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Appendix D Coal Authority Report

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

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LEEDS
WEST YORKSHIRE
LS12 6QA**

Our reference: **51000082296001**
Your reference: **4482**
Date of your enquiry: **11 May 2012**
Date we received your enquiry: **11 May 2012**
Date of issue: **11 May 2012**

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

Non-Residential Coal Authority Mining Report

PHOENIX WORKS, THURLSTONE, SHEFFIELD, S36 9QU

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

According to the records in our possession, the property is not within the zone of likely physical influence on the surface from past underground workings.

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.

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

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres, since 31st October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

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.

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 not in an area for which a notice of entitlement to withdraw support has been published.

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

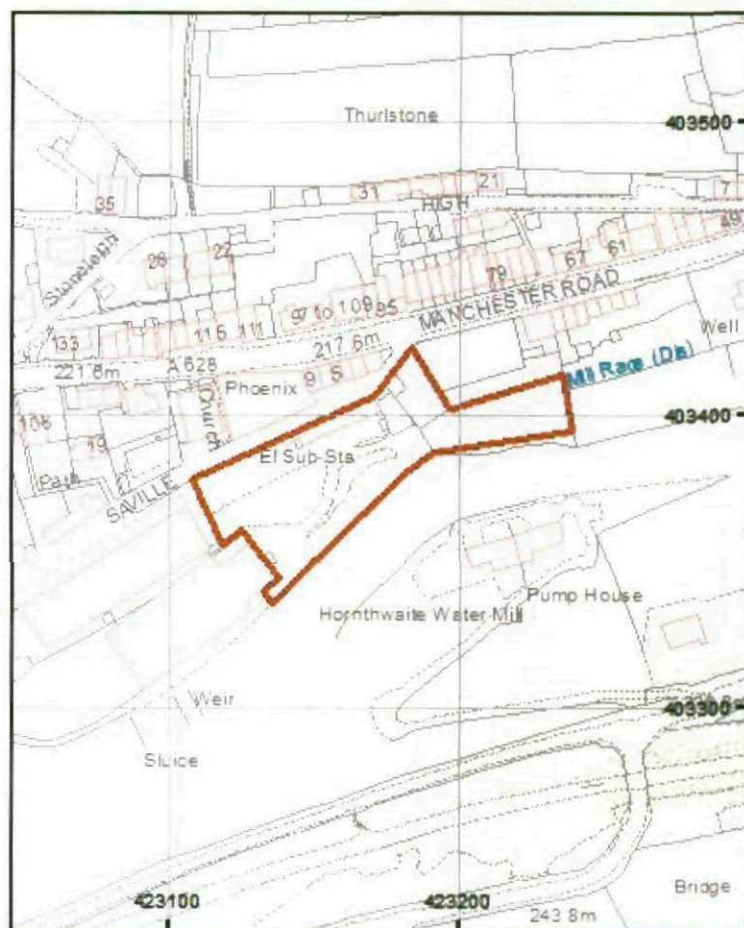


Enquiry boundary

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Key

Approximate position of enquiry
boundary shown





Appendix E BGS Borehole Data Pack



**British
Geological Survey**
NATURAL ENVIRONMENT RESEARCH COUNCIL



GeoRecords Plus+

**Reuben Mew
JPG (Leeds) Limited
5 John Charles Way
Leeds
LS12 6QA
United Kingdom**

Borehole Data Pack:

This package provides additional data relating to your selected borehole record ordered via GeoRecordsPlus. It provides index listings of other information held in some key BGS databases for your site and a geological map extract for the surrounding area, taken from the 1:50,000 scale BGS digital geological map of Great Britain (DiGMapGB-50).

It should be noted that this package is not a comprehensive listing of all BGS data holdings and other data may be available. Note that index data is also accessible through the BGS Internet Geoscience Data Index on the BGS website at www.bgs.ac.uk If you wish to place an order for any of the index data please e-mail enquiries@bgs.ac.uk

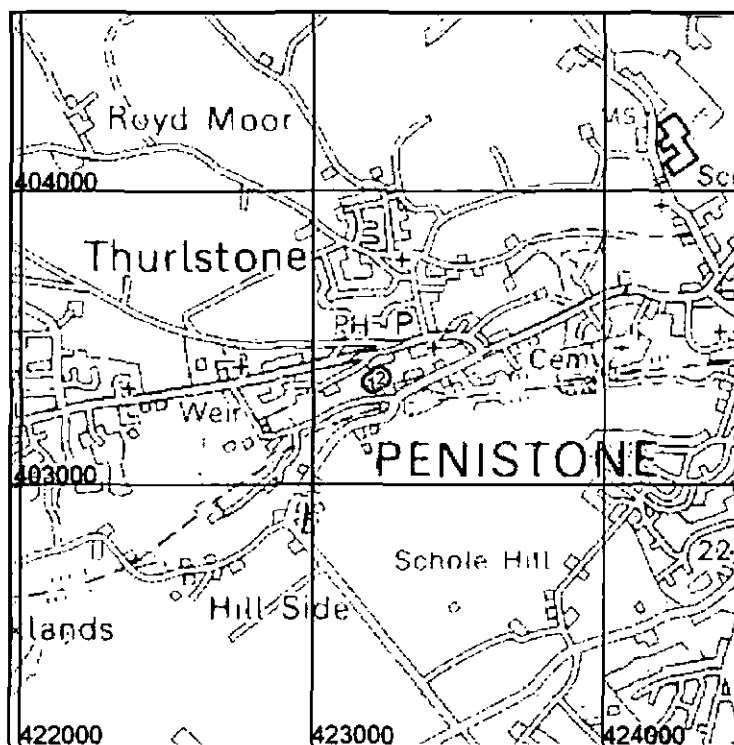
Report Id: *BH_118488_1*

Client reference: 4482 Penistone



Borehole location map

This map shows the locations of the boreholes you have ordered.



This product includes mapping data licensed from Ordnance Survey.
© Crown Copyright and/or database right 2012. Licence number 100037272

Scale: 1:25 000 (1cm = 250 m)

Key

Number on Map	Borehole Number
1	SE20SW1 A
2	SE20SW1 B



Geological Map Extracts

This part of the pack contains extracts of geological maps taken from the 1:50 000 scale BGS Digital Geological Map of Great Britain (DiGMapGB-50). The geological information in DiGMapGB is separated into four themes: artificial ground, landslide deposits, superficial deposits and bedrock, shown here in separate maps. The fifth 'combined geology' map superimposes all four of these themes, to show the geological formations that occur at the surface, just beneath the soil.

More information about DiGMapGB-50 and how the various geological units are classified can be found on the BGS website (www.bgs.ac.uk). The maps are labelled with two-part computer codes that indicate the name of the geological unit and its composition. Descriptions of the units listed in the map keys may be available in the BGS Lexicon of Named Rock Units, which is also on the BGS website (<http://www.bgs.ac.uk/lexicon/>). If available, these descriptions can be found by searching against the first part of the computer code used on the maps. Please treat this labelling with caution in areas of complex geology, where some of the labels may overlap occurrences of several geological formations. If in doubt, please contact BGS Enquiries for clarification.

In the map keys the geological units are listed in order of their age, as defined in the BGS Lexicon, with the youngest first. However, where units are of the same defined age they are listed alphabetically and this may differ from the actual geological sequence.

Artificial ground: This is ground at or near the surface that has been modified by man. It includes ground that has been deposited (Made Ground), landscaped, disturbed, excavated (Worked Ground) or some combination of these.

Landslide deposits: These are deposits formed by localised mass-movement of soils and rocks on slopes under the action of gravity. Landslides may occur within the bedrock, superficial deposits or artificial ground; and the landslide deposits may themselves be artificially modified.

Superficial deposits: These are relatively young geological deposits, formerly known as 'Drift', which lie on the bedrock in many areas. They include deposits such as unconsolidated sands and gravels formed by rivers, and clayey tills formed by glacial action. They may be overlain by landslide deposits or by artificial deposits, or both.

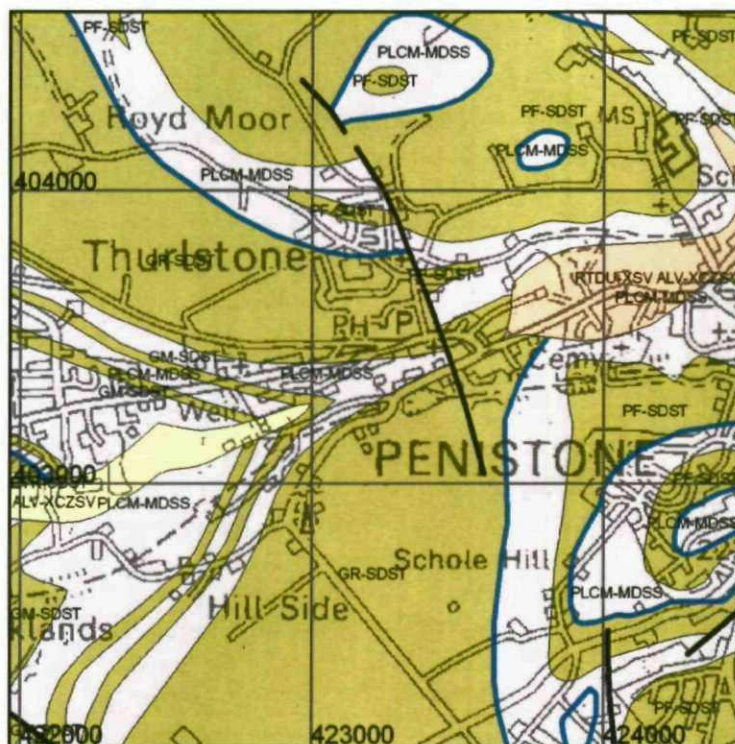
Bedrock: Bedrock forms the ground underlying the whole of an area, commonly overlain by superficial deposits, landslide deposits or artificial deposits, in any combination. The bedrock formations were formerly known as the 'Solid Geology'.

Combined 'Surface Geology' Map: This map shows all the geological themes from the previous four maps overlaid in order of age.



Combined 'Surface Geology' Map

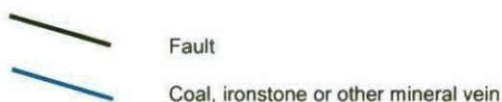
This map shows the surface elements of all four geological layers. Please see keys to the Artificial, Landslide, Superficial and Bedrock geology maps



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Scale: 1:25 000 (1cm = 250 m)



Note: Faults and Coals, ironstone & mineral veins are shown for illustration and to aid interpretation of the map. Not all such features are shown and their absence on the map face does not necessarily mean that none are present



Key to Artificial ground:

No deposits found in the search area

Key to Landslide deposits:

No deposits found in the search area

Key to Superficial deposits:

Map colour	Computer Code	Name of geological unit	Composition
	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
	RTDU-XSV	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND AND GRAVEL

Key to Bedrock geology:

Map colour	Computer Code	Name of geological unit	Rock type
	EYR-SDST	80 YARD ROCK	SANDSTONE
	GM-SDST	GREENMOOR ROCK	SANDSTONE
	GR-SDST	GRENOSIDE SANDSTONE	SANDSTONE
	PF-SDST	PENISTONE FLAGS	SANDSTONE
	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION	MUDSTONE, SILTSTONE AND SANDSTONE



Artificial ground



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Landslide deposits



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Licence number 100037272

Superficial deposits



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Bedrock



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Please see key on previous page.



Geoscience Data List

List of available geological data

This section lists the data sets, in addition to boreholes and well records, that are held in the National Geoscience Records Centre that are relevant to your enquiry. Users with access to computing facilities can make their own index searches using the BGS Internet; go to 'Online shops' at www.bgs.ac.uk This will give access to the BGS Bookshop, Publications catalogue, GeoRecords (borehole browser) and GeoReports.

If you want to order any of the data please contact enquiries on enquiries@bgs.ac.uk. For current pricing see internet pages above or do not hesitate to contact us using the list found at the back of this pack.

Note that this list contains selective datasets and is not a definitive listing of all data held in BGS

Site investigation reports

Number of records in search area: 9

Additional laboratory and test data may be available in these reports, subject to any copyright and confidentiality conditions. The grid references used are based on an un-refined rectangle and therefore may not be applicable to a specific site. Borehole records in these reports will be individually referenced within the borehole records collection.

Number	Site investigation title
538	MANCHESTER-SHEFFIELD (LONGDENDALE) NEW ROUTE ENGINEERS REPORT CONTRACTS S1 AND S2
540	MANCHESTER-SHEFFIELD (LONGDENDALE) NEW ROUTE
9254	PENISTONE ST JOHNS CHURCH OF ENGLAND SCHOOL
11385	LANGSETT CLEAR WATER TANK
17642	PENISTONE GRAMMAR SCHOOL, SPORTS HALL
22136	PENISTONE
22306	VARIOUS SITES IN SHEFFIELD
22314	PENISTONE FIRE STATION
43693	LANGSETT-MIDHOPE WATER TREATMENT WORKS

National Grid geological maps (1:10 000 and 1:10 560 scale)

Number of records in search area: 0

There are no national grid geological maps for the selected area



County Series geological maps (1:10 560 scale)

Number of records in search area: 20

Map	Type	Published
Yorkshire273FS		1871
Yorkshire273FS	C	1871
Yorkshire273FS	S	1871
Yorkshire273SE		1933
Yorkshire273SE	C	1933
Yorkshire273SW	C	0
Yorkshire273SW	C	1930
Yorkshire273SW		1930
Yorkshire281FS	C	1871
Yorkshire281FS		1871
Yorkshire281FS	C	0
Yorkshire281NE	C	0
Yorkshire281NE	C	1934
Yorkshire281NE		1935
Yorkshire281NE	C	1936
Yorkshire281NE	C	1935
Yorkshire281NW		1930
Yorkshire281NW	C	0
Yorkshire281NW	C	1930
Yorkshire281NW	C	1871

New Series medium scale geological maps (1:50 000 and 1:63 360 scale)

Number of records in search area: 3

Sheet number	Sheet name	Type	Published
86	Glossop	C	1980
86	Glossop	D	1932
86	Glossop	S	1932

Old Series one inch geological maps (1:63 360 scale)

Number of records in search area: 1

Sheet number	Sheet name	Type	Published
88SE	Penistone	S	1868

Hydrogeological maps (various scales)

Number of records in search area: 1

Map	Scale
Southern Yorkshire	1:100,000

Geological Memoirs

Number of records in search area: 1

Geological memoir	Date
Holmfirth and Glossop	1933



Technical reports

Technical reports may be available for this area. Please see <http://geolib.bgs.ac.uk>

Waste sites

Number of records in search area: 2

Listing of some 3500 waste sites for England and Wales identified by BGS as part of a survey carried out on behalf of the Department of the Environment in 1973. Later information may be available from the Local authority.

Site Number	Site Name	Grid Reference
714	Stottercliffe Road, Penistone, S Yorkshire	SE 242034
715	Thurstone Road, Penistone, S Yorkshire	SE 238037

Mining plans

Number of records in search area: 9

This listing includes plans of various types, principally relating to mining activity including abandonment plans. The coverage is not comprehensive; however that for Scotland is most complete.

Record Type	Plan No.	Title
KP	13814	GEOLIGICAL MAP OF THE YORKSHIRE COALFIELD SHOWING THE SITES OF THE PRINCIPAL COLLIERIES AND BOREHOLES
KP	17931	OPENCAST SITES CONSULTATION MAPS
KP	179340	TEST ONE
KP	17940	JOAN COAL SEAM
KP	18191	WESTPHALIAN A & B OF THE COALFIELDS OF ENGLAND & WALES (INCLUDING CANONBIE)
KP	4973	LOCATIONS OF MINE SHAFTS AND BOREHOLES
KP	8350	LOCATIONS OF COLLIERIES AND BOREHOLES. NORTH MIDLANDS AND LINCOLNSHIRE PITS.
KP	996	PROSPECTING SITES BOUNDARIES CONSULTATION PLANS
KP	999	PROSPECTING SITES BOUNDARIES CONSULTATION PLANS



GeoRecords Plus+ Terms & Conditions

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The BGS will make reasonable endeavours to ensure that the records you order are delivered promptly and at a reasonable cost. If you find that your purchase does not match what you have ordered, you will be provided with a full refund for the item(s) if you inform us within 7 days of receiving the item. If the delivery is defective in any way, we will send you a replacement within 7 days or again give you a full refund (including postage costs) if a replacement is unavailable. This guarantee does not affect your statutory rights.

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1. Geological observations are made according to the prevailing understanding of the subject at the time. The quality of such observations may be affected by subsequent advances in knowledge or improved methods of interpretation and better access to sampling locations.
2. Raw data may have been transcribed from analogue to digital format, or may have been acquired by means of automated measuring techniques. Although such processes are subjected to quality control to ensure reliability where possible, some raw data may have been processed without human intervention and may in consequence contain undetected errors.
3. Although samples and records are maintained with all reasonable care, there may be some deterioration in the long term.
4. The most appropriate techniques for copying original records are used, but there may be some loss of detail and dimensional distortion when such records are copied.
5. Data supplied by external organisations to the BGS, and which the BGS makes available to others, is provided 'as is' without warranty of any kind, either express or implied, including, but not limited to, the implied warranties of fitness for a purpose.
6. Data, information and related records that have been donated to BGS have been produced for a specific purpose, and that may affect the type and completeness of the data recorded and any interpretation. The nature and purpose of data collection, and the age of the resultant material may render it unsuitable for certain applications/uses. Customers/recipients of such material are advised that it is their responsibility to verify the suitability of the material for their intended usage.
7. The data, information and related records supplied by the BGS should not be taken as a substitute for specialist interpretations, professional advice and/or detailed site investigations. Professional advice should be sought before making technical interpretations on the basis of the materials provided.
8. Detail, which is clearly defined and accurately depicted on large-scale maps, may be lost when small-scale maps are derived from them.



9. Data may be compiled from the disparate sources of information at BGS's disposal, including material donated to BGS by third parties, and may not originally have been subject to any verification or other quality control process.
10. If a report or other output is produced for you on the basis of data you have provided to BGS, or your own data input into a BGS system, please do not rely on it as a source of information about other areas or geological features, as the report may omit important details.
11. The topography shown on any map extracts is based on the latest OS mapping and is not necessarily the same as that used in the original compilation of the BGS geological map, and to which the geological linework available at that time was fitted.
12. Note that for some sites, the latest available records may be quite historical in nature, and while every effort is made to place the analysis in a modern geological context, it is possible in some cases that the detailed geology at a site may differ from that described.

Availability of goods

The maps provided on this website show where the various records are available. However, if for some reason, after you have paid for a record, the BGS is unable to provide it (for example, due to data or computing problems), we will inform you and offer an alternative record or a full refund.

Some of the records held in the National Geoscience Data Centre (NGDC) were donated under conditions of confidentiality. For most of these confidential records, the BGS is able to tell you that the records exist, and their location will, therefore, be displayed on the index maps on this website but we will not be able to provide you with a copy immediately. You will, however, be able to place a request to obtain details about the owners of the records who you can then contact to request release of the data. Once this is obtained you will then have to supply the BGS with written confirmation of release, and we will then be able to provide you with a copy of the records concerned.

Prices, payment and VAT

Prices quoted in printed leaflets and internet pages are liable to change without prior notice.

Payment can currently only be accepted in Sterling, but may be made by credit or debit card (not by charge card, e.g. Amex), International Money Order, or Bankers' Draft. Electronic Fund Transfers, such as BACS (Bank Automated Clearing System) are also possible, please contact us for details.

The BGS reserve the right not to supply goods to purchasers who have previously defaulted on payment, or where there is reasonable evidence that a fraudulent credit card payment may be involved.

Value Added Tax (VAT) will be charged in accordance with current regulations.

The charges for obtaining copies of records are detailed on this website. There is a minimum charge of £26+VAT on all orders to reflect our minimum administration costs.

Delivery

Records ordered through this website will be dispatched using your requested method, options being: prints/photocopies by standard post/special delivery/faxing, or digital files (secure PDF format) by e-mail (if file size allows) or on CD by post. Records will normally be dispatched within 10 working days from receipt of the order. However, a special 24 hour Premium delivery can be requested at an additional charge, details of which can be found on this website.

On top of these quoted dispatch times, please allow five days for postage in the UK, seven days in the EU and up to 30 days elsewhere. If your order is delayed beyond this time, please contact the Central Enquiries Desk immediately (contact details below). Standard Postal Delivery charges are included in the price of the records. You will only be charged the amount quoted. If you require special delivery arrangements to be made, please contact us before placing your order.

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The BGS will take all reasonable steps to replace items damaged in transit or those that have been supplied in error. Where this is not possible, a full refund will be made (please see Availability above).

If goods are lost or damaged in transit, or have been incorrectly supplied, you should retain them together with all packaging and documents, and notify the BGS immediately. You should do this by letter, fax or email within 7 days of receiving the goods: beyond this period we cannot guarantee that replacements will be available. You then have the choice of having a replacement item or a full refund. Please ensure you quote any customer order numbers and include your full name and address in any communications.

Please do not return any faulty or incorrect goods unless asked to do so. We will give you instructions on how, or whether, to return these items, and may ask you to supply appropriate documents.



Complaints

We would hope that the vast majority of potential problems can be resolved by simply contacting the BGS through the Central Enquiries Desk. If, however, you are not satisfied that the problem has been resolved or handled to your satisfaction, you may wish to make a formal complaint. Your complaint can be sent to the BGS by post, fax or e-mail. In all cases you should aim to provide as much relevant information as possible so that we can deal with your complaint as promptly as possible. Please also include your contact details in case we need to obtain more details from you.

All complaints should be sent to the Central Enquiries Desk (contact details below).

You will receive an acknowledgement *within five working days* that your complaint has been received. If you do not receive an acknowledgement, please contact the Head of Enquiry Service at the same address.

When acknowledging receipt of your complaint, we will give an indication of how long it will take to send you a detailed response. In most cases, we would aim to provide a detailed response within ten working days. However, this may not always prove possible, especially if we need to obtain further information. In these cases, we will keep you fully informed on the progress of your complaint, and endeavour to provide you with as full a response as possible as soon as we can.

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In the event of a dispute over the description or supply of goods, payment, or ownership, the contract will be deemed to have been made within England and will therefore be subject to the laws of England and Wales.

The BGS regret that we are only able to handle enquiries and conduct business matters in English.

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Please see our 'Privacy policy'.

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WELL BORING at Penstone Water Works, Charlton

County

Yorks

Geol. map

1 in. map New Series

6 in. map

273 PEA

Made by Chapman Bros, Ld.

Date

Sunk

24

feet

Bored

402

feet

of from 13"

Communicated by W. Matthews Esq.

Height above Ordnance Datum

720

Rest level of water

Yield

10,000 gal. per hr. March 1882.

Quality (with copy of analysis on separate sheet)

86

12 a.

12A

GEOLOGICAL FORMATION	NATURE OF STRATA	THICKNESS		Feet	Inches
		Feet	Inches		
	Pit	24	-	24	-
	Hard Blue Rock	4	2	28	2
	Yellow grit mixed with Black Ainey	1	10	30	-
	Hard Black Pine	1	6	31	6
	Light Grit Rock	3	-	34	6
	Rag Rock	1	6	36	-
	Grey shale	2	6	62	-
	Dark Rag Rock	2	-	64	-
	Rag Rock	4	-	70	-
	Light sand Grit Rock	4	-	74	-
	Hard Brown Pine	2	-	76	-
	Light sand Grit Rock	7	6	83	6
	Rag Rock	11	-	94	6
	Grey shale	1	6	96	-
	Rag Rock	1	-	97	-
	Grey shale	39	-	136	-
	Rag Rock	1	-	137	-
	Hard shale	37	-	174	-
	Hard gritty shale	58	-	232	-
	Black shale	68	-	300	-
	Hard Black shale	15	6	315	6
	" mixed with bands of Grit Rock	4	6	320	-
	Hard Brown shale	31	-	351	-
	Dark Brown Grit Rock	2	-	353	-
	Bands of sand & grit	-	-	359	-
	Mixed gritty shale	8	6	367	6
	Dark colored Flag Rock	4	6	372	-
	Fire clark red rock	6	6	378	6
	Black shale	47	6	426	-

(See also attached Memo from)

Visited & sited on Yorks. 273 SE.W. O.D. 700.
P.W.L. 180. Yields 5,000 g.p.h., pumping 8 hrs/day.

Penstone Undertaking transferred to Barnsley
Corpn. 10 April 1957

A

GEOLOGICAL SURVEY AND MUSEUM
JERNYH STREET, LONDON S.W. 1.

(B10819) W. 15824-8123 2500. 11/25. Op. 160. O.A.

RECORD of WELL or BORING

Q.1. Drawing of farnesol

Town, Village, etc.

Exact Site (unless a tracing from a map is supplied, give distance and direction from parish church, cross-roads, or other object shown on maps).

Surface level of ground 100 ft. above Ordnance Datum. Well or Bore commenced at _____ ft. below _____ level of ground

Sunk _____ ft., diameter _____ ft. Bored _____ ft.; diameter of boring at top _____ in., at bottom _____ in.

Details of lining tubes (internal diameter preferred)

Water struck at depths of (feet) _____

Rest-level of water below top of well or bore 54 ft. Pumping level _____ ft. Time of recovery _____ hours.

Suction at _____ ft. depth. Yield: (i) ~~on test~~ ^{max} 10,000 galls. per H, (ii) ~~normal~~ ^{max} 4,000 galls. per H.

Quality (if a copy of analysis is available)

Made by W. B. Smith for Mr. W. B. Smith Date of boring 10/10/1911

Information from Mr. William W. Chandler

GEOLOGICAL CLASSIFICATION.

NATURE OF STRATA
(and any additional remarks)

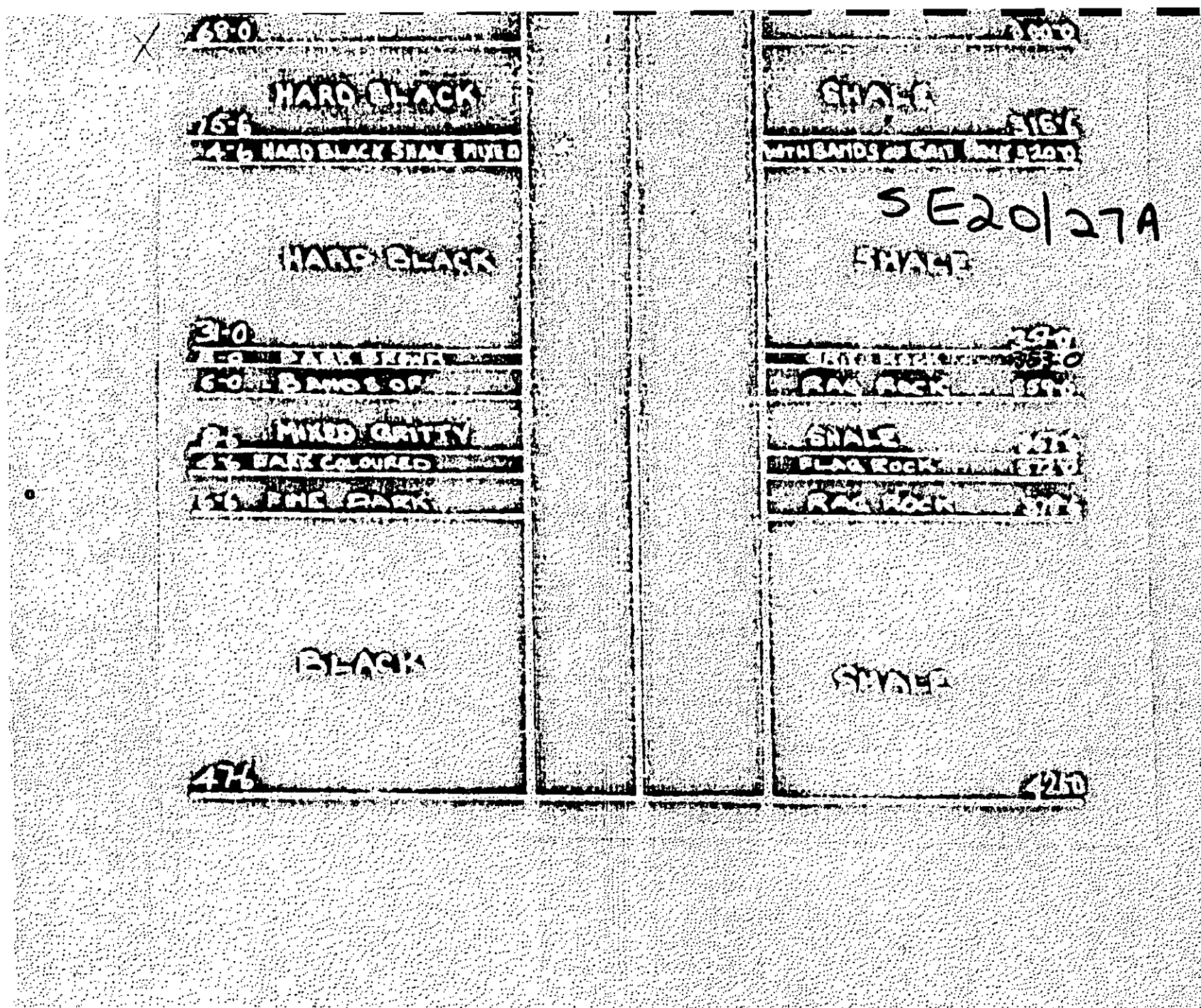
THICKNESS	
Feet.	Inches

DEPTH: _____
feet. | inches

[illegible]

GEOLOGICAL SURVEY
SOUTH AFRICA
LONDON

11/28
R 6 L 14 Qn 610



Copy NOT to be sent to heads

① Barnsley Corporation Water Department

86/12
SE 20/27
A
12

Laboratory: Royd Moor Filter House
Scout Lake Reservoir near Penistone

WATERWORKS OFFICE
TOWN HALL
BARNSLY
Telephone: Barnsley 2222 Extn. 274

Sampling Report Ref: 1/12/4

Analysis of Sample of Water received on 12/12/4

From: Penistone Filter House W.L.-208 ft
Sampling Point: Top of 6 in Hole Pumping rate 1700 G.P.H.
Purpose: Routine 3 ppm Ammonia Sulphate 3 ppm Chlorine
Taken by: R.T. Witness: J. S. Date: 12/12/4 Time: 10.30 am

Temperature of Water at Source

Colour: Nil Hazen Units Turbidity: Nil Filter's Earth Scale
Odour: Nil Taste: Nil
pH Value: 8.6 Free Carbon Dioxide as CO₂: Nil

Electrical Conductivity at 20°C: 500 Reciprocal Megohms per Centimetre Cube

RESULT EXPRESSED IN PARTS PER MILLION

Ca	Mg	Na	Fe	CO ₂	SO ₄	Cl	NO ₃	SiO ₂	Probable Combinations	
4.8	1.2	15.5	0.20	176.6	47.24	21.00	Nil	6.40		
4.8				1.2					Calcium Carbonate	12.00
	1.2			5.60					Magnesium	4.20
		131.26		168.61					Sodium	297.86
		22.63			47.24				" Sulphate	49.87
		13.66				11.00			" Chloride	34.66
			5.20						Oxide of Iron and Aluminium	3.20
								6.40	Silicon Dioxide	6.40
TOTAL SOLIDS DRIED AT 180°C										429.19

HARDNESS Calculated

Permanent Nil

Temporary 17

TOTAL 17

By E.D.T.A. test

Nil

298 (including 15.00 of 297.86, i.e. Sodium Carbonate)

17

RESIDUAL CHLORINE

Total 1.42

Free Chlorine 0.36

Ammoniacal Nitrogen as N

0.54

Albuminoid Nitrogen as N 0.11

Nitric Nitrogen as N

Nil

Nitrous Nitrogen as N Nil

Oxygen Absorbed in 4 hours at 80°F

METALS

Iron

0.20

Manganese

Nil

Fluoride

Lead

—

Aluminium

—

REMARKS

Signature

Date

2 Photostat copies to Ministry of Housing & Local Government



British Geological Survey

NATURAL ENVIRONMENT RESEARCH COUNCIL

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ISE20SW R 1 41

WELL BORING at Penstone Water Works, Thurston

Geol. map 1 in. map New Series

6 in. map 273 SE.

Made by Chapman & Sons, Lough.

Date

Sunk 24 feet.

Bored 402 feet. from 13"

Communicated by W. Matthews Esq

Height above Ordnance Datum 720

Rest level of water

Yield 10,000 gals. March 1932.

Quality (with copy of analysis on separate sheet)

86

12 a.

12 A

GEOLOGICAL FORMATION.	NATURE OF STRATA.	THICKNESS.		M	F
		Feet	Inches		
✓ Pit.		732.9	-	29	-7.32
	Hard Blue Rock	1.274	2	28	28.59
	Yellow grit mixed with Black Bine	0.561	10	30	-9.14
	Hard Black Bine	0.461	6	31	69.60
	Light Grit Rock	0.913	-	34	610.52
	Rag Rock	0.461	6	36	-10.97
	Grey shale	7.122	6	62	-4.90
	Dark Rag Rock	0.612	-	64	19.57
	Rag Rock	1.836	-	70	21.84
	Light coloured Grit Rock	1.224	-	74	28.56
	Hard Brown Bine	0.612	-	76	28.16
	Light col. Grit Rock	2.297	6	83	626.41
	Rag Rock	3.351	-	94	628.80
	Grey shale	0.461	6	96	-22.88
	Rag Rock	0.301	-	97	-5.07
	Grey shale	11.893	9	136	-4.45
	Rag Rock	0.301	-	137	41.70
	Hard shale	11.283	7	174	53.0
	Hard gritty shale	7.458	-	232	-70.71
	Black shale	2.788	-	300	21.44
	Hard Black shale	4.795	6	315	696.12
	" mixed with bands of Grit Rock.	1.374	6	320	92.54
	Hard Brown shale	9.453	1	351	106.98
	Dark Brown Grit Rock	0.612	-	353	107.59
	Bands of rag rock	1.836	-	359	109.42
	Mixed Gritty shale	2.578	6	367	111.96
	Dark coloured Flag Rock	1.274	6	372	118.39
	Fine dark rag rock	1.986	6	378	615.37
	Black shale	14.484	7	426	129.84

(See back of this print)

Visited & sited on 273 SE.W. O.D. 1700.

P.W.L. 180. Yield 5,000 g.p.h., pumping 8 hrs/day.

Penstone Undertaking transferred to Barnsley Corpn. 10 April 1957

A

1244

BOREHOLE AT	THURLSTON PUMPING STATION
PUT DOWN BY	CHAS. CHAPMAN & SONS
HIGHEST WATER LEVEL	10'
LOWEST WATER LEVEL	54'
MAXIMUM YIELD	19000 GPH.
MINIMUM YIELD	4000 GPH.
LATITUDE	53° 31' 4"
LONGITUDE	1° 39' 1"
ORDNANCE DATUM	700

RECORD of WELL or BORING

Survey No. 500

1" N.S.

6.5

at (Name or farm) Penistone U.D.C., Council Offices,

SE20/275

Town, Village, &c. Penistone, Sheffield, County Yorks.

Six-inch map 1058

Exact sit (unless a tracing from a map is supplied, give distance and direction from parish church, cross-roads, or other object shown on maps).

Thurstone Pumping Stn.

Popular Edition Sheet

Penistone SE2310 0342

one-inch map (Square

Surface level of ground 675 ft. above Ordnance Datum. Well or Bore commenced at ft. below surface level of ground.

Sunk - ft., diameter - ft.

Bored 705 ft. diameter of boring: at top 21 in., at bottom 21 in.

Details of lining tubes (internal diameters given) 107' 7" x 21" top 8' 5"

Water struck at depths of (feet) Not stated

Rest-level of water below top of well or bore 14/16 ft. Pumping level varied. Time of recovery - hours.

Suction at 345 ft. depth. Yield: (i) on test 1800 galls. per hour (ii) normal - galls. per

Quality (attach copy of analysis if available)

Made by LeGrand, Sutcliffe & Gell, Ltd. Mr.

Date of boring 1935

Information from LeGrand, Sutcliffe & Gell, Ltd., Southall, Middx.

For Survey use only. GEOLOGICAL CLASSIFICATION	NATURE OF STRATA (and any additional remarks)	THICKNESS		DEPTH	
		Feet	Inches	Feet	Inches
✓ Existing well 10'6" dia. x		65	0	65	0
Dark grey sandstone		37	6	102	6
Grey shale		39	6	142	0
Grey shale - hard		38	6	180	6
Grey shale - very hard		5	0	185	6
Grey shale - hard		23	6	209	0
Grey shale - very hard		3	0	212	0
Sandy shale - very hard		25	0	237	0
Grey shale		15	6	252	6
Dark grey shale		4	6	257	0
Grey shale		33	0	290	0
Black shale		40	0	330	0
Grey shale - hard		33	6	363	6
Hard shale and fine clay - sandy in places		19	0	382	6
Dark grey shaley sandstone		18	0	400	6
Hard sandy shale		95	6	496	0
Hard black shale with thin coal seams and fire clay		25	6	521	6
Hard grey rock		11	0	532	6
Hard black shale		10	6	543	0
Hard dark limestone		20	0	563	0
Hard black shale with thin coal seams		3	0	566	0
Hard black shale		81	0	647	0
Black shale		2	0	649	0
Gannister		1	0	650	0
Black shale and coal		6	0	656	0
Fire clay and hard grey rock and thin seams of coal		40	0	696	0
Dark grey sandstone - very hard		2	0	698	0
Hard grey sandstone			6	698	6
Very hard sandy shale		4	0	702	6
Black shale		2	6	705	0
		705	0	705	0

* Reservoir for Southall Waterworks 4/8/38

Visited & sited on Yorks. 275 SE/100 O.D. + 700.
No water - dried. 20.9.49.

GEOLOGICAL SURVEY AND MUSEUM,
SOUTH KENSINGTON,
LONDON, S.W. 7.

For Survey use only.

Date received.	G.S.M.	M. of H. notified.	Site marked on 1" map.
6268			

(24738C) Wt 26230/225 6.000 11/20
H. J. R. & L. Ltd. Op 616



British Geological Survey

1 HURLSTONE (Penistone U.D.C. W.A.S., 100 yds NNW of Hornthwaite Bridge,
 WELL BORING at + about 60 ft E of older well)
 Geol. map 78 1 in. map New Series 78 County Yorks, W.R.
 Made by Le Grand, Sutcliffe & Gill. 6 in. map 273 SE.
 Sunk to 65 feet. Date 1935.
 Communicated by Le Grand, Sutcliffe & Gill. (Cons. ream) Bored to 600 ft.
 Height above Ordnance Datum about 700 ft. Rest level of water 43 ft down.
 Yield 905 gallons in 60 min with air-lift rig 344 ft down.
 Quality (with copy of analysis on separate sheet)

GEOLOGICAL FORMATION.
 Lower Coal Measures

NATURE OF STRATA.

THICKNESS

Feet. Inches. Feet. Inches.

Greenon Rock

Black Shale

? Upper Band Coal

Feet.		Inches.		Feet.		Inches.	
65	0	65	0	65	0	65	0
37	6	102	6	37	6	102	6
109	0	211	0	109	0	211	0
1	6	213	0	1	6	213	0
25	0	238	0	25	0	238	0
14	6	252	6	14	6	252	6
3	6	256	0	3	6	256	0
35	0	291	0	35	0	291	0
55	0	346	0	55	0	346	0
32	6	378	6	32	6	378	6
20	6	399	0	20	6	399	0
53	6	452	6	53	6	452	6
15	0	467	6	15	0	467	6
2	2	469	8	2	2	469	8
25	4	496	0	25	4	496	0
12	0	508	0	12	0	508	0
9	5	508	5	9	5	508	5
9	0	517	5	9	0	517	5
9	7	527	0	9	7	527	0
11	6	538	6	11	6	538	6
18	0	556	6	18	0	556	6
43	0	599	6	43	0	599	6

10 ft well to 65 ft.
 Diameter { 21" casing to about 120 ft from surface
 18" to 599-6"

probably continuing to Rough Rock.
 (estimated a further 250 ft)

(See Hurlstone in continuation of 708 ft)

GEOLOGICAL SURVEY AND MUSEUM
 JERNYH STREET, LONDON S.W. 1

(B10619) W. 18824-8122 2500. 11/25 Op. Ind. O.A.



British Geological Survey

At (house or farm)

Town, Village, &c.

Exact spot (unless a tracing from a map is supplied, give distance and direction from parish church, cross roads, or other object shown on maps).

Surface level of ground 70 ft. above
Sunk ft., diameter ft.
Details of

Details of ... diameter ... ft.

Details of lining tubes (internal diameter 100 mm)

Water struck at depths of (feet)

Rest-level of water below top of well or bore

Suction at ft. depth. Yield: (1) on test
Quality (attach test report)

Quality: (attach copy of analysis) II. depth. Yield: (1) on test

Made by

Information from

(For Survey use only)
GEOLOGICAL
CLASSIFICATION

NATURE OF STRATA
(and any additional remarks)

THICKNESS
Feet. Inches

DEPT. OF
set. 3/19/41

Geological
South

RECORD of WELL or BORING

SE 20 SW 1

Survey No. 600
1" N.S. 8/4
1" O.S.

(Name or title) Penistone U.D.C., Council Offices.

Town, Village, &c. Penistone, Sheffield. County Yorks.

Six-inch map Yorks. 2738.E.

Exact spot (unless a tracing from a map is supplied, give distance and direction from parish church, cross-roads, or other object shown on map). Thurlstone Pumping Stn.

Popular Edition Sheet of one-inch map. Square

Surface level of ground 675 ft. above Ordnance Datum. Well or Bore commenced at ft. below surface level of ground.

Sunk - ft., diameter - ft. Bored 705 ft.; diameter of boring: at top 21 in., at bottom 21 in.

Details of lining tubes (internal diameters preferred) 107' 7" x 21" top 8' 5"

Water struck at depths of (feet) Not stated

Rest-level of water below top of well or bore 14/18 ft. Pumping level varied. Time of recovery - hours

Suction at 245 ft. depth. Yield: (i) on test 1800 galls. per hour; (ii) normal galls. per hour

Quality (attach copy of analysis if available)

Made by LaGrand, Sutcliffe & Gell, Ltd. Date of boring 1935

Information from LaGrand, Sutcliffe & Gell, Ltd., Southall, Middx.

(For Survey use only).
GEOLOGICAL
CLASSIFICATION.

NATURE OF STRATA.
(and any additional remarks)

THICKNESS.
Feet. Inches.

DEPTHS.
Feet. Inches.

✓ Existing well, 10' 6" dia. x	19.87	65	0	19.87	65	0
Dark grey sandstone	11.43	37	6	31.34	102	6
Grey shale	12.04	39	6	43.38	142	0
Grey shale - hard	11.73	38	6	55.12	180	6
Grey shale - very hard	1.25	0	0	56.37	185	6
Grey shale - hard	7.16	23	6	63.53	209	0
Grey shale - very hard	0.71	3	0	64.24	212	0
Sandy shale - very hard	7.62	25	0	71.86	237	0
Grey shale	4.72	15	6	76.58	252	6
Dark grey shale	1.37	4	6	77.95	257	0
Grey shale	10.00	33	0	88.37	280	0
Black shale	12.14	40	0	100.51	330	0
Grey shale - hard	10.41	33	6	110.92	363	6
Hard shale and fine clay - sandy in places	5.71	19	0	116.63	368	6
Dark grey shaley sandstone	6.47	18	0	123.10	400	6
Hard sandy shale	2.91	10	6	126.01	496	0
Hard black shale with thin coal seams and fire clay	7.77	25	6	133.78	521	6
Hard grey rock	3.31	11	0	137.09	532	6
Hard black shale	3.20	10	6	140.29	543	0
Hard dark limestone	6.40	20	0	146.69	563	0
Hard black shale with thin coal seams	0.91	3	0	147.60	565	0
Hard black shale	3.48	11	0	151.08	647	0
Black shale	0.61	2	0	151.69	649	0
Gannister	0.31	0	0	152.00	650	0
Black shale and coal	1.36	0	0	153.36	656	0
Fire clay and hard grey rock and thin seams of coal	1.19	40	0	154.55	698	0
Dark grey sandstone - very hard	0.61	2	0	155.16	698	0
Hard grey sandstone	0.15	6	6	155.31	698	6
Very hard sandy shale	1.82	0	0	157.13	702	6
Black shale	0.76	2	6	157.89	705	0
	705	0	0	705	0	0

* Record for Southall North. 4/8/36

Visited & sited on Yorks. 273 SE/w. O.D. + 700.
No water - dried. 26.5. 28.9.49.

GEOLOGICAL SURVEY AND MUSEUM,
SOUTH KENSINGTON,
LONDON, S.W. 7.

For Survey use only.

Date received.	G.S.M.	M. of H. notified.	Site marked on 1" map.
	6265		

(24738C) W1 20030/795 8.000 11/36
H. J. R. & L. Ltd. Op 616

WELL BORING

78

6 in. map

273-SE

Date _____

Barro

—

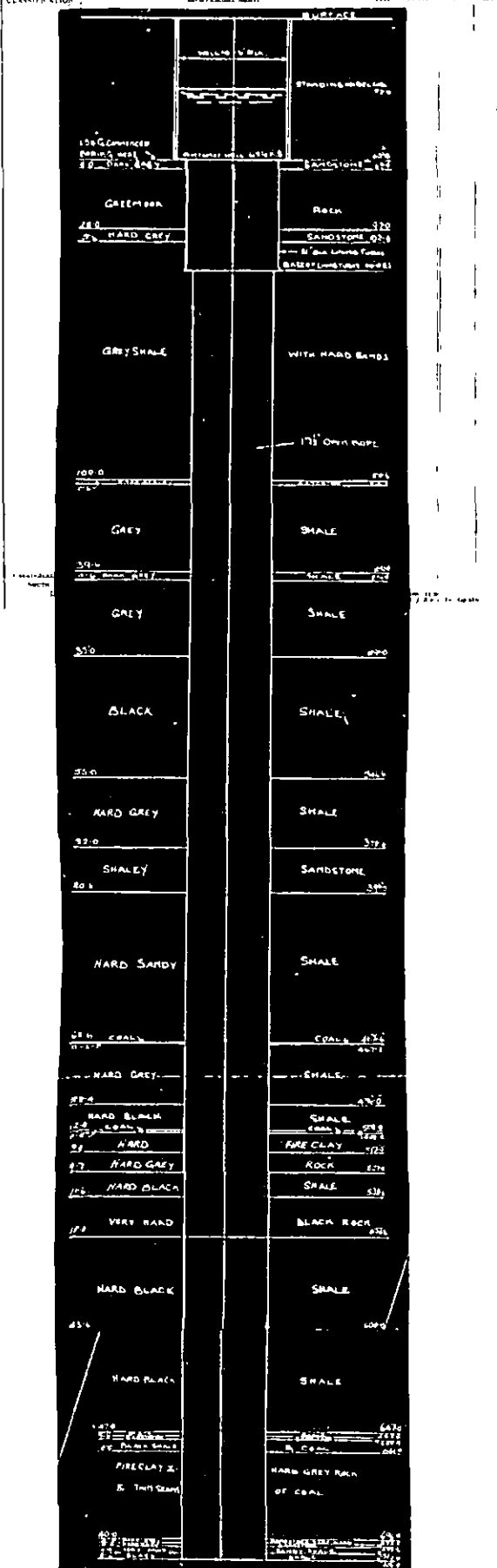
of wa

07/04

01

? Upper Beach Coal

21

[illegible]

BOREHOLE AT	THURLSTONE OLD ABBINGDON
PUT DOWN BY	LE GRAND, SUICIDE BELL LTD - 1936
HIGHEST WATER LEVEL	W
LOWEST WATER LEVEL	
MAXIMUM YIELD	NO WATER
MINIMUM YIELD	
LATITUDE	52° 31' 4"
LONGITUDE	1° 39' 0"
ORIGINATION DATA	700

SE 20 SW 1 86/12

Barnsley Corporation Water Department

Laboratory: Royd Moor Filter House,
Scout Dike Reservoir, near Penistone.

WATERWORKS OFFICE,
TOWN HALL,
BARNSLEY.

Telephone No. Penistone 3995.

Telephone: Barnsley 3232. Extn. 374.

Sampling Report Ref. 1/12/14

Analysis of Sample of Water received on 23rd Oct 1959
from Homegate, Barn Hols.

Sampling Point Tap at Barn Hols. Pumping rate 1700 G.P.H.

Purpose Routine 3ppm. Amm. Sulphate 3ppm Chlorine

Taken by R.R.I. Witness G.T. J.H. Date 23.10.59 Time 10.30am

Temperature of Water at Source Appearance Clear

Colour Nil Hazen Units Turbidity Nil Fuller's Earth Scale

Odour Nil Taste Normal

pH Value 8.26 Free Carbon Dioxide as CO₂ Nil

Electrical Conductivity at 20°C 500 Reciprocal Megohms per Centimetre Cube.

RESULT EXPRESSED IN PARTS PER MILLION

Ca	Mg	Na	Fe	CO	SO	Cl	NO	SiO	Probable Combinations	
			2	3	4		3	2		
4.80	12.0	135.5	3.20	178.86	47.24	21.00	Nil	6.40		
4.80				120					Calcium Carbonate	12.00
	12.0			3.60					Magnesium	4.20
		137.26		168.66					Sodium	297.86
		22.63			47.24				" Sulphate	69.87
		13.66				21.00			" Chloride	34.66
			3.20						Oxide of Iron and Aluminium	3.20
							6.40		Silicon Dioxide	6.40
TOTAL SOLIDS DRIED AT 180°C										428.19

HARDNESS: Calculated.

Permanent Nil

Temporary 17

TOTAL 17

By E.D.T.A. test.

Nil

298 (including as Alkalinity of 297.86, i.e. Sodium Carbonate.)

17

RESIDUAL CHLORINE: Total 1.42

Free Chlorine 0.36

Ammoniacal Nitrogen as N 0.54

Albuminoid Nitrogen as N 0.11

Nitric Nitrogen as N Nil

Nitrous Nitrogen as N Nil

Oxygen Absorbed in 4 hours at 80°F

METALS: Iron 0.20 Manganese Nil Fluoride —

Lead — Aluminium —

REMARKS:

Signature [Signature]

Date 2.11.59

2 Photostat copies to Ministry of Housing - local government



British Geological Survey

YORKSHIRE WATER AUTHORITY - Survey of Existing Boreholes					
I.C.S. Ref. No. <u>SE. 20. 24/1</u> N.C.R. <u>SE. 25. 2369. 0211</u>			Licence No.		
OWNERS NAME . <u>Parsons. U.K.</u>			App No		
ADDRESS . <u>Parsons. Sheffield</u>			Authorised Abstraction		
			G.P.H. G.P.D. M.G.S.		
STRATA DETAILS	Thick ^{ns}	Depth			
Well		65'			
Dark grey s/st	27' 6"	102' 6"			
Grey shale	187' 6"	240'			
Black shale	40'	330'			
Grey shale	32' 6"	362' 6"			
Hard shale + fine clay	19'	381' 6"			
Grey shaley s/st	12'	400' 6"			
Hard sandy shale	95' 6"	496'			
Black shale + thin coal seams	25' 6"	521' 6"			
Hard grey rock	11' 0"	532' 0"			
Black shale	10' 6"	542'			
Hard dark limestone	20'	562'			
Black shale + thin coals	3'	565'			
Black shale	101'	667'			
Granite	1'	668'			
Black shale + rock	6'	674'			
Fine clay	40'	694'			
Sandstone	2' 6"	698' 6"			
Shale	4'	702' 6"			
Black shale	2' 6"	705'			
			OD 200'		
			Dia. 21"		
			Depth 105'		
			Lining: 3" x 1/2" galv screwed sinker		
			Date . 1925		
			R.W.L.		
			P.W.L.		

INSPECTION REPORT	WATER QUALITY	DATE OF INSPECTION:-
Present Owner:- Access (Yes or No) 1/2" Probe 3" Instruments Landrover Access Agreed	Date 1959 9/9 pH 8.86 Total hard 17 Temp. hard 17 Alk. Ca 4.8 Mg Na 75.55 K	Other Comments:-
Water Level at time of insp. metres below Date Datum above O.D. R.W.L. above O.D. Date	HCO ₃ SO ₄ 47.20 Cl 21.0 NO ₃ Fe 0.2	Sketch Plan of Location



British
Geological Survey

NATURAL ENVIRONMENT RESEARCH COUNCIL

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[SE20SW BJ 1 B]



Appendix F Notes on Limitations



General

JPG (Leeds) Ltd have prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from JPG (Leeds) Ltd; a charge may be levied against such approval.

JPG (Leeds) Ltd accepts no responsibility or liability for:

- a) the consequences of this document being used for any purpose or project other than for which it was commissioned, and
- b) this document to any third party with whom an agreement has not been executed.

Phase I Desk Study Reports

The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the site and meetings and discussions with relevant authorities and other interested parties. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, JPG (Leeds) Ltd reserves the right to review such information and, if warranted, to modify the opinions accordingly.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site.

Phase II Geo-Environmental Investigations

The investigation of the site has been carried out to provide sufficient information concerning the type and degree of contamination, geotechnical characteristics and ground and groundwater conditions to allow a reasonable assessment of the environmental risks together with engineering and development implications. The objectives of the investigation have been Ltd to establishing the risks associated with potential human targets, building materials, the environment (including adjacent land), and to surface and groundwater.

The amount of exploratory work and chemical testing undertaken has necessarily been restricted by the short timescale available, and the locations of exploratory holes have been restricted to the areas unoccupied by the building(s) on the site and by buried services. A more comprehensive investigation may be required if the site is to be redeveloped as, in addition to risk assessment, a number of important engineering and environmental issues may need to be resolved.

For these reasons if costs have been included in relation to site remediation these must be considered as tentative only and must, in any event, be confirmed by a qualified quantity surveyor.

The exploratory holes undertaken, which investigate only a small volume of the ground in relation to the size of the site, can only provide a general indication of site conditions. The opinions provided and recommendations given in this report are based on the ground conditions apparent at the site of each of the exploratory holes. *There may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.*

The comments made on groundwater conditions are based on observations made at the time that site work was carried out. It should be noted that groundwater levels will vary owing to seasonal, tidal and weather related effects.

The number of sampling points and the methods of sampling and testing do not preclude the existence of localised "hotspots" of contamination where concentrations may be significantly higher than those actually encountered.

The risk assessment and opinions provided, inter alia, take in to consideration currently available guidance values relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.

The scope of the investigation was selected on the basis of the specific development proposed by the Client and may be inappropriate to another form of development or scheme.

5 John Charles Way
LEEDS
LS12 6QA

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Fax: 0113 263 0405
admin@jpgleeds.com
www.jpgleeds.com

