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# **Geo-environmental Ground Investigation Report**

**ON**

**PROPOSED DEVELOPMENT**

**AT**

**BRIERLEY HALL, CHURCH STREET,  
BRIERLEY**

**FOR**

**SAUL CONSTRUCTION**

**REF: E09/4942**

**DATE: JULY 2009**

**Prepared by:**

**MARTIN HUDDLESTON MEng**

## 1.0 INTRODUCTION

- 1.1 As requested by Saul Construction, this practice carried out a ground and contamination investigation works to the proposed development at Brierley Hall, Church Street, Brierley.
- 1.2 The purpose of the report was to:-
  - 1.2.1 Identify the nature of the near surface strata, in order to enable recommendations to be made as to the most economic foundation solution for the proposed residential development.
  - 1.2.2 To identify any areas of contaminated ground.
  - 1.2.3 Propose a suitable outline remediation strategy, which will enable the site to be developed safely, to the satisfaction of the overseeing regulators and in compliance with the current environmental standards.
  - 1.2.4 To undertake an initial soakaway appraisal of the site.
- 1.3 Soil sampling was undertaken via a series of trial pits to determine the near surface strata. Distributed samples were taken for testing to ascertain the nature of the soils and fills present.
- 1.4 The ground investigation was slightly restricted due to the existing on-site buildings, hardstanding areas, existing stockpiled materials and location of services.
- 1.5 The conclusions and recommendations made in this report are limited to the findings of the Geotechnical Survey. The report is made on condition that Haigh Huddleston Associates will not in any circumstances be liable for loss, arising directly or indirectly from ground conditions encountered between trial pits/boreholes, which have not been revealed by the investigation. Any opinion given on the possible configuration of strata between trial hole/borehole locations and below maximum depth of the investigation is for guidance only.

## 2.0 THE SITE

- 2.1 The site is situated off Church Street, Brierley on land that was previously part of the Brierley Hall estate. Access to the site is proposed directly off Church Street, through a new opening in the existing stone wall. The site is approximately square in nature and formerly consisted of a Brierley Hall Estate (a listed building) and extension. In addition there were a number of other outbuildings and a detached residential property. A tarmac hard standing areas serviced the site. We understand that the site was formerly owned by Barnsley MBC and utilised as council offices.
- 2.2 The site lies around Ordnance Survey grid reference 441020 411140 and is approximately 1.29 hectares in area. A site location plan is shown in Appendix A Fig 1 at the rear of the report.
- 2.3 The proposed site is situated predominantly in an existing residential location with existing properties located adjacent to the north western site boundary. To the north and north east open space farmland is located with further residential development situated beyond. St Paul's Church and associated cemetery are located to the south east of the site. There is an unmade track running parallel to the south eastern boundary, linking Church Street to the residential development to the north. To the south situated along Church Street are convenience stores and further residential development.
- 2.4 The current site boundaries consist of an approximate 2m high brick wall western and northern boundaries, a temporary Harris fencing has also been utilised to the north east. A 2.2m high palisade fence to the south east and a stone wall adjacent to Church Street, that is slightly retaining site levels.
- 2.5 At present, the site frontage is approximately 200-300mm above than the adjacent footway to Church Street. The site raises to a crest approximately 30m from, and parallel to, Church Street. It then falls to the North East, with a low point in the North-Eastern corner 3m lower than the levels to Church Street.

### 3.0 SITE HISTORY

A number of historical Ordnance Survey plans from 1852-2000 have been consulted. These are contained for reference within Appendix C to the rear of the report. Below is a brief description outlining the significant developments that may effect future construction of the site.

Date	Historical uses on site	Historical findings within 100m perimeter of the site	Historical findings further than 100m perimeter of the site
1894	i) Site is shown to have variety of buildings upon it, site labelled as Brierley Hall.	i) Open fields to the North East and opposite side of Church Street. ii) St Pauls Church 100m to the South East on Church Street. iii) Buildings immediately to the North West. iv) A pump is indicated serving the buildings.	i) Open fields to North East and South West. ii) School and Methodist Chapel 120m to the South East. iii) Spring 400m to the South East. iv) Royd Well 400m to the East. v) Train tracks 800m to the North. vi) Buildings extend to 300m North West of site.
1907	i) As above.	i) As above.	i) As above. ii) Old Quarry shown 700m to the East. iii) Ventilating shaft shown 700m to the North East. iv) Old Quarry shown 700m to the West. v) Windmill Hill Quarry 1000m to the South. vi) Coblers Well 250m to the South East.

Date	Historical uses on site	Historical findings within 100m perimeter of the site	Historical findings further than 100m perimeter of the site
1933	i) As above	i) Training Station (Miner Rescue) 25m to the South West, opposite side of Church Street.	i) Land 400m to the East labelled as Miners Welfare Recreation Ground ii) Residential development shown 600m to the East. iii) Old quarries 700m to the East and West no longer labelled. iv) Residential development shown 400m to the North West. v) Residential development shown 600m to the West. vi) Sewage Works shown 700m to the West. vii) Residential development shown 200m to the South. viii) Brierley Colliery 300m to the South. ix) Windmill Hill Quarry labelled as disused. x) Coblers Well no longer labelled. xi) Spring no longer shown 400m to the South East. x) Sewage works 700m to the South East.
1938	i) As above.	i) As above.	i) As above.
1948	i) As above.	i) As above.	i) Further development on the residential area 600m to the East.
1956	i) As above.	i) As above.	i) Brierley Colliery labelled as disused.

Date	Historical uses on site	Historical findings within 100m perimeter of the site	Historical findings further than 100m perimeter of the site
1966	i) Site labelled as Brierley Hall (Hemsworth RDC Offices)	i) As above.	i) Elm Farm shown 600m to the East. ii) Allotment Gardens shown 400m to the East. iii) Hawthorne Farm shown 600m to the North West. iv) Cliff Farm shown 300m to the West. v) Further development on the residential area 600m to the West. vi) Violet Farm shown 400m to the South vii) Residential development 500m to the South viii) Secondary school constructed on site of former Windmill Hill quarry.
1981-84	i) Buildings redeveloped and labelled as Council Offices.	i) Residential development on former Training Station (Miner Rescue) ii) Pear Tree Farm shown 100m to the North	i) School shown 200m to the East. ii) New residential development 250m to the East. iii) Residential development 600m to the East extended Northwards. iv) Sewage works 700m to the West now disused. v) Former colliery 300m to the South now labelled as a depot. vi) Violet Farm now a residential area. vii) Sewage Works 700m to South East no longer shown.
1989	i) As above	i) As above.	i) As above.
2000	i) As Above	i) Hall Farm immediately to North of site.	i) Residential development 250m to the East extended Northwards.
2008	i) As above	i) As above	i) Former depot 300m to the South now a residential area.

Date	Historical uses on site	Historical findings within 100m perimeter of the site	Historical findings further than 100m perimeter of the site
1893 (Large Scale)	i) Site shown to contain a variety of buildings and non-coniferous trees.	i) Pump shown 50m to the North West. ii) Grave yard shown immediately to the South East.	i) Coblers Well 250m to the South East.
1906 (Large Scale)	i) As above.	i) As above.	i) As above
1919 (Large Scale)	i) As above.	i) Training School shown 25m to the South West. ii) Pump no longer labelled to the North.	i) Coblers Well no longer labelled. ii) Residential development 100m to the South. iii) Brierley Colliery 150m to the South. iv) Residential area 100m to the West.
1962 (Large Scale)	i) Brierley Hall labelled as offices.	i) Hall Farm adjacent site.	i) Pear Tree Farm 100m to North West. ii) Residential development 200m to the North West iii) Allotments 75m to the West. iv) Allotments 50m and 150m to the South. v) Brierley Colliery now disused. vi) Lilac Farm 250m to the South East.
1976 (Large Scale)	i) Brierley Hall offices reconstructed	i) Residential development immediately to the West.	i) Building shown on Allotments 75m to the West. ii) Both allotments to the south now part of residential area. iii) Residential area 250m to the East.
1978-88 (Large Scale)	i) As above.	i) Council depot constructed to North East of site. ii) Tanks shown to North of site.	i) School constructed 150m to the East. ii) Residential area 250m to the East extended Northwards. iii) Residential development 150m to the North West.
1993 (Large Scale)	i) As above.	i) As above.	i) Depot shown on former Brierley Colliery.

#### 4.0 SITE GEOLOGY & MINING

4.1 The BGS Digital Geological map of Great Britain at 1:10,000 has been consulted and we would report as follows:-

4.2 The site is underlain by Brierley Rock, which consists of Sandstone bedrock.

4.3 There are no fault lines indicated through or close to the site boundaries.

4.4 No made ground or infilled ground is noted on the site.

4.5 A copy of the coal mining report has been obtained and is enclosed within Appendix D. The report states that the property is within the zone of influence of 5 seams of coal at depths ranging from 180-850m beneath the site. The date of the last working is recorded as 1987. Any ground movement from these previous workings should now have ceased.

4.6 The property is not in an area for which a license has been granted to remove underground coal. The site is not in an area that could be affected by planned future workings. However coal reserves do exist in the local area that could be worked in the future.

4.8 There are no known coal mine entries within or within 20m of the boundary of the property.

## 5.0 **ENVIRONMENTAL CONSIDERATIONS**

### 5.1 **Radon**

The BRE Guidance Note BR211 'Radon' guidance on protective measures for new dwellings indicates that no radon protection is required for this development.

### 5.2 **Landfill Sites**

There are no recorded landfill sites within a 500m radius of the development.

### 5.3 **Flood Risk**

The site falls outside of the floodplain maps produced by the Environment Agency. However a flood risk assessment may be requested by the planning authority to *determine the impact that any potential flooding from the new development may have on the existing surrounding properties, and indication of possible flood routes.*

### 5.4 **Groundwater**

The groundwater vulnerability map for the area indicates that the site lies overlies rocks of variable permeability that are designated as a minor aquifer. *These soils will readily transmit any non-absorbed pollutants and liquid discharges. This is based on limited available local information.*

The site is not within a currently defined (Groundwater) Source Protection Zone (SPZ).

There are no water abstractions within a 250m radius of the site.

There were no incidents of pollution to a controlled watercourse within a 500m radius of the site.

## 6.0 PRELIMINARY CONCEPTUAL SITE MODEL

- 6.1 The initial stage in assessing the risks posed from contaminated land during the redevelopment of a site is to prepare a conceptual model. A generalised conceptual model illustrating the main pollutant linkages through a contaminant ► pathway ► receptor model for a commercial development are annotated on Fig 2 within Appendix A. In order to prepare the conceptual model for a particular site the following parameters need to be reviewed as discussed below.
- 6.2 Contamination of existing land can be caused by a number of factors, including:-
- i) Historical/current industrial activities.
  - ii) Disposal of waste materials.
  - iii) Storage of materials.
  - iv) A number of natural processes can also lead to hazardous gases and elevated heavy metals.
- 6.3 Potential pathways can include ground and surface water, permeable strata, existing services providing a conduit and voided ground. Potential receptors can include human health, ecosystems, controlled waters and building structures. There are a number of ways that a receptor can be exposed to the contaminant these include, inhalation, direct contact, ingestion, dermal contact and uptake.
- 6.4 Sources of potential contamination, that could affect the proposed development, from either on of off site activities would include the following:-
- i) The historical usage of the buildings on site is understood to have been former council offices.
  - ii) Low risk of possible contamination from farming activities adjacent to the site.
  - iii) Demolition of former structures.
- Based on the above activities the potential for some contamination to exist on site is considered to be very low.
- 6.5 Considering the proposed residential end use, there will be two possible human receptor groups exposed to the existing onsite contamination:-
- a) Site operatives during development.
  - b) End users, future site residents (the critical receptor is 0-6year-old child).

6.6 Human receptors may be exposed to site contamination by a number of possible pathways. These pathways are summarised in Table 1 below.

**Table 1- Potential Human Exposure Pathways**

<u>Human Exposure Pathway</u>	<u>Site Residents</u>	<u>Construction Workers</u>
Soil Ingestion	YES	YES
Consumption of Home Grown Vegetables	YES	NO
Dermal Contact	YES	YES
Dust Inhalation	YES	YES
Gases/Vapours	YES	NO

6.7 Site operatives will come into contact with any contaminated soil to a far greater extent than future residents. The exposure pathways are generally through dermal contact and indirect ingestion. However their exposure will be for a limited time and the provision and correct use of personnel protective equipment and adequate welfare facilities during construction should restrict their risks to acceptable levels.

6.8 The risk of pollution to controlled waters by existing contamination is considered low. There are no watercourses crossing or adjacent to the site boundary. The site is underlain by sandstone strata that are classified as a minor aquifer, but does have the potential to transmit contaminants. There are no licensed ground water abstractions within a 250m radius of the site.

6.9 No specific areas of ecological importance have been identified in the initial desk top study. Therefore the site is considered to be in a low risk environmental setting. The potential for phototoxic materials to exist at shallow depth should be considered, these could pose a potential risk to new planting and soft landscaping areas within the proposed development.

6.10 The proposed planning drawings indicate residential properties to be constructed. The presence of elevated sulphates and hydrocarbons could affect the long term integrity of buried concrete structures, including foundations and drainage pipes. Plastic water supply pipes can also be damaged by the presence of hydrocarbon contamination.

## 7.0 FIELDWORK

- 7.1 The field work comprised of trial hole excavations undertaken on 27<sup>th</sup> April 2009. A total of eight trial pits were excavated using a 180 deg excavator equipped with a backactor and 600mm wide bucket. The location of the trial pits has been indicated on the site survey and is enclosed within Appendix A.
- 7.2 Materials encountered in the trial pits were examined and categorised. Trial pit logs are contained within Appendix B of the report.
- 7.3 The site Investigation works were designed to achieve a comprehensive site coverage, due to no obvious historical contamination or current on-site features indicated. Soil samples were removed from the natural ground deposits within the trial pits. The samples were removed by operatives wearing gloves and placed into airtight clean plastic containers for transportation to the laboratory.
- 7.4 The investigation work was slightly restricted due to the existing on-site buildings, hardstanding areas, stockpiled materials and location of services.
- 7.5 Soakaway tests were carried out in five of the eight trial pits prior to backfilling. The soakaway tests were undertaken in accordance with the method specified in BRE Digest 365 Soakaway Design. An instantaneous supply of water was provided via a bower. In general the trial pits were filled to the top of the weathered sandstone strata in each instance and the water levels were recorded against time as the water permeated into the natural strata. Due to time constraints only one soakaway test was undertaken within each trial pit. The water level was monitored over an extended time period to determine the infiltration rate for the sandstone strata.
- 7.6 Details of the trial pit logs and soakaway results are attached to the rear of this report in Appendix D. The infiltration rate has been calculated in each case between the 75% and 25% full values as recommended in the BRE Digest 365.

- 7.7 A total of eight soil samples from the made and natural ground strata were recovered from the trial holes for chemical and physical analysis. The testing was carried out by a UKAS accredited laboratory to nationally or accredited in-house methods. The results of the contamination and geotechnical testing are contained within Appendix C of this report.
- 7.8 A full ICRCCL suite of determinants was analysed for, including a range of metals and inorganic substances.

## **8.0 RESULTS OF THE INVESTIGATION**

### **8.1 GEOTECHNICAL INVESTIGATION**

8.1.1 A copy of the trial hole logs providing a complete record of strata encountered beneath the proposed development is presented in Appendix B.

8.1.2 Generally the trial pit investigation revealed a layer of made ground over a sandy clay layer with sandstone gravels. A weak weathered sandstone was proved to underlie the clay strata.

8.1.3 In trial pits 2, 3, 5, 7 and 8, a relatively thin layer of re-engineered made ground was found. The made ground was found to be between 0.1m and 0.7m in thickness and consisted of black clay, crushed brick, gravels and occasional. In trial pits 5,6 and 7 a thin layer of red shale was also encountered. Trial pit 1 had a 0.3m thick layer of black granular topsoil containing some gravel, while trial pits 4 and 6 showed 0.3-0.8m depth of dark brown sandy topsoil with numerous roots.

8.1.4 In all trial pits, a firm light brown sandy clay with angular sandstone gravels was encountered beneath the made ground/topsoil. The clay strata was between 0.2-2.0m thick.

8.1.5 In trial pits 1,3,4,7 and 8, the 0.2-0.3m thick layer of clay was underlain by a medium dense light brown slightly clayey sand containing frequent sandstone gravels. Towards the northeast of the site TP's 1 and 3 the thickness of the sand strata was recorded as 1.3-1.5m. In the remaining trial pits a shallower sand layer of approximately 0.5-0.7m was noted. In trial pit 2, a very weak brown/grey highly weathered mudstone was encountered at 1.8m which extended to a depth of 2.6m beneath existing ground level.

8.1.6 A moderately weak, light brown weathered sandstone was proven in all trial pits. The weathered deposits were excavated as angular gravels, with occasional larger cobbles within a sand matrix. The excavations proved the sandstone strata at depths varying between 1.1-2.6. The depth to the weathered sandstone strata increased towards the north east of the site.

8.1.7 No instability was noted within the trial holes excavated. The excavations were only left open for a short period of time.

## 8.2 GROUND WATER

8.2.1 No ground water was encountered within the trial pit excavations.

## 8.3 SOAK-A-WAY TESTS

8.3.1 Details of the trial pit logs and soak-a-way results are attached to the rear of this report in Appendix D. The infiltration rate has been calculated in each case between the 75% and 25% full values as recommended in the BRE Digest 365.

8.3.2 The five tests carried out indicated a maximum rate of discharge of  $1.1 \times 10^{-4}$  m/s in TP 03 and a minimum infiltration rate of  $6.5 \times 10^{-6}$  m/s in TP 02. An average percolation rate for the five tests undertaken was  $4.6 \times 10^{-5}$  m/s. We would suggest that the average rate should be utilised for the design of the proposed surface water soak-a-ways. The worst case result is an order of magnitude difference when compared to the other soak-a-way results. This is probably due to the increased depth and minimal excavation into the weathered sandstone deposits within the trial pit.

## 9.0 CONTAMINATION

### 9.1 HUMAN HEALTH RISK ASSESSMENT

9.1.1 The appraisal of contaminated land within the UK is based on a risk assessment approach. The method involves the principle of defining a source ► pathway ► receptor, linkage to establish a human health risk. For any risk to exist to a potential receptor from an identified contaminant there must be an unbroken source ► pathway ► target relationship.

9.1.2 In the first instance site data for the contaminant levels are compared against guidance such as the CLEA values published by DEFRA. Should the site values exceed the guidance criteria, the contamination levels are recognised to have the potential to pose a risk to human health. Two scenarios are then available:-

- a) To break or remove one of the source ► pathway ► receptor linkages, by specifying an appropriate level of remedial work. Examples of remedial action may include the removal of the contaminated material or alternatively specifying a sufficient capping layer.
- b) The alternative approach is to provide a more detailed human health site specific risk assessment. This will involve examining factors such as soil properties, exposure assumptions, groundwater flows and contamination composition.

### 9.2 CONTAMINATION RESULTS

9.2.1 As stated above, in order to put the analytical results into context, the data has in the first instance been assessed in relation to several sets of guidelines: -

- 9.2.2 The analytical results have been assessed via an initial screening assessment with regard to the current Contaminated Land Exposure Assessment model (CLEA UK) for human health, which has been produced for the Environment Agency and the Department of Environment, Food and Rural Affairs (DEFRA). The CLEA model provides Soil Guideline Values (SGVs) for a limited range of contaminants only, and these are based on risk to human health. As such they do not take into account potential risks to other receptors eg groundwater and third party land.
- 9.2.3 It is proposed to redevelop the site for low rise residential properties with private gardens areas. Soil results have therefore been assessed against the CLEA SGVs for Residential use with plant uptake, as these are considered to be the most suitable guidelines to protect the most critical targets from contaminants via all possible exposure routes.
- 9.2.4 Where no CLEA SGV has been published, Generic Assessment Criteria (GAC) based on guidelines from the Chartered Institute of Environmental Health (CIEH) and Land Quality Management Ltd (LQM) for residential has been used. Where there is no GAC, guidance limits have been adopted from sources referenced in the table below.
- 9.2.5 A new approach is now being adopted for the calculation of the SGV. These are currently being re-appraised by the Environment Agency leading to all previous SGV and TOX reports being withdrawn. In this interim period the previous SGV have been utilised to provide an initial screening level, in order to appraise the results.
- 9.2.6 Assessment of risk is considered as a tiered approach. Assessment based on non intrusive means is considered Tier 1 assessment, comparison against SGVs and GACs is a Tier 2 assessment, and the generation of and comparison with Site Specific Assessment Criteria (SSAC) is a Tier 3 assessment and is conducted where deemed appropriate following the Tier 2 assessment.
- 9.2.7 The sulphate and acid concentrations have been compared against the BRE digest "Concrete in Aggressive Ground" parts 1-4. This will enable the concrete class to be specified in relation to possible contact with aggressive soils.

9.2.8 The results of the chemical analysis are presented on the laboratory analysis sheets with Appendix C. A summary of the significance of the results is presented in Table 4.

**Table 2**

**Comparison of contaminant against accepted guidance values for Domestic Gardens**

<u>CONTAMINANT</u>	<u>ICRCL – TTV / DEFRA – SGV MG/KG</u>	<u>CONCENTRATION IN ALL SOILS. MG/KG</u>	<u>No. OF SAMPLES EXCEEDING ACCEPTED GUIDANCE VALUES</u>	<u>PERCENTAGE OF SAMPLES EXCEEDING GUIDELINE VALUE</u>
Arsenic	32 (1)	<3.0-38	1	13%
Cadmium	1-8 (2)	<0.5-2.0	0	
Chromium	130 (2)	14-67	0	
Lead	450 (2)	30-280	0	
Mercury	1 (1)	<0.6-1.6	1	13%
Selenium	350 (1)	<2.5	0	
Copper	130	7.2-57	0	
Nickel	130 (1)	14-22	0	
Zinc	200-300	62-350	1	13%
Boron (soil, water soluble)	3	<0.5-1.8	0	
Cyanide (total)	250	<1	0	
Sulphate	0.24% (3)	<0.02-0.42	1	13%
Thiocyanate	50	<5.0	0	
Monohydric Phenol	78	<1.0	0	
Sulphide	250	<10-14	0	
PAH (Total)	40	ND-345	1	13%
Naphthalene	5	<0.5-0.55	0	
Benzo(a)pyrene	1.2	<0.5-40	1	13%
PH	6-8	7.3-8.8	0	

(1) DEFRA CLR Model residential with plant uptake published 2009.

(2) DEFRA CLR SGV's withdrawn used for initial comparison

(3) BS 8110 1985 Table 6.1

- 9.2.9 The analysis undertaken for the heavy metal compounds indicate isolated slightly elevated levels of Arsenic and Mercury above the tier 1 screening level. A single elevated level of Arsenic (38mg/kg) and Mercury (1.6mg/kg) were both found in the ashy gravels of TP08 located centrally on site. The results were all within a factor of 2 when compared to the residential tier one screening value. The cadmium concentrations are very pH dependent, soils of containing high acidic concentrations will cause any elevated cadmium to be released at a far greater rate. The 2.0mg/kg level of cadmium observed within the sample of made ground taken from TP 01 coincided with a pH value of 7.7, and therefore should not pose a risk to future human health.
- 9.2.10 A single sample indicated an elevated level of the phytotoxic metal and zinc. The increased levels of 350mg/kg was found in TP 01 located in the northern corner of the site. The elevated level of zinc was found to be approximately 1.75 times above the published residential guideline figure. Zinc is a contaminant that is not normally considered harmful to human health, but is considered toxic to plants.
- 9.2.11 A single sample indicated elevated levels of PAH (total) and corresponding Benzo(a)pyrene. The elevated sample was locted in TP 03 in the north eastern corner of the site. A peak level of 345mg/kg and 40mg/kg were found in the PAH and Benzo(a)pyrene testing respectively. These results are considerably greater than the Tier 1 screening criteria an as such would be considered a risk to future receptors.
- 9.2.12 The sulphate levels within the made ground are of particular concern to the placement of new concrete structures within this material. Total sulphate concentrations in the sample ranged from <0.02 – 0.42%. The single elevated level was proved in the made ground of TP 03. The worst case result corresponds to design sulphate class DS-2, ACEC class AC-2, when compared against the BRE Special Digest 1 "Concrete in aggressive ground".

### 9.3 QUALITATIVE RISK ASSESSMENT

9.3.1 The Qualitative Risk Assessment is based upon the previously discussed source ► pathway ► receptor principle. In relation to the proposed site these may be described as follows:-

#### 9.3.2 **SOURCE**

- i) Isolated elevated contamination of heavy metals arsenic and mercury within the made ground.
- ii) Slightly elevated levels of the phototoxic metal zinc within the made ground.
- iii) Elevated contamination of PAH (total) and benzo(a)pyrene.
- iv) Isolated slightly elevated concentration of sulphate.

#### 9.3.3 **PATHWAYS**

- i) Ingestion of contamination material.
- ii) Inhalation of contaminated particles.
- iii) Dermal contact with the known contamination.
- iv) Leaching to controlled waters.

#### 9.3.4 **RECEPTORS**

- i) Residential end users.
- ii) Construction and maintenance workers.
- iii) Controlled waters.
- iv) The building structure.

9.3.5 Each of the receptors will now be appraised and attribute the likely risks involved.

##### i) **Residential end users.**

Based on the chemical results obtained it is considered that there is a **low** risk to end users from the shallow localised ground contamination on-site. The main risk to the residential end users is the elevated PAH compounds found within TP 03. The elevated PAH contamination appears to be isolated within the shallow depth of made ground adjacent to the eastern boundary of the site. The nominally elevated heavy metal contamination is primarily located on the Gannex Mill site, which we understand will be re-developed for commercial use and therefore should not pose a significant risk. At

present we would suggest that the most practical remedial method is to provide a suitably designed clean capping blanket to soft landscaped areas to break potential pollutant linkages between the contaminated ground and future end-users.

on the chemical results obtained it is considered that there is a **low** risk to end users from localised ground contamination on-site.

**ii) Construction and Maintenance Workers.**

It is considered that there is a **very low** risk to construction and maintenance workers from the redevelopment of the site.

Construction workers should always wear PPE including overalls, boots and gloves when handling the contaminated materials onsite. In addition eating, drinking and smoking should be restricted to designated areas where the above hygiene facilities are available.

**iii) Controlled Waters**

Relatively impermeable sandy clay material has been found to underlie the site. No raised or perched ground water levels have been encountered throughout the investigation works. There are no licensed ground water abstractions or surface watercourse within a 250m radius of the site. We would consider the risk of ground contamination leaching into the existing ground water system as **very low/negligible**.

**iv) Building Structures.**

An isolated elevated sulphate level has been found in the made ground tested on site, therefore a worst case Sulphate Class DS-2 ACEC AC-2 should be adopted, where new concrete structures are to be constructed within the made ground areas on site. If concrete is to wholly placed within the natural strata a Sulphate Class DS-1 ACEC AC-1s may be utilised.

A thin layer of red shale has also been noted in a number of trial pits located towards the front of the site adjacent to Church Street. Particular care needs to be observed with red shale due to its potential expansive properties and elevated sulphate content. At present we would recommend the removal of red shale where it is encountered.

Service providers should be forwarded the final validated chemical levels in order for them to provide an accurate specification for the apparatus to be provided. New services should be surrounded and backfilled with clean material to afford some protection to the apparatus and allow any future maintenance work to be undertaken in clean material.

9.4.6 From the above it is evident that a source/pathway/receptor linkage is plausible.

Therefore further remedial action will be required to either;

- i) Break the pathway by providing an effective capping blanket ie encapsulating the contamination.
- ii) Remove the contamination from the site.
- iii) Treat the contamination on-site to a satisfactory level to ensure it is safe to remain on-site.

These options are further discussed in Section 10.6.

## 10.0 CONCLUSIONS AND RECOMMENDATIONS

### 10.1 GEOTECHNICAL ASSESSMENT

10.1.1 The fieldwork generally proved a firm light brown sandy clay, with sandstone gravels overlying weathered sandstone deposits. For initial design purposes we would envisage a safe bearing capacity of  $100\text{kN/m}^2$  where foundations are to be cited onto the firm sandy clay material. If foundations are deepened onto the weathered sandstone a safe net bearing capacity of  $150\text{kN/m}^2$  could be adopted.

10.1.2 We would therefore suggest that the proposed two storey traditional house construction should be constructed on strip/trench fill footings founded entirely onto the firm brown sandy clay. If sandstone strata is encountered within the foundation excavation then we would recommend that the entire footing should be deepened and constructed off the rock strata to avoid potential differential settlement. The foundation widths will vary dependent upon the line loadings calculated.

10.1.3 Preliminary site engineering works have indicated that the proposed plot levels to the rear of the site may require raising due to drainage requirements. The planning of these engineering works should be considered. It may prove beneficial to construct the plots footings at current ground levels prior to backfilling to minimise excavations.

10.1.4 Foundations should be deepened where constructed adjacent to boundary retaining walls or existing buildings, to prevent any lateral forces being exerted on the retaining structure.

10.1.5 The plot foundations should be constructed in accordance with NHBC Standards Chapter 4.2 "Building Near Trees". Designs should cater for previous, existing or proposed trees adjacent to the plot foundations where sited in shrinkable soils. In these cases the foundation depths should be increased in accordance with NHBC Standards Chapter 4.2. This may affect the foundations adjacent to the southern and western site boundaries where existing trees are adjacent to the site boundary. Plasticity testing should be undertaken to determine the volume change potential of the clay strata. Alternatively foundations could be extended onto the non shrinkable granular weathered sandstone deposits.

10.1.6 All foundations should be placed below a line of 45° drawn up from the base of any services or other structures.

10.1.7 If any existing foundations or structures are encountered during construction, these should be totally removed from the excavations to enable the new foundations to be constructed without obstructions.

10.1.8 The site investigation did not encounter any ground water seepage into the trial hole excavations. At this stage we would advise that no precautions should be required in respect localised ground water issues on the development.

10.1.9 The weathered sandstone strata proved easy to excavate, however significant over break could occur within deeper excavations undertaken within the solid bedrock material. A mechanical breaker may need to be required to undertake these excavations.

10.1.10 Elevated sulphate levels were found within the chemical analysis and therefore Design Sulphate Class DS-2 ACEC AC-2 should be adopted for the site.

## 10.2 MINING

10.2.1 The report states that the property is within the zone of influence of 5 seams of coal at depths ranging from 180-850m beneath the site. The date of the last working is recorded as 1987. Any ground movement from these previous workings should now have ceased.

10.2.2 There are no faults located within 20m of the boundary of the site.

## 10.3 GROUND FLOOR SLAB – GAS MEASURES

10.3.1 No landfills are located within a 500m radius of the site. In addition no shallow mine workings have been undertaken.

10.3.2 Basic radon protection measures are not required for the site.

10.3.3 Where fill is in excess of 600mm thick, a suspended precast concrete or cast insitu concrete floor should be used. Note no fills or made ground were encountered in the trial hole excavations. In addition where the foundations are subject to the influence of trees a suspended floor is also required.

10.3.4 As noted previously in the report slab levels may need to be raised to accommodate on site drainage and therefore suspended slabs are likely to be required in these instances.

10.3.5 In light of the above and the possibility of a permanent void beneath the dwelling there is a risk of a build up of carbon dioxide/methane over a long term period. We would therefore recommend that the following procedures are adopted for the new build construction.

- A suspended precast concrete floor.
- Fully vented minimum 150mm deep void below suspended slab. To be increased to 225mm where the proximity of trees affect the foundation construction.

The passively ventilated sub-space void should be constructed with a cross ventilation (i.e. two opposite faces of the external walls to be vented), with ventilation set at a minimum of 2650mm<sup>2</sup>/m run of wall.

#### 10.4 **SURFACE WATER DRAINAGE**

10.4.1 The existing ground has been proved to consist of firm sandy clays overlying a weathered sandstone strata, consequently a sustainable surface water drainage solution has been investigated.

10.4.2 The on-site soak-a-way tests have proved an average infiltration rate of  $4.6 \times 10^{-5}$ m/s, into the Brierley Rock Sandstone formation underlying the site. This is considered an acceptable rate to enable the use of a sustainable drainage solution in the form of soak-a-ways to be adopted for the proposed development.

10.4.3 The size, location and number of soak-a-ways should be specified once the final design scheme is established.

10.4.4 Any adoptable highway soak-a-ways should be located in areas outside of the main adoptable highway. These areas will need to be hard paved and put forward for adoption by the highway authority.

10.4.5 Approval of the proposed soak-a-way system should be sought from Barnsley Land Drainage and Highway departments. In addition Yorkshire Water should be consulted, they may require further testing prior to their final approval.

10.4.5 Further to above we would recommend the following good practice to enhance the longevity of the soakaway designs for the site: -

- i. Approximate equal areas drained into each soakaway. Therefore not overloading any one soakaway.
- ii. Adjacent soakaways to be cross-connected via the use of a relatively flat section of pipe.
- iii. A catchpit is proposed prior to the water entering each soakaway, to act as an additional silt trap.
- iv. All designs incorporate a F.O.S. of 2.0, in relation to storage provided for a 12 hour storm.
- v. The average infiltration rate should be assumed for the development.
- vi. A 25-75mm diameter clean imported filter material wrapped in terram to the perimeter of all soakaway chambers is to be utilised to prevent clogging from fines.
- vii. Soakaways should be located a minimum of 5.0m from any proposed buildings in accordance with the BRE Digest 365.

## 10.5 HIGHWAY CONSTRUCTION

10.5.1 The sandy clay encountered within the trial holes should provide a design California Bearing Ratio (CBR) of 2%. Localised soft spots may be encountered in the cohesive strata and therefore further excavation and replacement with an engineering capping layer may be required.

10.5.2 The weathered sandstone material should provide a CBR value of around 5%.

10.5.3 We would advise that confirmatory CBR tests to the road formation should be undertaken during construction.

## 10.6 CONTAMINATION ASSESSMENT

10.6.1 The trial pit investigation revealed between 0.2-0.8m of made ground across the site. The made ground consisted of crushed bricks, gravels, soft clays occasional ash and red shale.

10.6.2 Isolated elevated level of arsenic and mercury was identified in the made ground material with a recorded level of 38mg/kg, 2.0mg/kg respectively.

10.6.3 Elevated levels of PAH (total) and Benzo(a)Pyrene have been identified in the made ground materials with a maximum recorded levels of 345mg/kg and 40mg/kg respectively.

10.6.4 We would recommend that some remedial action would be necessary to deal with the identified contaminated material on-site. Any remedial strategy adopted would need to be developed to consider either the removal of the contaminated material or the provision of a clean/inert topsoil layer effectively capping the contaminated material to break the pathway to the receptor.

10.6.5 Alternatively a Quantitative Risk Assessment (QRA) could be carried out in order to determine site specific target levels (SSTL's) for the remediation of PAH and to a lesser extent the mercury and arsenic contamination.

10.6.6 Due to the isolated nature of the contaminated material exposed to date we would suggest that the most economical method of dealing with the material would be to excavate and remove off site.

10.6.7 The red shale noted within the sub base construction of the tarmac hard standing area towards the front of the site should be excavated and removed from site.

10.6.8 The excavated areas should be validated by undertaking additional sample analysis to confirm the successful removal of the contaminated materials.

10.6.9 At present, based on the available information, we would recommend any final soft landscaped areas should have a minimum 500mm thickness of clean sub soils and top soils. A reduced thickness could be incorporated if the existing made ground material is totally removed from areas of site where soft landscaping is proposed. At present there does not appear to be sufficient clean sub soils and top soils available, therefore it is likely that clean material will be required to be imported to site.

10.6.10 The planning and drainage requirements necessitate that the site levels are raised at the rear of the site. There is insufficient material available on-site to provide the increase in ground levels and therefore material will need to be imported to site provide the required build up.

10.6.11 All imported material to be used for the capping/topsoil layer should be uncontaminated and comply with the specification for Engineering Fill. Before any material is brought onto site at least 3 samples from each material type or source should be taken and tested for the range of ICRCCL contaminants listed previously in table 2. Only material found to be below published trigger levels should be deemed uncontaminated and accepted for use on site.

10.6.12 Should any further suspected areas of contamination be exposed during site strip/construction, an engineer should be contacted to determine if additional chemical testing should be undertaken. The on-site staff should maintain a photographic record and dates of any exposed contaminated material.

10.6.13 If the made ground areas are removed off site, they should be taken to a licensed waste site and full documentation should be obtained. Any relevant chemical test results should be given to the landfill operator, so that they can determine if this material is suitable to be disposed of in their licensed landfill.

10.6.14 Following completion of the remediation, shallow trial pits should be excavated to the top of the capping layer by an independent consultant to confirm the capping layer thickness. Samples should be taken and chemically tested to validate that the capping layer has been constructed correctly. All site records and results of the shallow trial pits should be consolidated into a validation report.

11.0 **FURTHER WORK**

11.1 Plasticity testing to be undertaken in relation to the sandy clays and confirmation of tree influence affects upon the proposed foundations.

12.0 **APPROVALS**

12.1 Proposals for the remediation of contaminated land may require the approval of numerous bodies. These include:

12.2 Barnsley Environmental Health Department as required by the building and planning regulations.

12.3 The NHBC or similar as they will provide the insurance costs to cover the property.

12.4 The Environment Agency if there are risks of contamination to ground or surface water systems. They will also require notification if material is removed from site and taken to an appropriate tip.

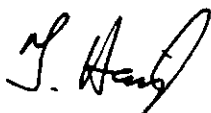
12.5 Relevant highways and drainage authorities and other service companies may also wish to know about the level of contaminants.

Prepared by



M. Huddleston. MEng

Checked by




T. Haigh. BSc.,C.Eng.M.I.C.E.

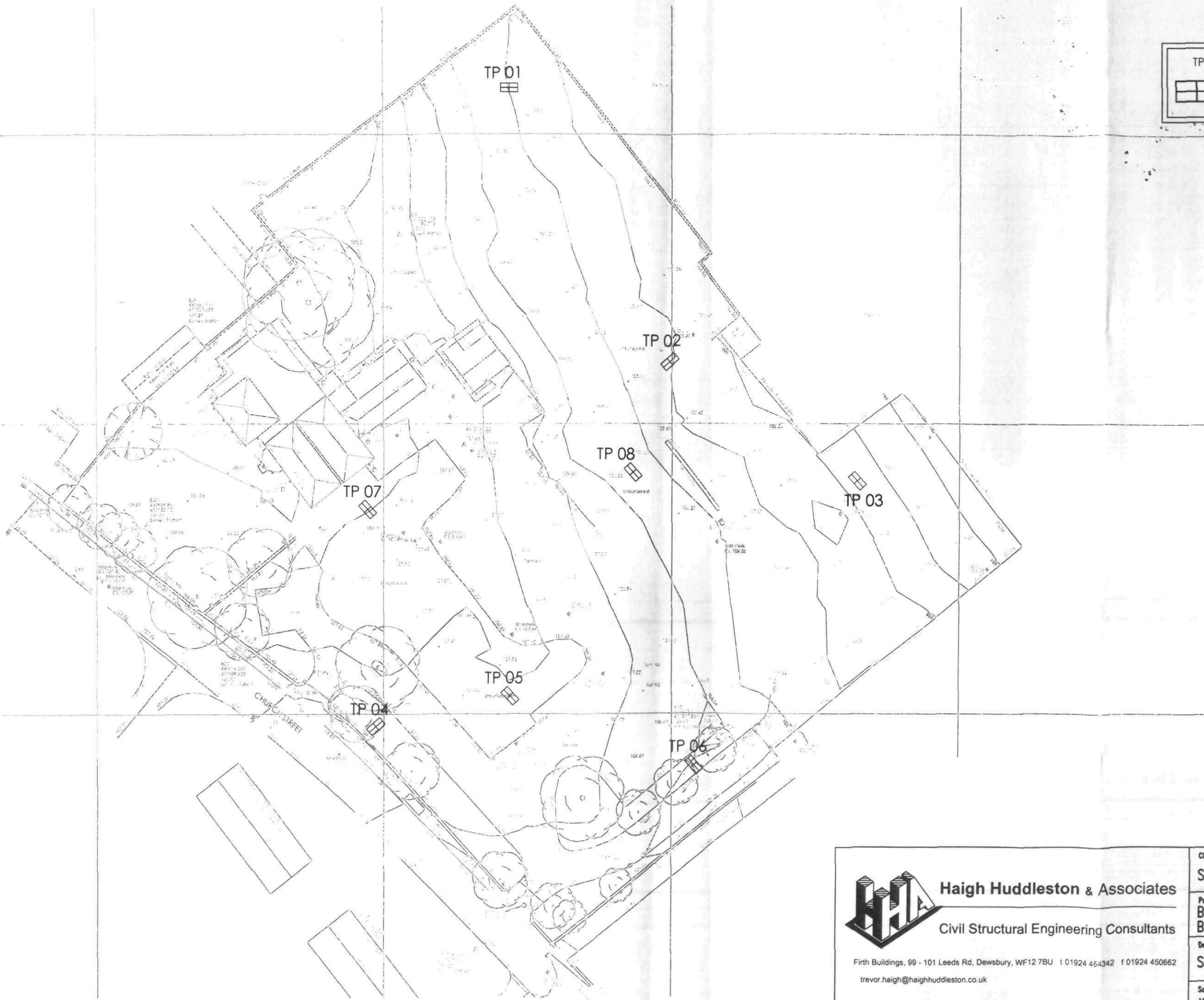
March 2010

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## **APPENDIX A**

- 1. Dwg No. E07/4942/01 – Trial Pit Location Plan**
- 2. Typical Site Conceptual Model**
- 3. Site Location Plan**

TP  
 HHA SOAK AWAY TRIAL PIT  
 APRIL 09

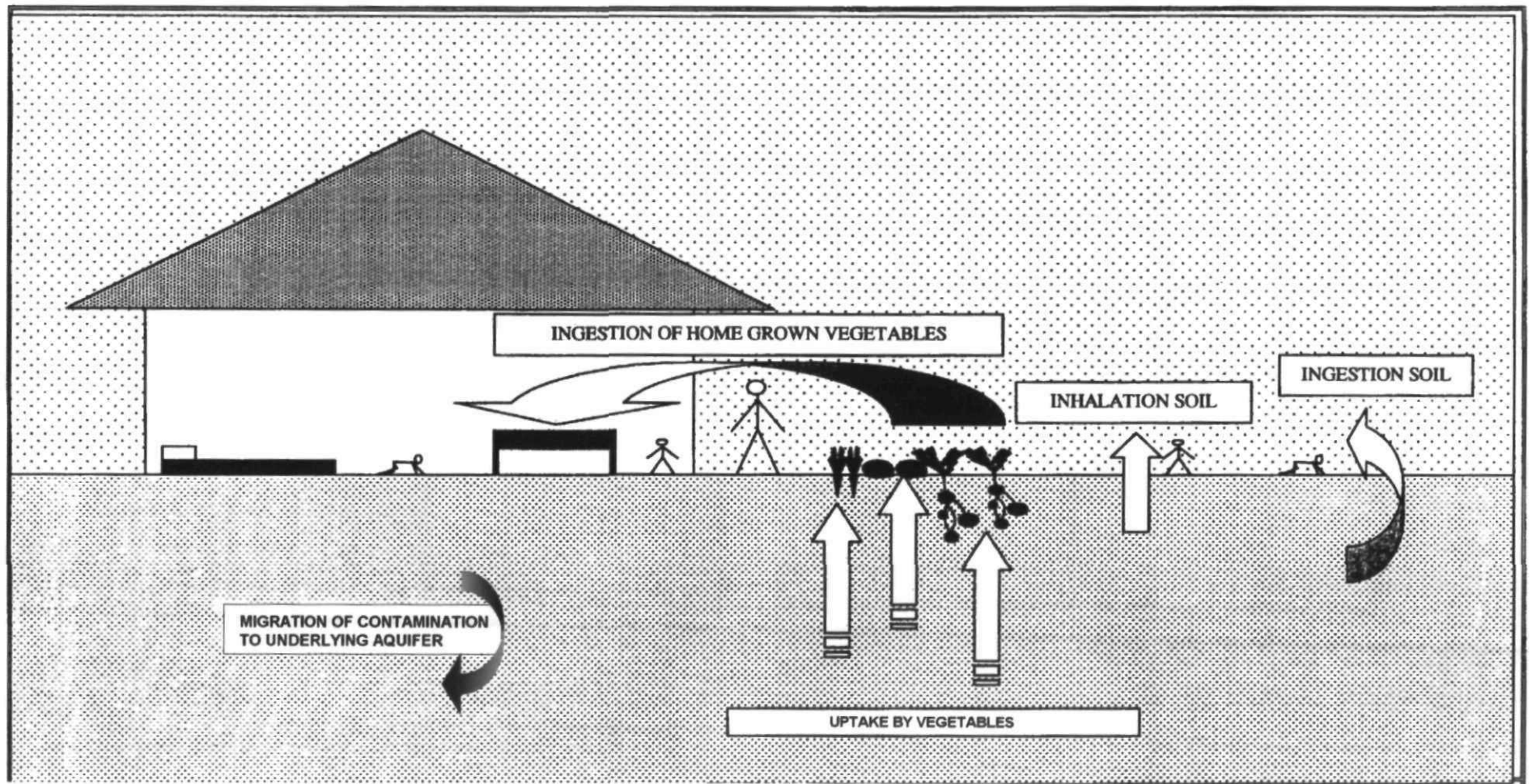


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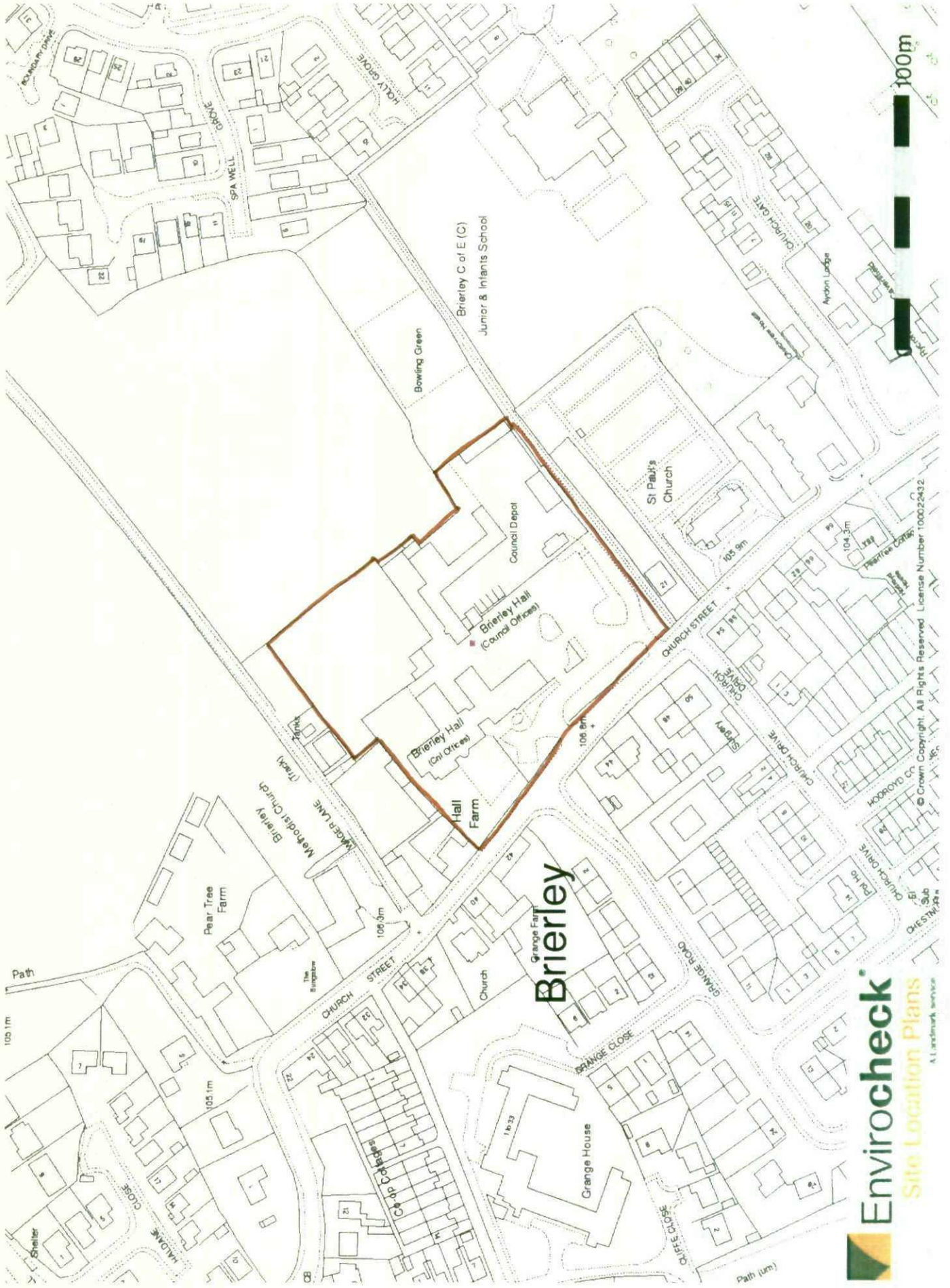
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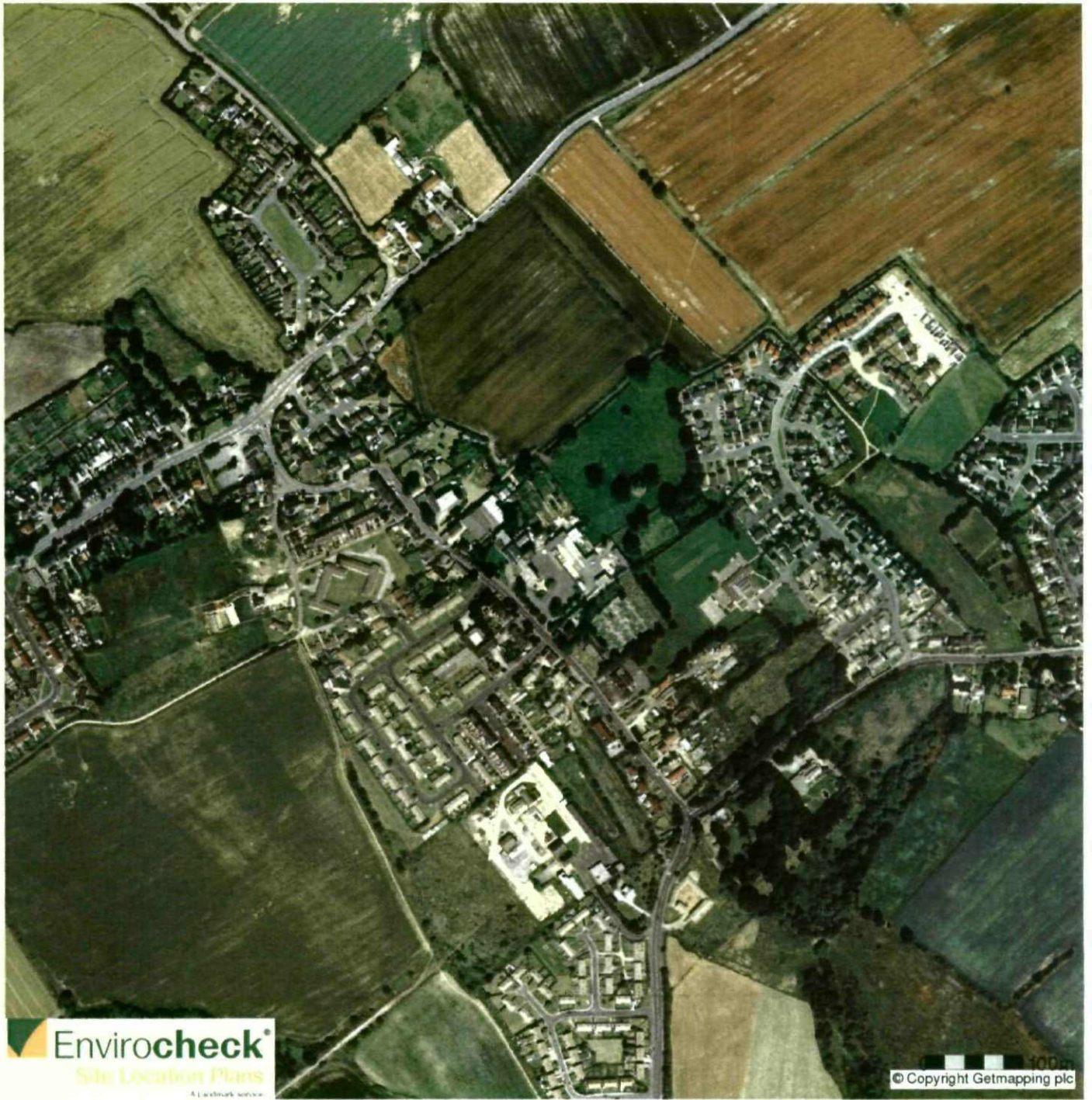
Firth Buildings, 99 - 101 Leeds Rd, Dewsbury, WF12 7BU | 01924 464342 | 01924 450662  
 trevor.haigh@haighhuddleston.co.uk

<b>Client</b>				
SAUL CONSTRUCTION				
<b>Project</b>				
BRIERLEY HALL, CHURCH STREET, BRIERLEY				
<b>Detail</b>				
SOAK AWAY TRIAL PIT LOCATION PLAN				
<b>Scale</b>	<b>Dwn</b>	<b>Chkd</b>	<b>Date</b>	<b>Dwg No.</b>
NTS	JM	MH	Mar'10	E09/4942/01



**FIGURE 2**





**Envirocheck**<sup>®</sup>  
Site Location Plans  
A Landmark service

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**APPENDIX B**

**Trial Pit Logs**



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FORM HHA 5

## TRIAL HOLE NO. 1

<b>Client :</b>	<b>SAUL CONSTRUCTION</b>	<b>Job No :</b>	<b>E09/4942</b>
<b>Site :</b>	<b>BRIERLEY HALL CHURCH STREET</b>	<b>Date :</b>	<b>27.04.09</b>

0.0		Black granular topsoil containing some gravels. Sample taken at 0.2m
	0.3	
		Soft/ firm orangish brown very sandy clay.
0.5	0.5	
		Moderately dense light brown sand containing sandstone angular gravels.
		Sample taken at 0.9m.
1.0		
1.5		
2.0	2.0	
		Moderate weak light brown weathered sandstone, excavated within a sand matrix.
	2.2	
		End of trial pit.
2.5		
3.0		
3.5		
4.0		

**REMARKS:**  
 Ground water encountered during excavation      NO  
 Sample taken      Taken at 0.2m and 0.9m  
 Sides of excavation remained stable      YES  
 Level      .....

**NOTES:**  
 .....  
 .....



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FORM HHA 5

## TRIAL HOLE NO. 2

<b>Client :</b>	<b>SAUL CONSTRUCTION</b>	<b>Job No :</b>	<b>E09/4942</b>
<b>Site :</b>	<b>BRIERLEY HALL CHURCH STREET</b>	<b>Date :</b>	<b>27.04.09</b>

0.0		Made ground, crushed brick, ash and gravels.
0.5	0.6	
1.0		Firm brown/grey very sandy clay containing numerous sandstone gravels.
1.5		
1.8		
2.0		Very weak brown/grey highly weathered mudstone.
2.5		
2.6		
2.7		Moderate weak brown weathered sandstone excavated as angular gravels.
3.0		End of trial pit
3.5		
4.0		

**REMARKS:**

Ground water encountered during excavation	NO
Sample taken	NO
Sides of excavation remained stable	YES
Level	.....

**NOTES:**

.....  
.....



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FORM HHA 5

## TRIAL HOLE NO. 3

<b>Client :</b>	<b>SAUL CONSTRUCTION</b>	<b>Job No :</b>	<b>E09/4942</b>
<b>Site :</b>	<b>BRIERLEY HALL CHURCH STREET</b>	<b>Date :</b>	<b>27.04.09</b>

0.0		Made ground crushed brick ash/ gravels.
0.5	0.5	
1.0	1.2	Firm brown very sandy clay containing numerous sandstone gravels.
1.5		
2.0		
2.5	2.5	Medium dense light brown slightly clayey sand with numerous sandstone gravels.
2.7	2.7	Moderate weak light brown highly weathered sandstone.
3.0		End of trial pit.
3.5		
4.0		

**REMARKS:**

Ground water encountered during excavation      NO  
 Sample taken      NO  
 Sides of excavation remained stable      YES  
 Level      .....

**NOTES:**

.....  
 .....



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FORM HHA 5

## TRIAL HOLE NO. 4

<b>Client :</b>	<b>SAUL CONSTRUCTION</b>	<b>Job No :</b>	<b>E09/4942</b>
<b>Site :</b>	<b>BRIERLEY HALL CHURCH STREET</b>	<b>Date :</b>	<b>27.04.09</b>

0.0

		Dark brown topsoil with numerous rootlets.
	0.3	
		Firm light brown sandy clay.
0.5		
	0.6	
		Medium dense light brown sand with sandstone angular gravels.
1.0		
	1.1	
		Moderately weak orangeish brown weathered sandstone excavated as angular gravels.
1.5		
	1.8	
		End of trial pit.
2.0		
2.5		
3.0		
3.5		
4.0		

**REMARKS:**

Ground water encountered during excavation	NO
Sample taken	NO
Sides of excavation remained stable	YES
Level	.....

**NOTES:**

.....  
.....



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FORM HHA 5

## TRIAL HOLE NO. 5

<b>Client :</b>	<b>SAUL CONSTRUCTION</b>	<b>Job No :</b>	<b>E09/4942</b>
<b>Site :</b>	<b>BRIERLEY HALL CHURCH STREET</b>	<b>Date :</b>	<b>27.04.09</b>

0.0		Made ground crushed brick/ red shale/ gravel.
0.5		
	0.7	
1.0		Firm light brown sandy clay with some sandstone gravels.
1.5		
	1.7	
2.0		Moderate weak light brown highly weathered sandstone excavated as angular gravels and cobbles.
2.5	2.5	
		End of trial pit.
3.0		
3.5		
4.0		

**REMARKS:**

Ground water encountered during excavation	NO
Sample taken	NO
Sides of excavation remained stable	YES
Level	.....

**NOTES:**

.....  
.....





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FORM HHA 5

## TRIAL HOLE NO. 7

<b>Client :</b>	<b>SAUL CONSTRUCTION</b>	<b>Job No :</b>	<b>E09/4942</b>
<b>Site :</b>	<b>BRIERLEY HALL CHURCH STREET</b>	<b>Date :</b>	<b>27.04.09</b>

0.0

	0.1	Made ground – gravels, occasional red shale.
0.5		Firm light brown sandy clay with sandstone gravels.
	0.9	
1.0		Medium dense light brown slightly clayey sand containing sandstone gravels.
1.5		
	1.6	
		Moderate weak light brown sandstone within a sand matrix.
2.0		
	2.1	
		End of trial pit.
2.5		
3.0		
3.5		
4.0		

**REMARKS:**

Ground water encountered during excavation	NO
Sample taken	NO
Sides of excavation remained stable	YES
Level	.....

**NOTES:**

.....  
.....



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FORM HHA 5

## TRIAL HOLE NO. 8

<b>Client :</b>	<b>SAUL CONSTRUCTION</b>	<b>Job No :</b>	<b>E09/4942</b>
<b>Site :</b>	<b>BRIERLEY HALL CHURCH STREET</b>	<b>Date :</b>	<b>27.04.09</b>

0.0

		Made ground black firm clay with ash and gravels. Sample taken at 0.2m
0.5	0.5	
		Firm brown sandy clay
	0.7	
		Firm light brown slightly sandy clay.
1.0		
	1.1	
		Medium dense light brown slightly clayey sand with sandstone angular gravels.
1.5		
	1.6	
		Moderate light brown weathered sandstone excavated as angular gravels within a sandy matrix.
2.0		
	2.1	
		End of trial pit.
2.5		
3.0		
3.5		
4.0		

**REMARKS:**

Ground water encountered during excavation

NO

Sample taken

taken at 0.2m

Sides of excavation remained stable

YES

Level

.....

**NOTES:**

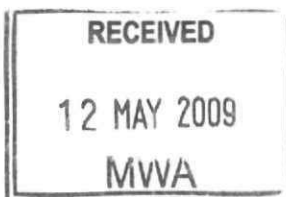
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# APPENDIX C

## Chemical Analysis of Samples



Martin Huddleston  
Haigh Huddleston and Associates  
Firth Buildings  
99 -101 Leeds Road  
Dewsbury  
WF12 7BU



07 May 2009

## TEST REPORT

Our Report Number: 09-62878

Your Order Reference: N/A

8 soil samples received on 28/04/2009

Final instructions received on 28/04/2009

Project Name: ~~99-101 Leeds Rd, Dewsbury~~

Project Code: 4942

*Brierley, Church Street (Saul Construction)*

*Laboratory analysis started on 28 April 2009*

*All laboratory analysis completed by 07 May 2009*

Rexona Rahman  
Analytical Reporting Manager  
**ALCONTROL LABORATORIES**

Rhys Ashton  
Project Co-Ordinator  
**ALCONTROL LABORATORIES**

**This test report shall not be reproduced, except in full, without written approval of the laboratory.**

Results contained herein relate only to the samples tested. Test methods are documented in house procedures or where appropriate standard methods. Non accredited tests (if applicable) are identified on each page. Procedures for sampling are outside the scope of the laboratory UKAS accreditation. Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation. All samples connected with this report, including any 'on hold', will be stored and disposed of according to company policy. A copy of this policy is available on request.



# ALcontrol Laboratories

## Table Of Results

Job Number : 09-62878  
 Matrix : Soil  
 Project Code: 4942

Project Name: 99-101 Leeds Rd, Dewsbury  
 Client : Haigh Huddleston and Associates

Sample Reference	TP01	TP01	TP03	TP03	TP04	Method No	Units	LOD
Sample Depth (m)	0.2	0.9	0.1	0.8	0.2			
Date Sampled	-	-	-	-	-			
Date Scheduled	28/04/09	28/04/09	28/04/09	28/04/09	28/04/09			
Laboratory Reference No	378695	378696	378697 †	378698	378699			
Analysis								
Moisture Content (Dry Weight)	20.9	13.0	6.0	13.1	17.5	021	%	0.1
Moisture Content (Wet Weight)	17.3	11.5	5.7	11.6	14.9	021	%	0.1
Arsenic	14	4.2	20	< 3	17	069S™	mg/kg	3
Boron (W/S)	1.6	< 0.5	< 0.5	0.7	0.9	016S™	mg/kg	0.5
Cadmium	2.0	< 0.5	1.5	0.6	0.7	069S™	mg/kg	0.5
Chromium	16	14	67	18	18	069S™	mg/kg	10
Copper	49	7.2	57	12	28	069S™	mg/kg	5
Lead	130	30	200	37	89	069S™	mg/kg	10
Mercury	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	069S™	mg/kg	0.6
Nickel	14	19	19	21	18	069S™	mg/kg	4
Selenium	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	069S™	mg/kg	2.5
Sulphate (Total Acid Soluble) as SO4	630	< 200	4200	310	460	025a™	mg/kg	200
Zinc	350	66	180	60	83	069S™	mg/kg	10
Total Cyanide	< 1	< 1	< 1	< 1	< 1	061S™	mg/kg	1
pH	7.7	7.9	8.8	7.7	7.8	084S™	pH Units	1
Acid Soluble Sulphide	< 10	< 10	< 10	< 10	< 10	008™	mg/kg	10
Thiocyanate as SCN	< 5	< 5	< 5	< 5	< 5	061S™	mg/kg	5
<b>** RAPID PAH SUITE **</b>								
Naphthalene	< 0.5	< 0.5	0.55	< 0.5	< 0.5	022R™	mg/kg	0.5
Benzo(a)pyrene	< 0.5	< 0.5	40	< 0.5	1.5	022R™	mg/kg	0.5
Rapid PAH (Total 16)	2.66	ND	345.18	ND	18.69	022R <sup>1</sup>	mg/kg	2
<b>** PHENOLS SUITE **</b>								
Phenol	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	020S™	mg/kg	0.1
Total Monohydric Phenols	< 1	< 1	< 1	< 1	< 1	020S <sup>1</sup>	mg/kg	1

<sup>1</sup> ISO 17025 accredited.

\* MCERTS accredited for sand, loam and clay.

# ALcontrol Laboratories

## Table Of Results

Job Number : 09-62878  
 Matrix : Soil  
 Project Code: 4942

Project Name: 99-101 Leeds Rd, Dewsbury  
 Client : Haigh Huddleston and Associates

Sample Reference	TP06	TP06	TP08			Method No	Units	LOD
Sample Depth (m)	0.3	1.0	0.2					
Date Sampled	-	-	-					
Date Scheduled	28/04/09	28/04/09	28/04/09					
Laboratory Reference No	378700	378701	378702					
Analysis								
Moisture Content (Dry Weight)	19.1	12.4	16.3			021	%	0.1
Moisture Content (Wet Weight)	16.0	11.0	14.0			021	%	0.1
Arsenic	22	4.3	38			069S <sup>TM</sup>	mg/kg	3
Boron (W/S)	1.8	< 0.5	1.2			016S <sup>TM</sup>	mg/kg	0.5
Cadmium	0.8	0.5	0.7			069S <sup>TM</sup>	mg/kg	0.5
Chromium	25	20	16			069S <sup>TM</sup>	mg/kg	10
Copper	35	16	32			069S <sup>TM</sup>	mg/kg	5
Lead	280	34	100			069S <sup>TM</sup>	mg/kg	10
Mercury	0.6	< 0.6	1.6			069S <sup>TM</sup>	mg/kg	0.6
Nickel	19	22	22			069S <sup>TM</sup>	mg/kg	4
Selenium	< 2.5	< 2.5	< 2.5			069S <sup>TM</sup>	mg/kg	2.5
Sulphate (Total Acid Soluble) as SO4	610	< 200	570			025a <sup>TM</sup>	mg/kg	200
Zinc	120	62	98			069S <sup>TM</sup>	mg/kg	10
Total Cyanide	< 1	< 1	< 1			061S <sup>TM</sup>	mg/kg	1
pH	7.7	7.3	8.1			084S <sup>TM</sup>	pH Units	1
Acid Soluble Sulphide	14	< 10	< 10			008 <sup>TM</sup>	mg/kg	10
Thiocyanate as SCN	< 5	< 5	< 5			061S <sup>TM</sup>	mg/kg	5
<b>** RAPID PAH SUITE **</b>								
Naphthalene	< 0.5	< 0.5	< 0.5			022R <sup>TM</sup>	mg/kg	0.5
Benzo(a)pyrene	0.70	< 0.5	< 0.5			022R <sup>TM</sup>	mg/kg	0.5
Rapid PAH (Total 16)	8.80	ND	4.21			022R <sup>I</sup>	mg/kg	2
<b>** PHENOLS SUITE **</b>								
Phenol	< 0.1	< 0.1	< 0.1			020S <sup>TM</sup>	mg/kg	0.1
Total Monohydric Phenols	< 1	< 1	< 1			020S <sup>I</sup>	mg/kg	1

<sup>I</sup> ISO 17025 accredited.

<sup>M</sup> MCERTS accredited for sand, loam and clay.

# ALcontrol Laboratories

## Table Of Results - Appendix

Job Number : 09-62878

Project Name: 99-101 Leeds Rd, Dewsbury  
Client : Haigh Huddleston and Associates

Project Code: 4942

### Summary of methods contained within report :

Method No.	Reference	Description	Wet/Dry Analysis
061S	In-house method based on Method 4500-CN, "Standard Methods for the Examination of Water and Waste Water", APHA AWWA WEF, Edition 18, 1992	Determination of cyanides and thiocyanate in soil samples by continuous flow colorimetry (Skalar)	W
022R	In-house method	Determination of PAH compounds in soil samples by hexane / acetone extraction followed by GC-MS detection [Note: this method does not separate benzo(j)fluoranthene, and this PAH will be included in the sum of benzo(b)fluoranthene & benzo(k)fluoranthene]	W
020S	In-house method based on Second Site Property: Environmental Assessment Guidance Version 3: March 2003	Determination of methanol/water based mobile phase extractable phenols in soil samples by HPLC with electrochemical detection	W
008	In-house method adapted from MEWAM "Sulphide in Waters and Effluents", HMSO, 1983	Determination of sulphide in soil samples by sulphuric acid addition, absorption of liberated hydrogen sulphide in sodium hydroxide / ascorbic acid buffer solution and ion selective electrode detection	W
084S	In-house method based on 1) Method 2510, "Standard Methods for the Examination of Water and Waste Water", APHA AWWA WEF, Edition 18, 1992 and 2) BS1377 Part 3, "Chemical and Electrochemical Tests", 1990	Determination of electrical conductivity, pH and temperature of 5:1 de-ionised water to soil extracts using corresponding probes.	D
069S	In-house method based on MEWAM "Methods for the Determination of Metals in Soil", HMSO, 1986	Determination of metals in soil samples by aqua-regia digestion followed by ICP-OES detection	D
025a	In-house method based on BS1377 Part 3, "Chemical and Electrochemical Tests", 1990	Determination of hydrochloric acid soluble sulphate in soil samples by Inductively Coupled Plasma - Optical Emission Spectrometry (ICP-OES)	D
016S	In-house method	Determination of water soluble boron by 2:1 extraction in hot water followed by ICP-OES detection	D

Soil results are expressed on a dry weight basis. Where the test uses as-received sample, a moisture correction factor is applied to the wet weight result. This factor is determined gravimetrically using weight loss on drying at 30° (+/-5) C.

### Appendix

Code	Description
<b>On Results</b>	
*	Detection limit(s) raised due to matrix interference
¥	Detection limit(s) raised due to reduced amount of sample available for analysis
‡	Dilution factor applied due to nature of sample
NAD	No asbestos detected
\$	Analysis sub-contracted
U/S	Analysis unsuitable for sample due to its matrix or properties
I/S	Insufficient sample
M/S	Sample cannot be located within the laboratory
ND	Not detected (below relevant analytical detection limit)
¢	Sample filtered prior to analysis
§	Please note product present, therefore this result is for indicative purpose only
<b>On the Sample Numbers</b>	
†	Sample type outside the scope of our MCERTS accreditation since matrix not included in method validation
¢	Unsuitable for analysis due to asbestos content
<b>General Statements</b>	
æ	Please note TOC's & LOI's have been repeated and the apparently anomalous results confirmed
¶	UKAS and/or MCERTS accreditation removed due to duration of sample in laboratory prior to testing
◻	The BOD analysis was carried out prior to the COD analysis and included an oily layer, which is the likely cause of the anomalous results
Note:	Analysis carried out for organic compounds on water samples containing free product is on a "best endeavour" basis
Note:	All results calculated from organic carbon on a dry weight basis
Note:	Fe(II) and dissolved Fe are analysed by different methods, sometimes leading to slight discrepancy between results
Note:	"Total" results calculated by summing individual components are not rounded
Note:	The reporting limit stated in the LOD column is the standard method reporting limit, derived statistically from validation data, however it is occasionally necessary to raise reporting limits due to matrix interference or limited sample availability
Note:	During soil preparation, best efforts are made to produce analytical subsamples representative of the entire submitted sample, without exclusion of stones

## **APPENDIX D**

### **Soak a way Test Results**

**Soil Permeability test TP 1****Site** Brierley Hall**Date** Apr '09**Client****Job No.** E09/4623

Pit dimensions	m
Length	1.4
Width	0.65
Depth	2.3

Time	Time into Test Mins	Dip Reading mm	Vol cu.m	Vol Change cu.m	Contact area Avge sq.m	Permeability lit/ sq.m/sec
10.10	0	1610	0.62790		3.73900	
10.12	2	1670	0.57330	0.05460	3.49300	0.12583
10.15	5	1690	0.55510	0.01820	3.41100	0.02929
10.27	17	1795	0.45955	0.09555	2.98050	0.04153
10.39	29	1890	0.37310	0.08645	2.59100	0.04310
10.45	35	1915	0.35035	0.02275	2.48850	0.02488
11.09	59	1955	0.31395	0.03640	2.32450	0.01050
11.17	67	1975	0.29575	0.01820	2.24250	0.01660
11.35	85	2000	0.27300	0.02275	2.14000	0.00961
11.48	98	2020	0.25480	0.01820	2.05800	0.01112
12.17	127	2065	0.21385	0.04095	1.87350	0.01197
12.39	149	2100	0.18200	0.03185	1.73000	0.01339
13.00	170	2115	0.16835	0.01365	1.66850	0.00638
13.30	200	2150	0.13650	0.03185	1.52500	0.01108
14.05	235	2180	0.10920	0.02730	1.40200	0.00888
14.20	250	2190	0.10010	0.00910	1.36100	0.00732

Average Permeability Value: 0.02477 lit/ sq.m/sec

BRE Value: 0.01693 lit/ sq.m/sec

**Soil Permeability test TP 2****Site** Brierley Hall**Date** Apr '09**Client****Job No.** E09/4623

<b>Pit dimensions</b>	m
Length	1.6
Width	0.65
Depth	2.6

Time	Time into Test Mins	Dip Reading mm	Vol cu.m	Vol Change cu.m	Contact area Avge sq.m	Permeability lit/ sq.m/sec
10.31	0	2020	0.60320		3.65000	
10.33	2	2060	0.56160	0.04160	3.47000	0.09738
10.35	4	2080	0.54080	0.02080	3.38000	0.05061
10.39	8	2100	0.52000	0.02080	3.29000	0.02599
10.45	14	2130	0.48880	0.03120	3.15500	0.02689
11.05	34	2145	0.47320	0.01560	3.08750	0.00416
11.21	50	2165	0.45240	0.02080	2.99750	0.00712
11.33	62	2150	0.46800	-0.01560	3.06500	-0.00715
11.46	75	2160	0.45760	0.01040	3.02000	0.00438
12.21	110	2215	0.40040	0.05720	2.77250	0.00940
12.40	129	2235	0.37960	0.02080	2.68250	0.00669
13.01	150	2255	0.35880	0.02080	2.59250	0.00626
13.34	183	2295	0.31720	0.04160	2.41250	0.00840
14.06	215	2335	0.27560	0.04160	2.23250	0.00933
14.20	229	2345	0.26520	0.01040	2.18750	0.00560

Average Permeability Value: 0.01822 lit/ sq.m/sec

BRE Value: 0.006478 lit/ sq.m/sec



**Soil Permeability test TP 4**

**Site** Brierley Hall

**Date** Apr '09

**Client**

**Job No.** E09/4623

Pit dimensions	m
Length	1.55
Width	0.6
Depth	1.72

Time	Time into Test Mins	Dip Reading mm	Vol cu.m	Vol Change cu.m	Contact area Avge sq.m	Permeability lit/ sq.m/sec
11.08	0	1050	0.62310		3.81100	
11.15	7	1105	0.57195	0.05115	3.57450	0.03298
11.25	17	1158	0.52266	0.04929	3.34660	0.02374
11.39	31	1210	0.47430	0.04836	3.12300	0.01780
11.46	38	1247	0.43989	0.03441	2.96390	0.02692
12.14	66	1385	0.31155	0.12834	2.37050	0.02864
12.35	87	1415	0.28365	0.02790	2.24150	0.00960
12.58	110	1475	0.22785	0.05580	1.98350	0.01914
13.27	139	1535	0.17205	0.05580	1.72550	0.01729
14.01	173	1650	0.06510	0.10695	1.23100	0.03547
14.16	188	1680	0.03720	0.02790	1.10200	0.02658

Average Permeability Value: 0.02382 lit/ sq.m/sec

BRE Value: 0.0193662 lit/ sq.m/sec



**APPENDIX E**

**Mining Report**

**Geology Report**



Issued by:

The Coal Authority, Mining Reports Office, 200 Lichfield Lane, Berry Hill, Mansfield, Nottinghamshire NG18 4RG  
On-Line Service: [www.coalminingreports.co.uk](http://www.coalminingreports.co.uk) - Phone: 0845 762 6848 - DX 716176 MANSFIELD 5

TREVOR HAIGH,  
HAIGH HUDDLESTON & ASSOCIATES,  
FIRTH BUILDINGS,  
99-101 LEEDS ROAD,  
DEWSBURY,  
WEST YORKSHIRE,  
WF12 7BU

Person dealing with this matter: **Darren Moody**  
Our reference: **10045179-09**  
Your reference: **SAUL 4942**  
Electronic Ref: **EME\_00011465730001\_005**  
RRUID: **005.00011465730001**  
Date of your enquiry: **16 April 2009**  
Date we received your enquiry: **16 April 2009**  
Date of issue: **16 April 2009**

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

## Coal and Brine Report

**Brierley Hall, Church Street, Brierley, Barnsley, S72 9HT**

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	Yes
Brine extraction	No

### Information from the Coal Authority

#### Underground Coal Mining

##### Past

The property is in the likely zone of influence from workings in 5 seams of coal at 180m to 850m depth, and last worked in 1987.

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

##### Present

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

##### Future

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

The property is not in an area for which a licence has been granted to remove 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**

At the surface, there are no known faults or other lines of weakness due to coal mining that have made the property unstable.

### **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 property since 1 January 1984. There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority has not received a request to carry out preventive work 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 in an area for which a notice of entitlement to withdraw support was published in 1983.

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 report is compliant with Home Information Pack requirements.

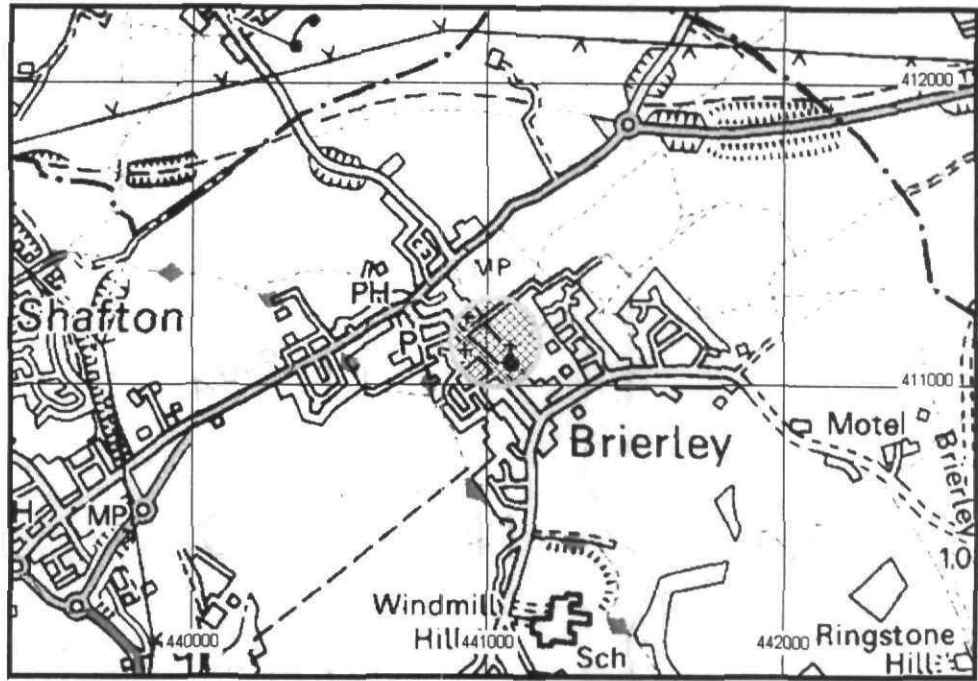
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Issued by:	The Coal Authority, 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG
Date:	16 Apr 2009
Coal and Brine report at:	Brierley Hall, Church Street, Brierley, Barnsley, S72 9HT
Reference number:	10045179-09
Cost:	£64.00
Plus VAT:	£9.60
Total received:	£73.60
VAT registration number:	598 5850 68

Location map



Approximate position of property

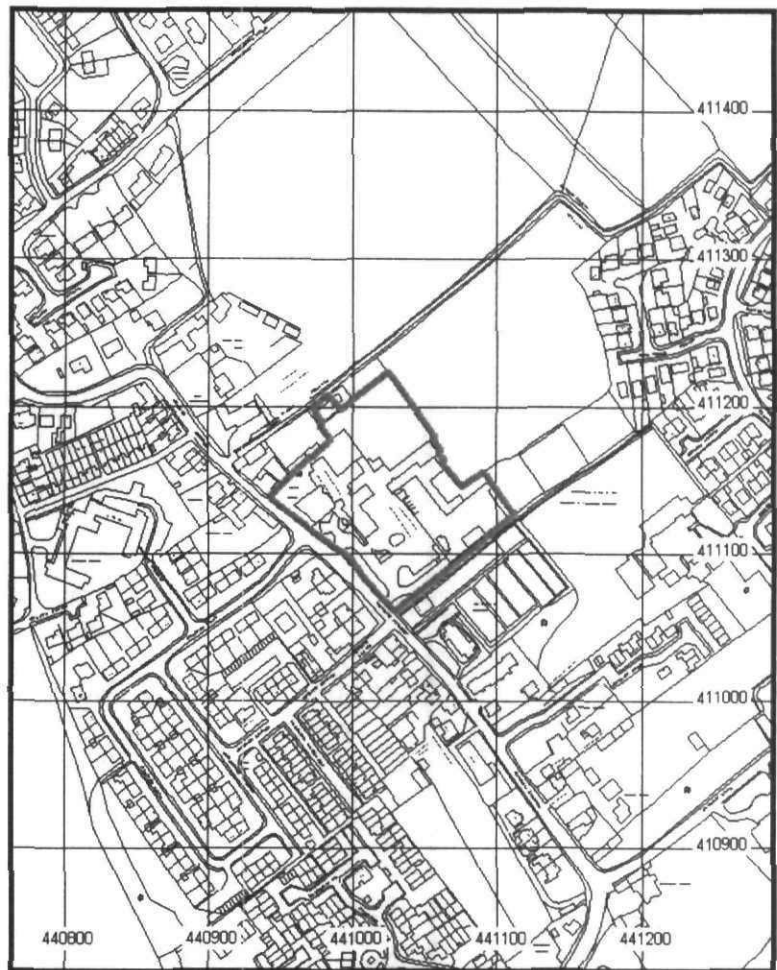


Enquiry boundary

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Key

Approximate position of enquiry boundary shown



Mapping sourced from



# Geology 1:10,000 Maps Legends

## Artificial Ground and Landslip

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	WGR	Worked Ground (Undivided)	Open Waste	Present Day - Present Day
	MGR	Made Ground (Undivided)	Made Ground (Composition Unspecified)	Present Day - Present Day
	WMGR	Infilled Ground	Made Ground (Composition Unspecified)	Present Day - Present Day

## Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	HEAD	Head (Undifferentiated)	Diamicton	Quaternary - Quaternary

## Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	MXR	Mexborough Rock	Sandstone	Bolsoviaian (Westphalian C) - Bolsoviaian (Westphalian C)
	AR	Ackworth Rock	Sandstone	Bolsoviaian (Westphalian C) - Bolsoviaian (Westphalian C)
	PUCM	Pennine Upper Coal Measures Formation	Mudstone, Siltstone and Sandstone	Westphalian D - Bolsoviaian (Westphalian C)
	PUCM	Pennine Upper Coal Measures Formation	Sandstone	Westphalian D - Bolsoviaian (Westphalian C)
	BYR	Brierley Rock	Sandstone	Bolsoviaian (Westphalian C) - Bolsoviaian (Westphalian C)
	NEWR	Newstead Rock	Sandstone	Bolsoviaian (Westphalian C) - Bolsoviaian (Westphalian C)
	PMCM	Pennine Middle Coal Measures Formation	Sandstone	Bolsoviaian (Westphalian C) - Duckmantian (Westphalian B)
	PMCM	Pennine Middle Coal Measures Formation	Mudstone, Siltstone and Sandstone	Bolsoviaian (Westphalian C) - Duckmantian (Westphalian B)
	Fault			
	Rock			

## Geology 1:10,000 Maps

This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:10,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around a site. This mapping may be more up to date than previously published paper maps.

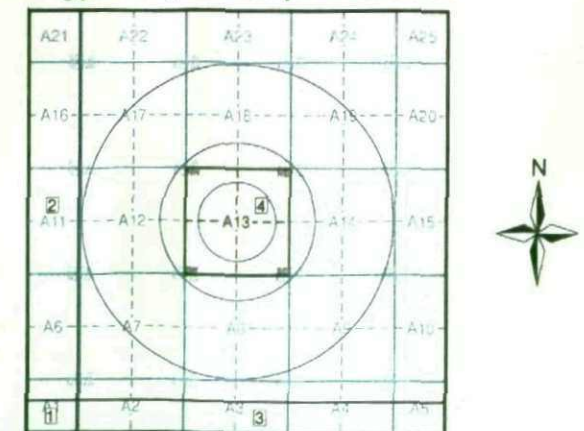
The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page.

Please Note: Not all of the layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

## Geology 1:10,000 Maps Coverage

Map ID:	1	Map ID:	2
Map Name:	SE30NE	Map Name:	SE31SE
Map Date:	2005	Map Date:	2005
Bedrock Geology:	Available	Bedrock Geology:	Available
Superficial Geology:	Available	Superficial Geology:	Available
Artificial Geology:	Available	Artificial Geology:	Available
Faults:	Available	Faults:	Available
Landslip:	Not Available	Landslip:	Not Available
Rock Segments:	Available	Rock Segments:	Available
Map ID:	3	Map ID:	4
Map Name:	SE40NW	Map Name:	SE41SW
Map Date:	2005	Map Date:	2005
Bedrock Geology:	Available	Bedrock Geology:	Available
Superficial Geology:	Available	Superficial Geology:	Available
Artificial Geology:	Available	Artificial Geology:	Available
Faults:	Available	Faults:	Available
Landslip:	Not Available	Landslip:	Available
Rock Segments:	Available	Rock Segments:	Available

## Geology 1:10,000 Maps - Slice A

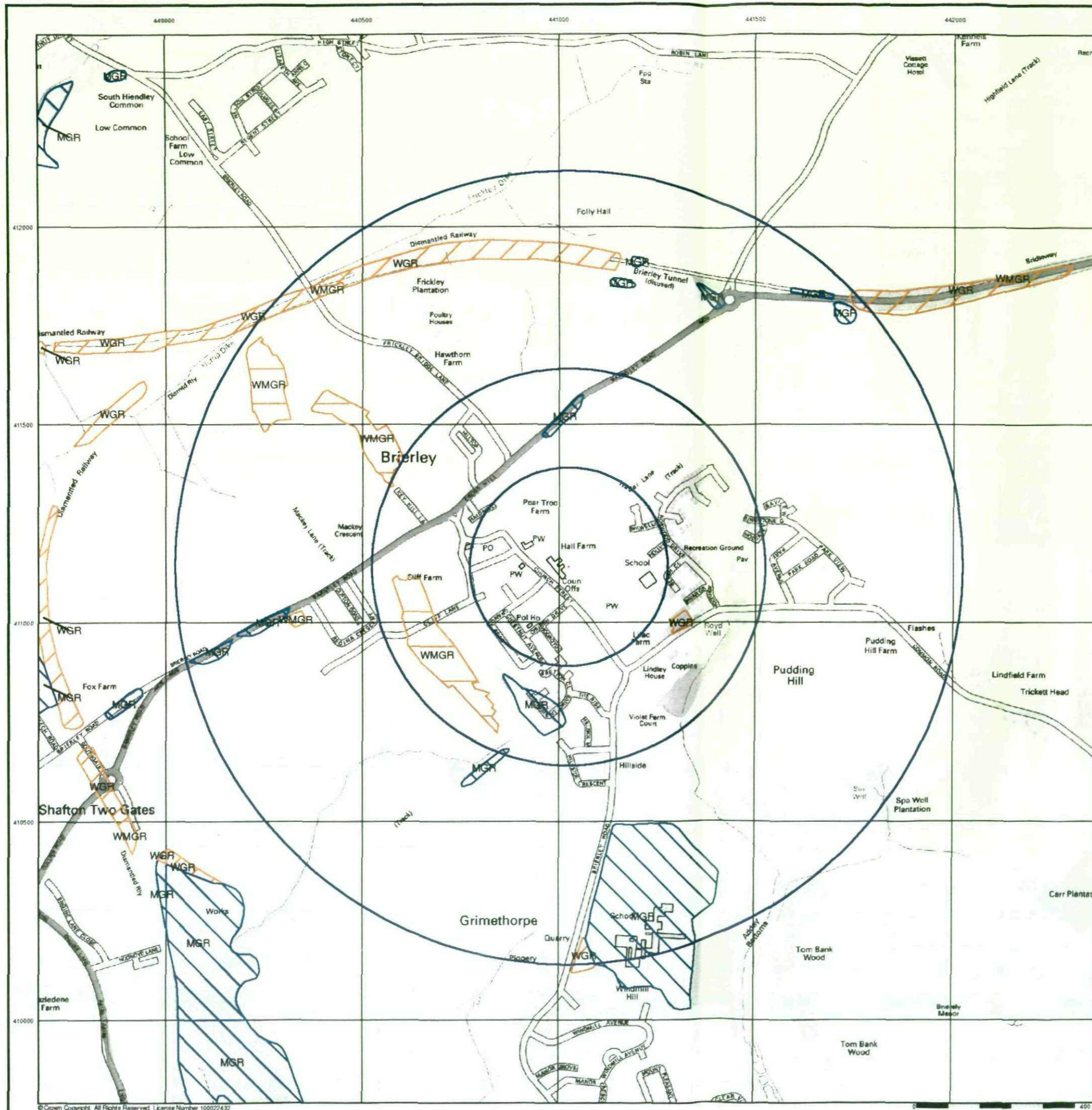


## Order Details

Order Number: 27703209\_1\_1  
Customer Ref: 4942  
National Grid Reference: 441020, 411140  
Slice: A  
Site Area (Ha): 0.01  
Search Buffer (m): 1000

## Site Details

Brierley Hall, Church Street, Brierley, BARNSELY, South Yorkshire, S72 9HT



**Artificial Ground and Landslip**

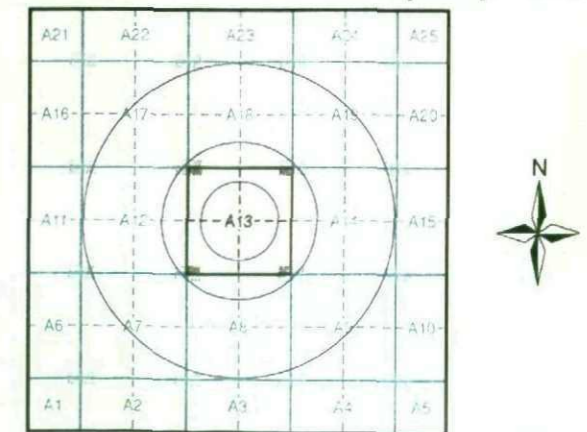
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions and unstable ground.

Artificial ground includes:

- Made ground - man-made deposits such as embankments and spoil heaps on the natural ground surface.
- Worked ground - areas where the ground has been cut away such as quarries and road cuttings.
- In-filled ground - areas where the ground has been cut away then wholly or partially backfilled.
- Landscaped ground - areas where the surface has been reshaped.
- Disturbed ground - areas of ill-defined shallow or near surface mineral workings where it is impracticable to map made and worked ground separately.

Mass movement (landslip) deposits on BGS geological maps are primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground. The dataset also includes foundered strata, where the ground has collapsed due to subsidence.

**Artificial Ground and Landslip Map - Slice A**



**Order Details**

Order Number: 27703209\_1\_1  
 Customer Ref: 4942  
 National Grid Reference: 441020, 411140  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 1000

**Site Details**

Brierley Hall, Church Street, Brierley, BARNSELY, South Yorkshire, S72 9HT

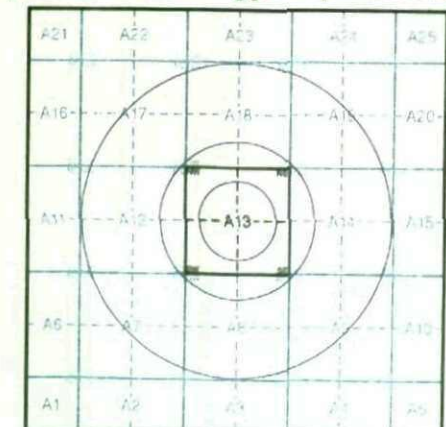
### Superficial Geology

BGS 1:10,000 Superficial Deposits are the youngest geological deposits formed during the most recent period of geological time, which extends back about 1.8 million years from the present.

They rest on older deposits or rocks referred to as Bedrock. This dataset contains Superficial deposits that are of natural origin and 'in place'. Other superficial strata may be held in the Mass Movement dataset where they have been moved, or in the Artificial Ground dataset where they are of man-made origin.

Most of these Superficial deposits are unconsolidated sediments such as gravel, sand, silt and clay, and onshore they form relatively thin, often discontinuous patches or larger spreads.

### Superficial Geology Map - Slice A

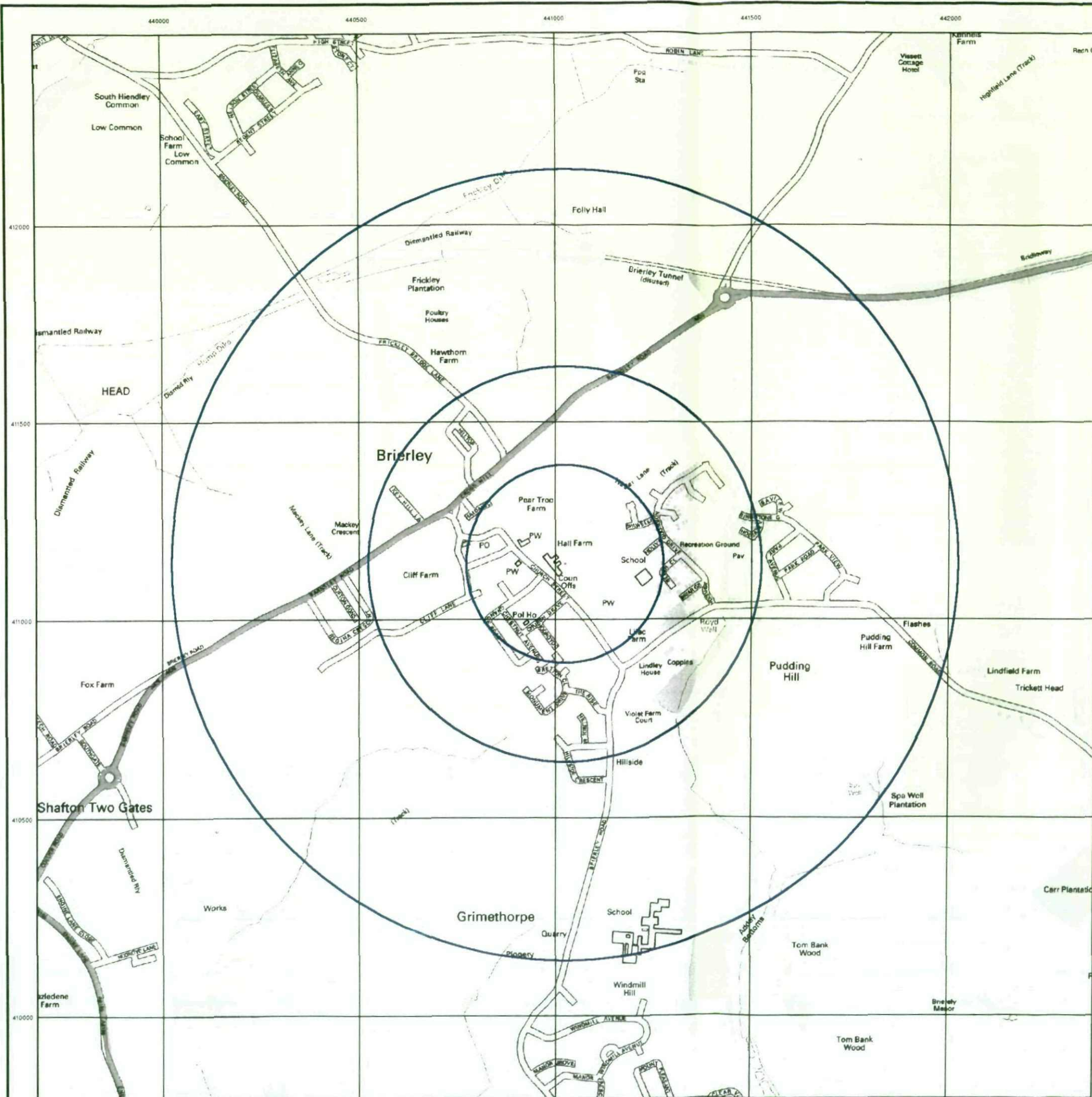


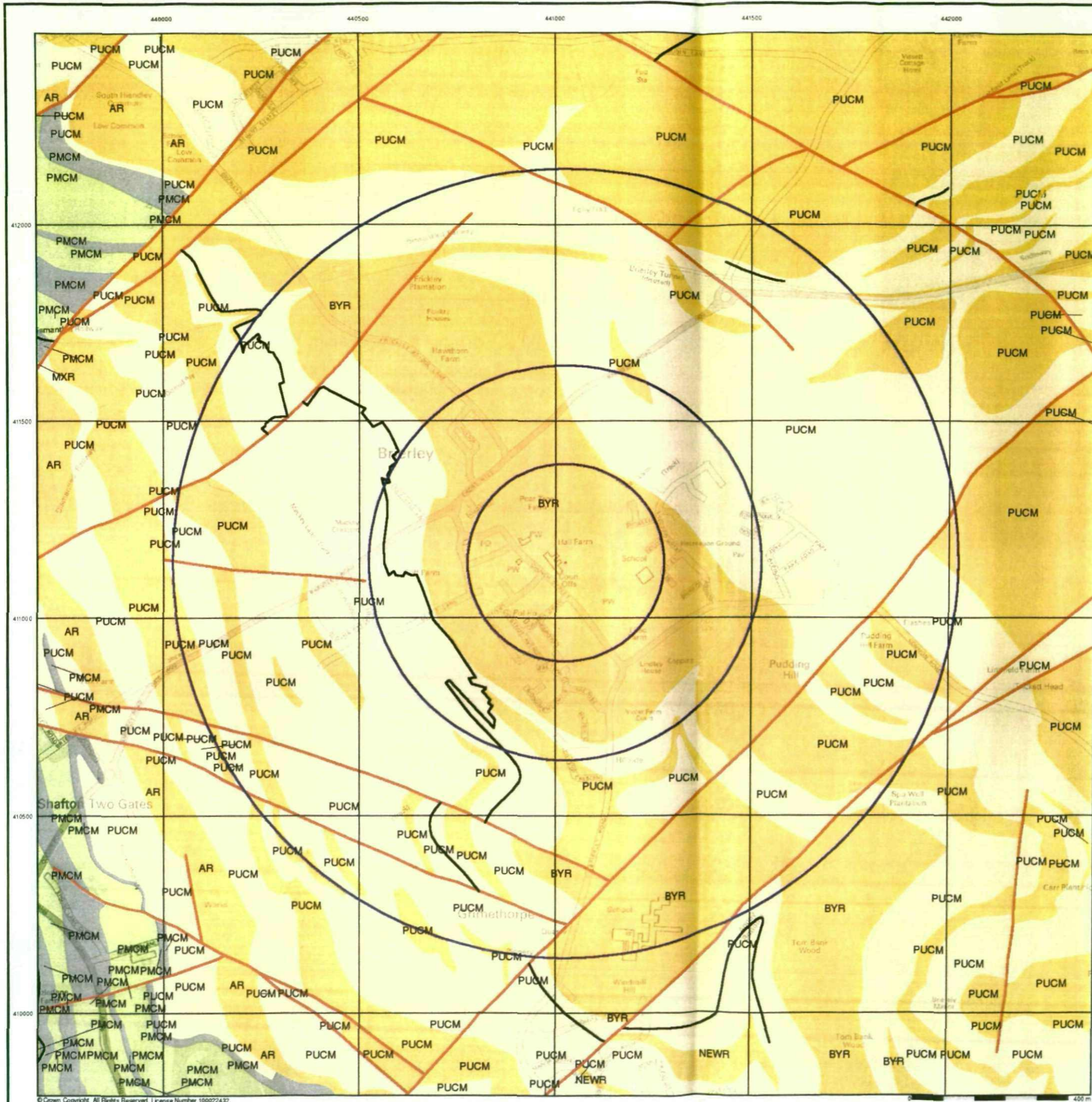
#### Order Details

Order Number: 27703209\_1\_1  
Customer Ref: 4942  
National Grid Reference: 441020, 411140  
Slice: A  
Site Area (Ha): 0.01  
Search Buffer (m): 1000

#### Site Details

Brierley Hall, Church Street, Brierley, BARNSELY, South Yorkshire, S72 9HT





**Bedrock and Faults**

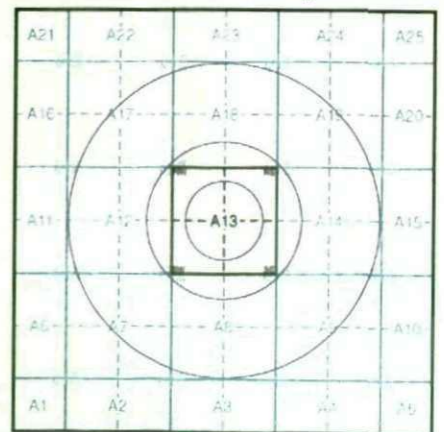
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

The bedrock has formed over vast lengths of geological time ranging from ancient and highly altered rocks of the Proterozoic, some 2500 million years ago, or older, up to the relatively young Pliocene, 1.8 million years ago.

The bedrock geology includes many lithologies, often classified into three types based on origin: igneous, metamorphic and sedimentary.

The BGS Faults and Rock Segments dataset includes geological faults and thin beds mapped as lines such as coal seams and mineral veins. These are not restricted by age and could relate to features of any of the 1:10,000 geology datasets.

**Bedrock and Faults Map - Slice A**



**Order Details**

Order Number: 27703209\_1\_1  
 Customer Ref: 4942  
 National Grid Reference: 441020, 411140  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 1000

**Site Details**

Brierley Hall, Church Street, Brierley, BARNSELY, South Yorkshire, S72 9HT

**Combined Surface Geology**

The Combined Surface Geology map combines all the previous maps into one combined geological overview of your site.

Please consult the legends to the previous maps to interpret the Combined "Surface Geology" map.

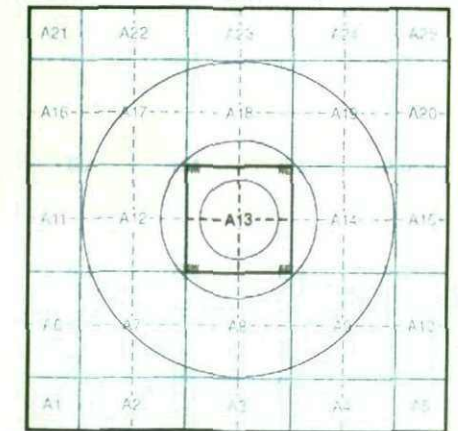
**Additional Information**

More information on 1:10,000 Geological mapping and explanations of rock classifications can be found on the BGS website. Using the LEX Codes in this report, further descriptions of rock types can be obtained by interrogating the 'BGS Lexicon of Named Rock Units'. This database can be accessed by following the 'Information and Data' link on the BGS website.

**Contact**

British Geological Survey  
Kingsley Dunham Centre  
Keyworth  
Nottingham  
NG12 5GG  
Telephone: 0115 936 3143  
Fax: 0115 936 3276  
email: enquiries@bgs.ac.uk  
website: www.bgs.ac.uk

**Combined Geology Map - Slice A**

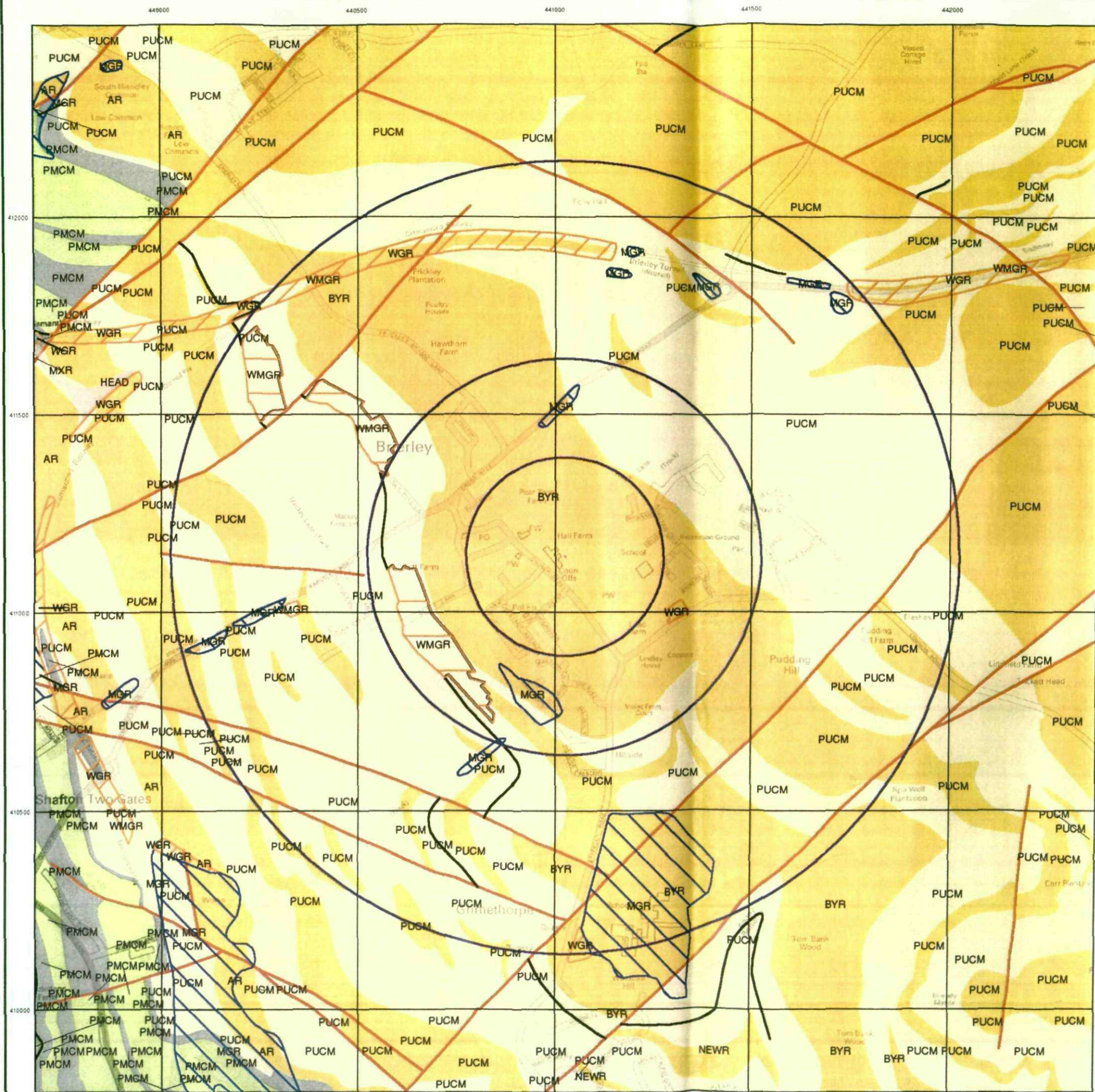


**Order Details**

Order Number: 27703209\_1\_1  
Customer Ref: 4942  
National Grid Reference: 441020, 411140  
Slice: A  
Site Area (Ha): 0.01  
Search Buffer (m): 1000

**Site Details**

Brierley Hall, Church Street, Brierley, BARNSELY, South Yorkshire, S72 9HT



**APPENDIX F**

**Historical Data Sheets**

**Envirocheck Report**

## **Envirocheck<sup>®</sup> Report: Datasheet**

### **Order Details:**

**Order Number:**

27703209\_1\_1

**Customer Reference:**

4942

**National Grid Reference:**

441020, 411140

**Slice:**

A

**Site Area (Ha):**

0.01

**Search Buffer (m):**

1000

### **Site Details:**

Brierley Hall, Church Street

Brierley

BARNSLEY

South Yorkshire

S72 9HT

### **Client Details:**

Mr T Haigh

Haigh Huddleston & Associates Ltd

Firth Buildings

99-101 Leeds Rd

Dewsbury

WF12 7BU

<b>Report Section</b>	<b>Page Number</b>
Summary	-
Agency & Hydrological	1
Waste	2
Hazardous Substances	-
Geological	3
Industrial Land Use	5
Sensitive Land Use	6
Data Currency	7
Data Suppliers	11
Useful Contacts	12

#### Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination.

For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.

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

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#### Radon Potential dataset Copyright Notice

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

Report Version v36.0

<b>Data Type</b>	<b>Page Number</b>	<b>On Site</b>	<b>0 to 250m</b>	<b>251 to 500m</b>	<b>501 to 1000m (*up to 2000m)</b>
<b>Agency &amp; Hydrological</b>					
Contaminated Land Register Entries and Notices					
Discharge Consents					
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls					
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 1			Yes	
Pollution Incidents to Controlled Waters					
Prosecutions Relating to Authorised Processes					
Prosecutions Relating to Controlled Waters					
Registered Radioactive Substances					
River Quality	pg 1			1	
River Quality Biology Sampling Points	pg 1				1
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register					
Water Abstractions	pg 1				(*1)
Water Industry Act Referrals					
Groundwater Vulnerability	pg 1	Yes	n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences				n/a	n/a
Flooding from Rivers or Sea without Defences				n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
<b>Waste</b>					
BGS Recorded Landfill Sites					
Historical Landfill Sites					
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)					
Local Authority Recorded Landfill Sites					
Registered Landfill Sites					
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites					

<b>Data Type</b>	<b>Page Number</b>	<b>On Site</b>	<b>0 to 250m</b>	<b>251 to 500m</b>	<b>501 to 1000m (*up to 2000m)</b>
<b>Hazardous Substances</b>					
Control of Major Accident Hazards Sites (COMAH)					
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					
<b>Geological</b>					
BGS Recorded Mineral Sites	pg 3			1	2
BGS 1:625,000 Solid Geology	pg 3	Yes	n/a	n/a	n/a
Brine Compensation Area			n/a	n/a	n/a
Coal Mining Affected Areas	pg 3	Yes	n/a	n/a	n/a
Mining Instability	pg 3	Yes	n/a	n/a	n/a
Natural and Mining Cavities					
Potential for Collapsible Ground Stability Hazards				n/a	n/a
Potential for Compressible Ground Stability Hazards				n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 3	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards				n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards				n/a	n/a
Radon Potential - Radon Affected Areas			n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
Shallow Mining Hazards	pg 4	Yes		n/a	n/a
<b>Industrial Land Use</b>					
Contemporary Trade Directory Entries	pg 5			2	1
Fuel Station Entries					

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
<b>Sensitive Land Use</b>					
Areas of Adopted Green Belt	pg 6		1		1
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones	pg 6	1			
Ramsar Sites					
<i>Sites of Special Scientific Interest</i>					
Special Areas of Conservation					
Special Protection Areas					

Map ID	Details	Quadrant Reference (Compass)	Estimated Distance From Site	Contact	NGR
	<b>Nearest Surface Water Feature</b>	A8NE (SE)	425	-	441267 410791
	<b>River Quality</b> Name: Grimethorpe_Dike GQA Grade: Not Supplied Reach: Tom_Bank_Sewage_Work_Shafton_Bec Estimated Distance: 2.5 (km) Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A8NW (SW)	439	1	440845 410739
1	<b>River Quality Biology Sampling Points</b> Name: Grimethorpe Dike Reach: Tom Bank Sewage Works To Shafton Beck Estimated Distance: Not Supplied Positional Accuracy: Located by supplier to within 10m Year: 1990 GQA Grade: Not Supplied Year: 1995 GQA Grade: Not Supplied Year: 2000 GQA Grade: Not Supplied Year: 2002 GQA Grade: Not Supplied Year: 2003 GQA Grade: Not Supplied Year: 2004 GQA Grade: Not Supplied Year: 2005 GQA Grade: Not Supplied Year: 2006 GQA Grade: Not Supplied	A9SW (SE)	790	1	441415 410453
	<b>Water Abstractions</b> Operator: Brierley Town Council Licence Number: 2/27/08/089 Permit Version: Not Supplied Location: Ornamental Fishing Lake, Addey Bottoms, GRIMETHORPE Authority: Environment Agency, North East Region Abstraction: Unclassified (Other) Abstraction Type: Not Supplied Source: Surface Daily Rate (m3): 0 Yearly Rate (m3): 0 Details: Not Supplied Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A4SW (S)	1707	1	441500 409500
	<b>Groundwater Vulnerability</b> Geological Classification: Minor Aquifer (Variably permeable) - These can be fractured or potentially fractured rocks, which do not have a high primary permeability, or other formations of variable permeability including unconsolidated deposits. Although not producing large quantities of water for abstraction, they are important for local supplies and in supplying base flow to rivers Soil Classification: Soils of High Leaching Potential (H3)- Coarse textured or moderately shallow soils which readily transmit non-absorbed pollutants and liquid discharges but which have some ability to attenuate absorbed pollutants because of their large clay or organic matter contents Map Sheet: Sheet 12 Vale of York Scale: 1:100,000	A13NE (NE)	0	1	441157 411304
	<b>Drift Deposits</b> None				
	<b>Extreme Flooding from Rivers or Sea without Defences</b> None				
	<b>Flooding from Rivers or Sea without Defences</b> None				
	<b>Areas Benefiting from Flood Defences</b> None				
	<b>Flood Water Storage Areas</b> None				
	<b>Flood Defences</b> None				

Map ID	Details	Quadrant Reference (Compass)	Estimated Distance From Site	Contact	NGR
	<b>Local Authority Landfill Coverage</b> Name: Barnsley Metropolitan Borough Council - Has supplied landfill data		0	8	440644 411983
	<b>Local Authority Landfill Coverage</b> Name: Wakefield Metropolitan Borough Council - Has not been able to supply Landfill data		925	9	440644 411983

Map ID	Details	Quadrant Reference (Compass)	Estimated Distance From Site	Contact	NGR
2	<b>BGS Recorded Mineral Sites</b> Site Name: Brierley Colliery Location: Brierley, Barnsley, South Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 26027 Type: Underground Status: Ceased Operator: Ncb Barnsley Area Operator Location: Grimethorpe, Barnsley, South Yorkshire, S72 7ab Periodic Type: Carboniferous Geology: Dalton Rock, Pennine Upper Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A13SW (S)	296	2	441012 410844
3	<b>BGS Recorded Mineral Sites</b> Site Name: Brierley Location: Brierley, Barnsley, South Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 26012 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Upper Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A12SW (W)	739	2	440299 410993
4	<b>BGS Recorded Mineral Sites</b> Site Name: Pudding Hill Location: Brierley, Barnsley, South Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 10192 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Dalton Rock, Pennine Upper Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A14SE (E)	756	2	441775 411055
	<b>BGS 1:625,000 Solid Geology</b> Description: Upper Westphalian (including Pennant Measures)	(SW)	0	2	437745 409737
	<b>Coal Mining Affected Areas</b> Description: In an area which may be affected by coal mining activity. It is recommended that a coal mining report is obtained from the Coal Authority. Contact details are included in the Useful Contacts section of this report.	(SW)	0	3	426000 396000
	<b>Mining Instability</b> Mining Evidence: Inconclusive Coal Mining Source: Ove Arup & Partners Boundary Quality: As Supplied	(S)	0	-	441000 404500
	<b>Potential for Collapsible Ground Stability Hazards</b> No Hazard				
	<b>Potential for Compressible Ground Stability Hazards</b> Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	0	2	440875 410875
	<b>Potential for Ground Dissolution Stability Hazards</b> No Hazard				
	<b>Potential for Landslide Ground Stability Hazards</b> Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A11NE (W)	0	2	440000 411140
	<b>Potential for Running Sand Ground Stability Hazards</b> Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	0	2	440875 410875
	<b>Potential for Shrinking or Swelling Clay Ground Stability Hazards</b> Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	2	441200 411325
	<b>Radon Potential - Radon Affected Areas</b> Affected Area: The property is not in a radon affected area, as less than 1% of homes are above the action level Source: British Geological Survey, National Geoscience Information Service	A11NE (W)	0	2	440000 411140

Map ID	Details	Quadrant Reference (Compass)	Estimated Distance From Site	Contact	NGR
	<b>Radon Potential - Radon Protection Measures</b> Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A11NE (W)	0	2	440000 411140
	<b>Shallow Mining Hazards</b> Risk: Low-Moderate Source: British Geological Survey, National Geoscience Information Service	A12SW (W)	0	2	440088 410998

Map ID	Details	Quadrant Reference (Compass)	Estimated Distance From Site	Contact	NGR
5	<b>Contemporary Trade Directory Entries</b> Name: A Rydown Location: 16, Norwood Drive, Brierley, Bamsley, South Yorkshire, S72 9EG Classification: Carpet, Curtain & Upholstery Cleaners Status: Active Positional Accuracy: Automatically positioned to the address	A14SW (E)	353	-	441377 411135
6	<b>Contemporary Trade Directory Entries</b> Name: Norwood Office Solutions Location: 43, Norwood Drive, Brierley, Bamsley, South Yorkshire, S72 9EG Classification: Office Furniture & Equipment Status: Active Positional Accuracy: Automatically positioned to the address	A13NE (NE)	380	-	441326 411371
7	<b>Contemporary Trade Directory Entries</b> Name: Hartley Engineering Location: 43, Bamsley Road, Brierley, Bamsley, South Yorkshire, S72 9JT Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	A12SE (W)	509	-	440515 411129

Map ID	Details	Quadrant Reference (Compass)	Estimated Distance From Site	Contact	NGR
8	<b>Areas of Adopted Green Belt</b> Authority: Bamsley Metropolitan Borough Council, Planning Department Plan Name: Bamsley Unitary Development Plan Status: <b>Adopted</b> Plan Date: 31st December 2000	A13NW (N)	81	5	441000 411217
9	<b>Areas of Adopted Green Belt</b> Authority: Wakefield City Metropolitan District Council Plan Name: Wakefield Metropolitan District Unitary Development Plan First Alteration Status: <b>Adopted</b> Plan Date: 17th January 2003	A17NE (NW)	922	4	440643 411979
10	<b>Nitrate Vulnerable Zones</b> Name: Not Supplied Description: Surface Water - Designated 2006 Source: Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	(W)	0	7	437565 411140


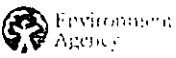










<b>Agency &amp; Hydrological</b>	<b>Version</b>	<b>Update Cycle</b>
<b>Contaminated Land Register Entries and Notices</b> Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards Wakefield City Metropolitan District Council - Environmental Health Doncaster Metropolitan Borough Council - Environmental Services	August 2008 July 2008 October 2008	Annual Rolling Update Annual Rolling Update Annual Rolling Update
<b>Discharge Consents</b> Environment Agency - North East Region	January 2009	Quarterly
<b>Enforcement and Prohibition Notices</b> Environment Agency - North East Region	April 2009	As notified
<b>Integrated Pollution Controls</b> Environment Agency - North East Region	October 2008	Quarterly
<b>Integrated Pollution Prevention And Control</b> Environment Agency - North East Region	January 2009	Quarterly
<b>Local Authority Integrated Pollution Prevention And Control</b> Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards Wakefield City Metropolitan District Council - Environmental Health Doncaster Metropolitan Borough Council - Environmental Services	January 2009 July 2008 November 2008	Annual Rolling Update Annual Rolling Update Annual Rolling Update
<b>Local Authority Pollution Prevention and Controls</b> Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards Wakefield City Metropolitan District Council - Environmental Health Doncaster Metropolitan Borough Council - Environmental Services	January 2009 July 2008 November 2008	Annual Rolling Update Annual Rolling Update Annual Rolling Update
<b>Local Authority Pollution Prevention and Control Enforcements</b> Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards Wakefield City Metropolitan District Council - Environmental Health Doncaster Metropolitan Borough Council - Environmental Services	January 2009 July 2008 November 2008	Annual Rolling Update Annual Rolling Update Annual Rolling Update
<b>Nearest Surface Water Feature</b> Ordnance Survey	September 2008	Quarterly
<b>Pollution Incidents to Controlled Waters</b> Environment Agency - North East Region	December 1998	Not Applicable
<b>Prosecutions Relating to Authorised Processes</b> Environment Agency - North East Region	March 2009	As notified
<b>Prosecutions Relating to Controlled Waters</b> Environment Agency - North East Region	March 2009	As notified
<b>Registered Radioactive Substances</b> Environment Agency - North East Region	January 2009	Quarterly
<b>River Quality</b> Environment Agency - Head Office	November 2001	Not Applicable
<b>River Quality Biology Sampling Points</b> Environment Agency - Head Office	September 2007	Annually
<b>River Quality Chemistry Sampling Points</b> Environment Agency - Head Office	August 2007	Annually
<b>Substantiated Pollution Incident Register</b> Environment Agency - North East Region - Ridings Area	January 2009	Quarterly
<b>Water Abstractions</b> Environment Agency - North East Region	January 2009	Quarterly
<b>Water Industry Act Referrals</b> Environment Agency - North East Region	January 2009	Quarterly
<b>Groundwater Vulnerability</b> Environment Agency - Head Office	January 1999	Not Applicable
<b>Drift Deposits</b> Environment Agency - Head Office	January 1999	Not Applicable

<b>Agency &amp; Hydrological</b>	<b>Version</b>	<b>Update Cycle</b>
<b>Source Protection Zones</b> Environment Agency - Head Office	September 2008	Variable
<b>Extreme Flooding from Rivers or Sea without Defences</b> Environment Agency - Head Office	March 2009	Quarterly
<b>Flooding from Rivers or Sea without Defences</b> Environment Agency - Head Office	March 2009	Quarterly
<b>Areas Benefiting from Flood Defences</b> Environment Agency - Head Office	March 2009	Quarterly
<b>Flood Water Storage Areas</b> Environment Agency - Head Office	March 2009	Quarterly
<b>Flood Defences</b> Environment Agency - Head Office	March 2009	Quarterly
<b>Waste</b>	<b>Version</b>	<b>Update Cycle</b>
<b>BGS Recorded Landfill Sites</b> British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
<b>Historical Landfill Sites</b> Environment Agency - North East Region - Ridings Area	January 2009	Quarterly
<b>Integrated Pollution Control Registered Waste Sites</b> Environment Agency - North East Region	October 2008	Quarterly
<b>Licensed Waste Management Facilities (Landfill Boundaries)</b> Environment Agency - North East Region - Ridings Area	January 2009	Quarterly
<b>Licensed Waste Management Facilities (Locations)</b> Environment Agency - North East Region - Ridings Area	November 2008	Quarterly
<b>Local Authority Landfill Coverage</b> Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards Doncaster Metropolitan Borough Council - Environmental Services Wakefield City Metropolitan District Council - Environmental Health	May 2000 May 2000 May 2000	Not Applicable Not Applicable Not Applicable
<b>Local Authority Recorded Landfill Sites</b> Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards Doncaster Metropolitan Borough Council - Environmental Services Wakefield City Metropolitan District Council - Environmental Health	May 2000 May 2000 May 2000	Not Applicable Not Applicable Not Applicable
<b>Registered Landfill Sites</b> Environment Agency - North East Region - Ridings Area	March 2003	Not Applicable
<b>Registered Waste Transfer Sites</b> Environment Agency - North East Region - Ridings Area	March 2003	Not Applicable
<b>Registered Waste Treatment or Disposal Sites</b> Environment Agency - North East Region - Ridings Area	March 2003	Not Applicable

<b>Hazardous Substances</b>	<b>Version</b>	<b>Update Cycle</b>
<b>Control of Major Accident Hazards Sites (COMAH)</b> Health and Safety Executive	October 2008	Bi-Annually
<b>Explosive Sites</b> Health and Safety Executive	January 2009	Bi-Annually
<b>Notification of Installations Handling Hazardous Substances (NIHHS)</b> Health and Safety Executive	November 2000	Not Applicable
<b>Planning Hazardous Substance Enforcements</b> Barnsley Metropolitan Borough Council - Planning Department Doncaster Metropolitan Borough Council Wakefield City Metropolitan District Council	July 2008 July 2008 May 2008	Annual Rolling Update Annual Rolling Update Annual Rolling Update
<b>Planning Hazardous Substance Consents</b> Barnsley Metropolitan Borough Council - Planning Department Doncaster Metropolitan Borough Council Wakefield City Metropolitan District Council	July 2008 July 2008 May 2008	Annual Rolling Update Annual Rolling Update Annual Rolling Update
<b>Geological</b>	<b>Version</b>	<b>Update Cycle</b>
<b>BGS Recorded Mineral Sites</b> British Geological Survey - National Geoscience Information Service	October 2008	Bi-Annually
<b>BGS 1:625,000 Solid Geology</b> British Geological Survey - National Geoscience Information Service	August 1996	Not Applicable
<b>Brine Compensation Area</b> Cheshire Brine Subsidence Compensation Board	November 2002	As notified
<b>Coal Mining Affected Areas</b> The Coal Authority - Mining Report Service	January 2006	As notified
<b>Mining Instability</b> Ove Arup & Partners	October 2000	Not Applicable
<b>Natural and Mining Cavities</b> Peter Brett Associates	December 2005	Variable
<b>Potential for Colapsible Ground Stability Hazards</b> British Geological Survey - National Geoscience Information Service	January 2009	Annually
<b>Potential for Compressible Ground Stability Hazards</b> British Geological Survey - National Geoscience Information Service	January 2009	Annually
<b>Potential for Ground Dissolution Stability Hazards</b> British Geological Survey - National Geoscience Information Service	January 2009	Annually
<b>Potential for Landslide Ground Stability Hazards</b> British Geological Survey - National Geoscience Information Service	January 2009	Annually
<b>Potential for Running Sand Ground Stability Hazards</b> British Geological Survey - National Geoscience Information Service	January 2009	Annually
<b>Potential for Shrinking or Swelling Clay Ground Stability Hazards</b> British Geological Survey - National Geoscience Information Service	January 2009	Annually
<b>Radon Potential - Radon Affected Areas</b> British Geological Survey - National Geoscience Information Service	May 2007	Annually
<b>Radon Potential - Radon Protection Measures</b> British Geological Survey - National Geoscience Information Service	May 2007	Annually
<b>Shallow Mining Hazards</b> British Geological Survey - National Geoscience Information Service	August 2002	Not Applicable

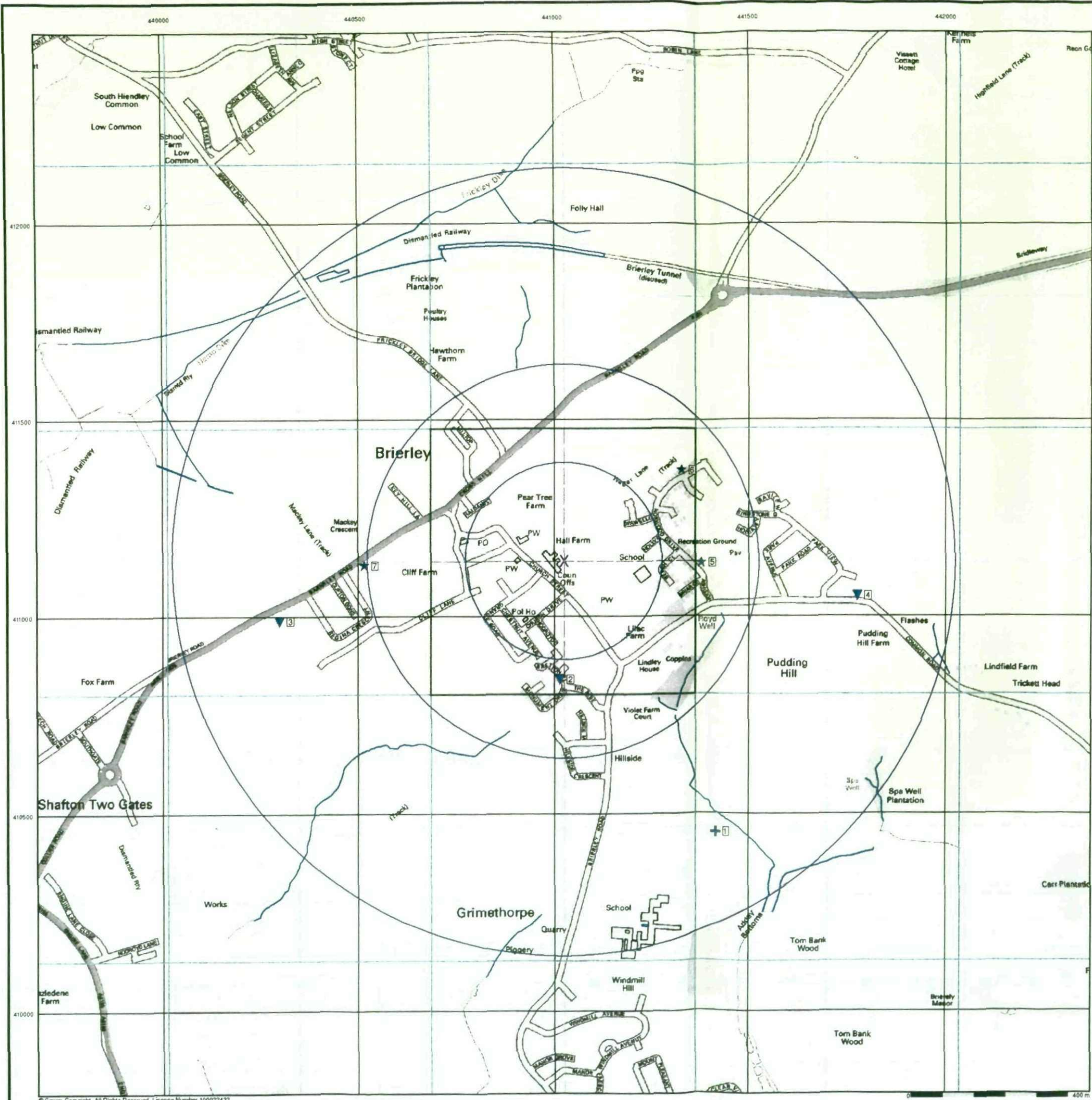
<b>Industrial Land Use</b>	<b>Version</b>	<b>Update Cycle</b>
<b>Contemporary Trade Directory Entries</b> Thomson Directories	November 2008	Quarterly
<b>Fuel Station Entries</b> Catalist Ltd - (Fuel Station Data)	February 2009	Quarterly
<b>Sensitive Land Use</b>	<b>Version</b>	<b>Update Cycle</b>
<b>Areas of Adopted Green Belt</b> Barnsley Metropolitan Borough Council - Planning Department Wakefield City Metropolitan District Council Doncaster Metropolitan Borough Council	December 2000 January 2003 July 1998	As notified As notified As notified
<b>Areas of Unadopted Green Belt</b> Barnsley Metropolitan Borough Council - Planning Department Wakefield City Metropolitan District Council Doncaster Metropolitan Borough Council	December 2000 January 2003 July 1998	As notified As notified As notified
<b>Areas of Outstanding Natural Beauty</b> Natural England	December 2008	Bi-Annually
<b>Environmentally Sensitive Areas</b> Natural England	February 2009	Annually
<b>Forest Parks</b> Forestry Commission	April 1997	Not Applicable
<b>Local Nature Reserves</b> Natural England	December 2008	Bi-Annually
<b>Marine Nature Reserves</b> Natural England	February 2009	Bi-Annually
<b>National Nature Reserves</b> Natural England	December 2008	Bi-Annually
<b>National Parks</b> Natural England	February 2009	Annually
<b>Nitrate Sensitive Areas</b> Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	December 2003	Not Applicable
<b>Nitrate Vulnerable Zones</b> Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	February 2009	Annually
<b>Ramsar Sites</b> Natural England	December 2008	Bi-Annually
<b>Sites of Special Scientific Interest</b> Natural England	December 2008	Bi-Annually
<b>Special Areas of Conservation</b> Natural England	December 2008	Bi-Annually
<b>Special Protection Areas</b> Natural England	December 2008	Bi-Annually

A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Scottish Environment Protection Agency	
The Coal Authority	
British Geological Survey	
Centre for Ecology and Hydrology	
Countryside Council for Wales	
Scottish Natural Heritage	
Natural England	
Health Protection Agency	
Ove Arup	
Peter Brett Associates	

Contact	Name and Address	Contact Details
1	<b>Environment Agency - National Customer Contact Centre (NCCC)</b> PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 08708 506 506 Email: enquiries@environment-agency.gov.uk
2	<b>British Geological Survey - Enquiry Service</b> British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
3	<b>The Coal Authority - Mining Report Service</b> 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG	Telephone: 0845 7626848 Email: thecoalauthority@coal.gov.uk
4	<b>Wakefield City Metropolitan District Council</b> Newton Bar, Wakefield, West Yorkshire, WF1 2TX	Telephone: 01924 306090 Fax: 01924 378532 Website: www.wakefield.gov.uk
5	<b>Barnsley Metropolitan Borough Council - Planning Department</b> Central Offices, Kendray Street, Barnsley, South Yorkshire, S70 2TN	Telephone: 01226 770770 Fax: 01226 772599 Website: www.barnsley.gov.uk
6	<b>Natural England</b> Northminster House, Northminster Road, Peterborough, Cambridgeshire, PE1 1UA	Telephone: 0845 600 3078 Fax: 01733 455103 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
7	<b>Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)</b> Government Buildings, Otley Road, Lawnswood, Leeds, West Yorkshire, LS16 5QT	Telephone: 0113 2613333 Fax: 0113 230 0879
8	<b>Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards</b> Central Offices, Kendray Street, Barnsley, South Yorkshire, S70 2TN	Telephone: 01226 770770 Fax: 01226 772599 Website: www.barnsley.gov.uk
9	<b>Wakefield City Metropolitan District Council - Environmental Health</b> Newton Bar, Wakefield, West Yorkshire, WF1 2TX	Telephone: 01924 306090 Website: www.wakefield.gov.uk
-	<b>Health Protection Agency - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards</b> Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@hpa.org.uk Website: www.hpa.org.uk
-	<b>Landmark Information Group Limited</b> The Smith Centre, Henley On Thames, Oxfordshire, RG9 6AB	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

Please note that the Environment Agency / SEPA have a charging policy in place for enquiries.


**General**

- Specified Site    ○ Specified Buffer(s)    X Bearing Reference Point    □ Map ID
- Several of Type at Location

**Agency and Hydrological**

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- ◆ Discharge Consent
- ▲ Enforcement or Prohibition Notice
- ▲ Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- ▲ Local Authority Pollution Prevention and Control
- ▲ Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- ▼ Prosecution Relating to Authorised Processes
- ◆ Prosecution Relating to Controlled Waters
- ▲ Registered Radioactive Substance
- ~ River Network or Water Feature
- ⊕ River Quality Sampling Point
- Substantiated Pollution Incident Register
- ◆ Water Abstraction
- ◆ Water Industry Act Referral

**Waste**

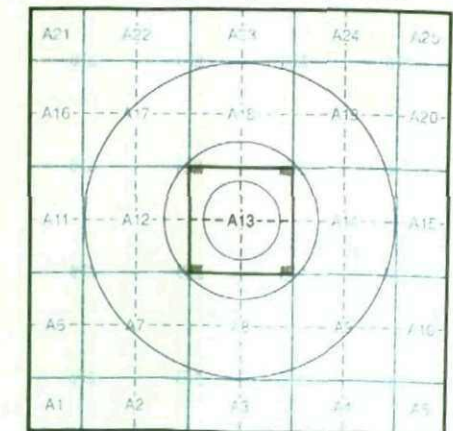
- ▼ BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- ▲ EA Historic Landfill (Polygon)
- ▲ Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- ▲ Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Registered Landfill Site
- ▼ Registered Landfill Site (Location)
- ▲ Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- ▲ Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- ▲ Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

**Geological**

- ▼ BGS Recorded Mineral Site

**Industrial Land Use**

- ★ Contemporary Trade Directory Entry
- ★ Fuel Station Entry
- ✳ COMAH Site
- ✳ Explosive Site
- ✳ NHS Site
- ✳ Planning Hazardous Substance Consent
- ✳ Planning Hazardous Substance Enforcement




**Site Sensitivity Map - Slice A**

**Order Details**

Order Number: 27703209\_1\_1  
 Customer Ref: 4942  
 National Grid Reference: 441020, 411140  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 1000






**Site Details**

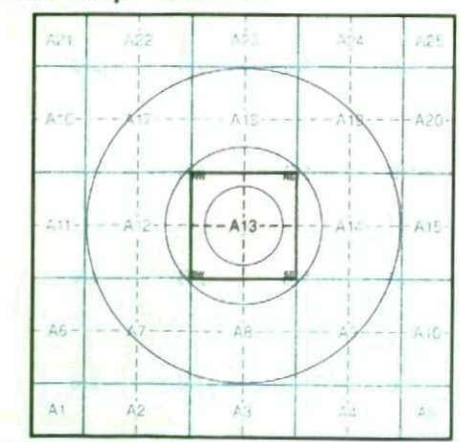
Brierley Hall, Church Street, Brierley, BARNSELY, South Yorkshire, S72 9HT

**General**

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

**Agency and Hydrological (Flood)**

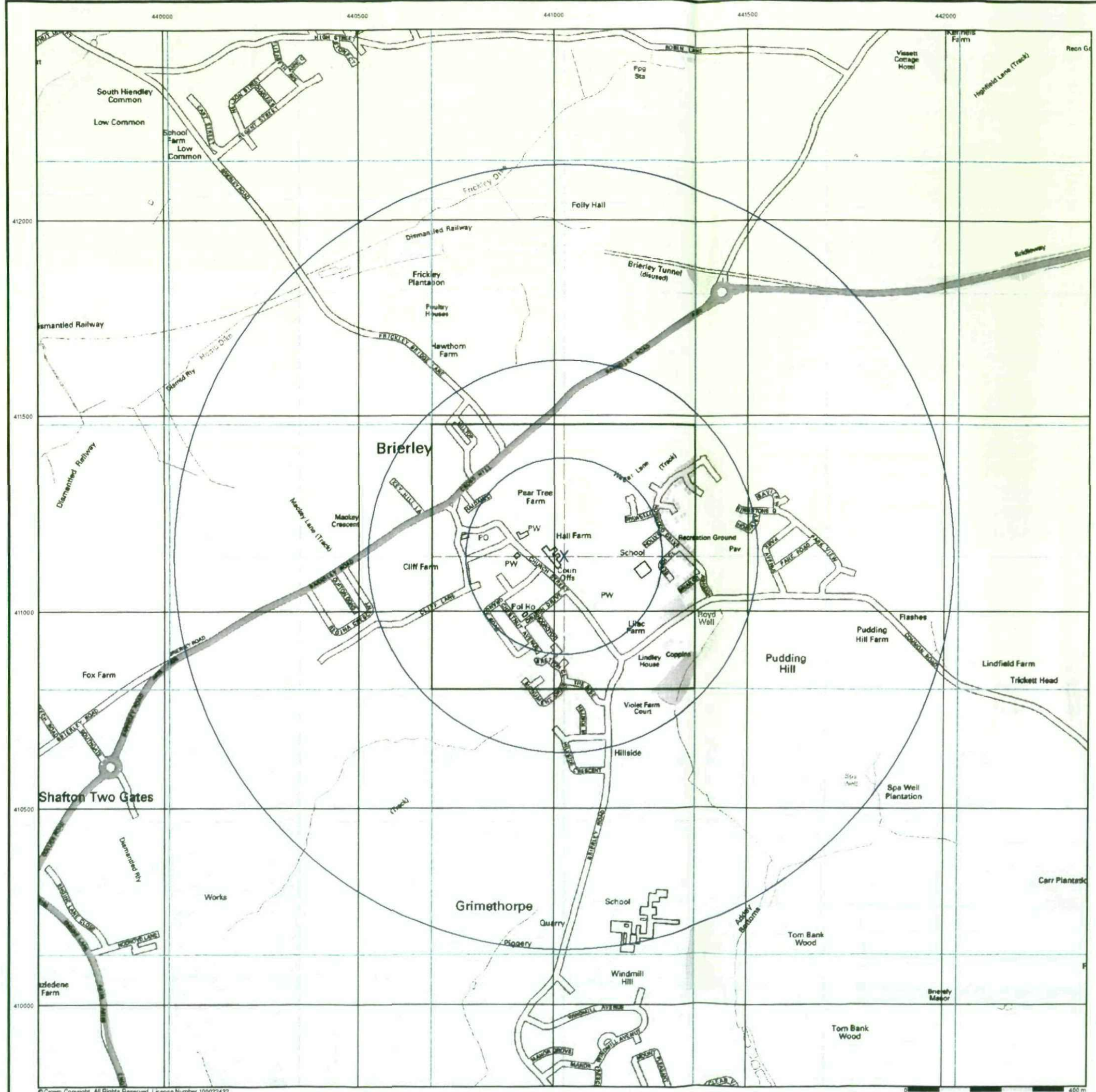
-  Extreme Flooding from Rivers or Sea without Defences (Zone 2)
-  Flooding from Rivers or Sea without Defences (Zone 3)
-  Area Benefiting from Flood Defence
-  Flood Water Storage Areas
-  Flood Defence

**Flood Map - Slice A**

**Order Details**

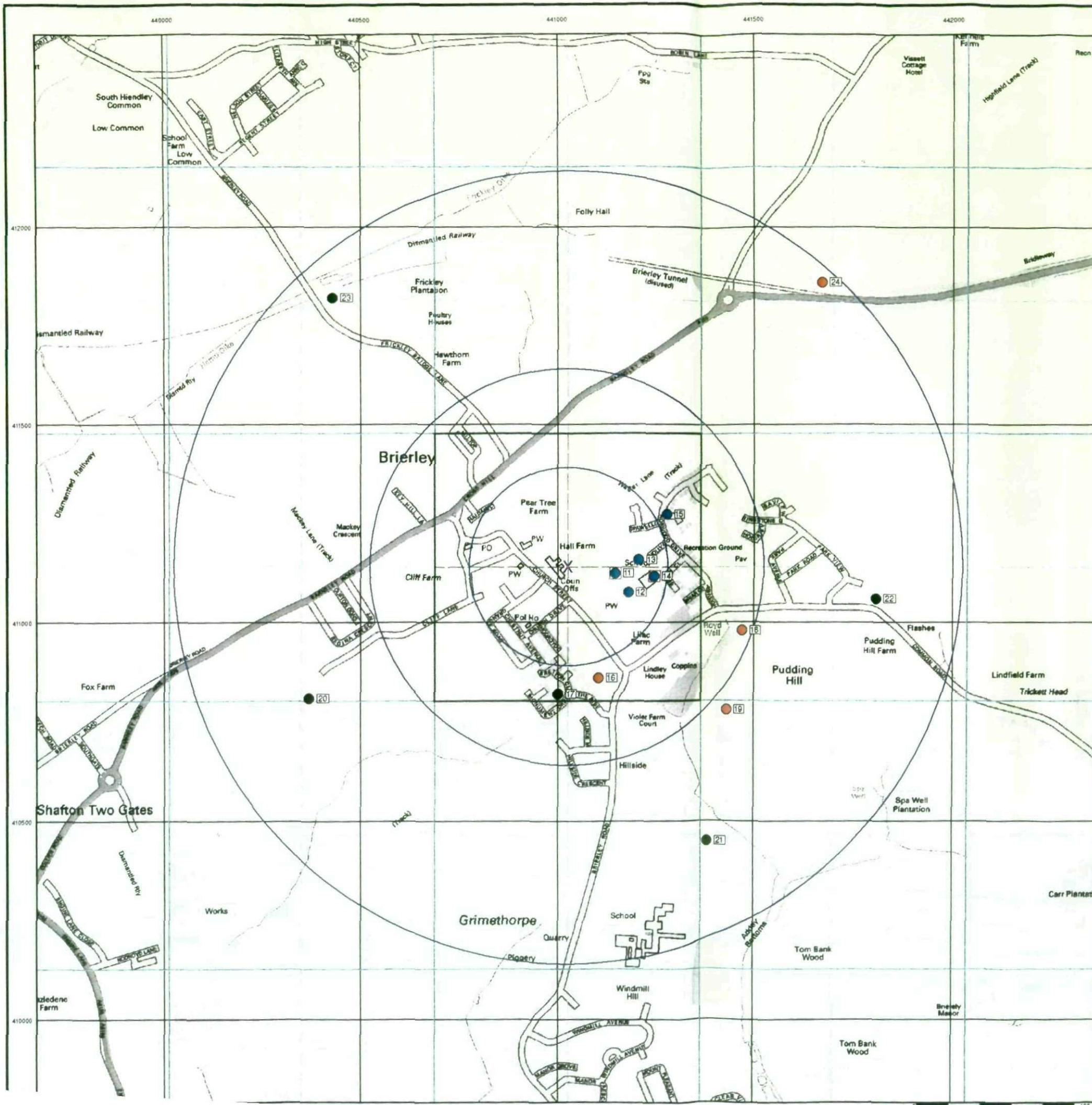
Order Number: 27703209\_1\_1  
 Customer Ref: 4942  
 National Grid Reference: 441020, 411140  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 1000

**Site Details**

Brierley Hall, Church Street, Brierley, BARNSELY, South Yorkshire, S72 9HT



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**General**

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point
- Map ID
- Several of Type at Location

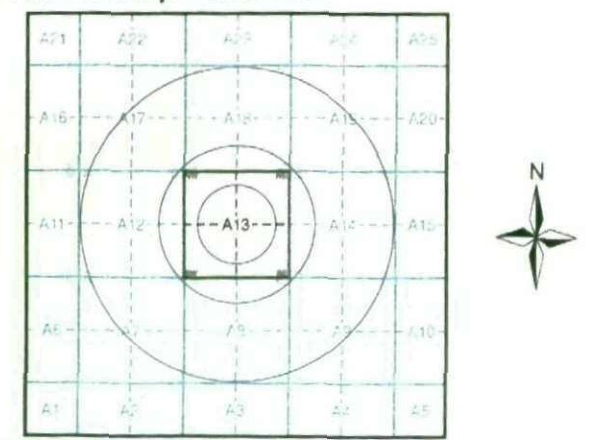
**Agency and Hydrological (Boreholes)**

- BGS Borehole Depth 0 - 10m
- BGS Borehole Depth 10 - 30m
- BGS Borehole Depth 30m +
- Confidential
- Other

For Borehole information please refer to the Borehole .csv file which accompanied this slice.

A copy of the BGS Borehole Ordering Form is available to download from the Support section of [www.envirocheck.co.uk](http://www.envirocheck.co.uk).

**Borehole Map - Slice A**



**Order Details**

Order Number: 27703209\_1\_1  
 Customer Ref: 4942  
 National Grid Reference: 441020, 411140  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 1000

**Site Details**

Brierley Hall, Church Street, Brierley, BARNSELY, South Yorkshire, S72 9HT

# Historical Mapping Legends

## Ordnance Survey County Series and Ordnance Survey Plan 1:2,500

**Quarry** **Gravel Pit** **Sand Pit**  
**Clay Pit** **Shingle** **Refuse Heap**  
**Sloping Masonry** **Flat Rock**  
**Marsh** **Reeds** **Osiers**  
**Rough Pasture** **Furze** **Wood**  
**Mixed Wood** **Brushwood** **Orchard**  
**Fir** **Ford** **Stepping Stones**  
**Ferry** **Waterfall** **Lock**  
**Trig. Station** **Altitude at Trig. Station**  
**B.M. 325.9** **Bench Mark** **Surface Level**  
**Arrow denotes flow of water** **Antiquities (site of)**  
**Cutting** **Embankment**  
**Railway crossing Road** **Level Crossing** **Road crossing Railway**  
**Railway crossing River or Canal** **Road over single stream** **Road over River or Canal**  
**County Boundary (Geographical)**  
**County & Civil Parish Boundary**  
**Administrative County & Civil Parish Boundary**  
**County Borough Boundary (England)**  
**Co. Boro. Bdy.**  
**County Burgh Boundary (Scotland)**  
**Co. Burgh Bdy.**  
**B.P. B.S.** **Boundary Post or Stone** **P.C.B.** **Police Call Box**  
**B.R.** **Bridle Road** **P** **Pump**  
**E.P.** **Electricity Pylon** **S.P.** **Signal Post**  
**F.B.** **Foot Bridge** **SL** **Sluice**  
**F.P.** **Foot Path** **Sp.** **Spring**  
**G.P.** **Guide Post or Board** **T.C.B.** **Telephone Call Box**  
**M.S.** **Mile Stone** **Tr.** **Trough**  
**M.P. M.R.** **Mooring Post or Ring** **W** **Well**

## Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250

**Inactive Quarry, Chalk Pit or Clay Pit** **Active Quarry, Chalk Pit or Clay Pit**  
**Rock** **Boulders**  
**Cliff** **Slopes** **Top**  
**Roofed Building** **Glazed Roof Building**  
**Sloping Masonry** **Archway**  
**Non-Coniferous Tree (surveyed)** **Coniferous Tree (surveyed)**  
**Non-Coniferous Trees (not surveyed)** **Coniferous Trees (not surveyed)**  
**Orchard Tree** **Scrub** **Bracken**  
**Coppice, Osier** **Reeds** **Marsh, Saltings**  
**Rough Grassland** **Heath** **Culvert**  
**Direction of water flow** **B.M.** **Bench Mark** **Antiquity (site of)**  
**Cave Entrance** **Triangulation Station** **Electricity Pylon**  
**Electricity Transmission Line**  
**County Boundary (Geographical)**  
**County & Civil Parish Boundary**  
**Civil Parish Boundary**  
**Admin. County or County Bor. Boundary**  
**London Borough Boundary**  
**Symbol marking point where boundary mereing changes**  
**BH** **Beer House** **P** **Pillar, Pole or Post**  
**BP, BS** **Boundary Post or Stone** **PO** **Post Office**  
**Cn, C** **Capstan, Crane** **PC** **Public Convenience**  
**Chy** **Chimney** **PH** **Public House**  
**D Fn** **Drinking Fountain** **Pp** **Pump**  
**EI P** **Electricity Pillar or Post** **SB, S Br** **Signal Box or Bridge**  
**FAP** **Fire Alarm Pillar** **SP, SL** **Signal Post or Light**  
**FB** **Foot Bridge** **Spr** **Spring**  
**GP** **Guide Post** **Tk** **Tank or Track**  
**H** **Hydrant or Hydraulic** **TCB** **Telephone Call Box**  
**LC** **Level Crossing** **TCP** **Telephone Call Post**  
**MH** **Manhole** **Tr** **Trough**  
**MP** **Mile Post or Mooring Post** **Wr Pt, Wr T** **Water Point, Water Tap**  
**MS** **Mile Stone** **W** **Well**  
**N.T.L.** **Normal Tidal Limit** **Wd Pp** **Wind Pump**

## Large-Scale National Grid Data 1:2,500 and 1:1,250

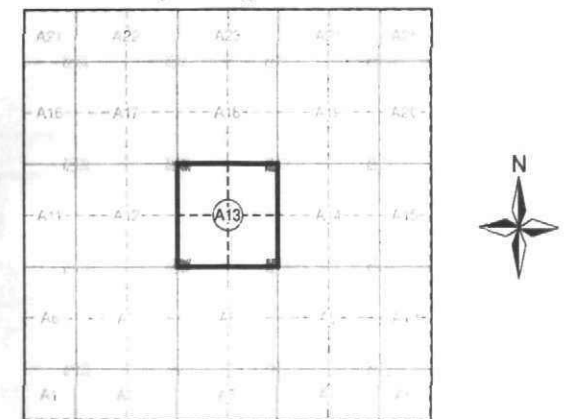
**Cliff** **Slopes** **Top**  
**Rock** **Rock (scattered)**  
**Boulders** **Boulders (scattered)**  
**Positioned Boulder** **Scree**  
**Non-Coniferous Tree (surveyed)** **Coniferous Tree (surveyed)**  
**Non-Coniferous Trees (not surveyed)** **Coniferous Trees (not surveyed)**  
**Orchard Tree** **Scrub** **Bracken**  
**Coppice, Osier** **Reeds** **Marsh, Saltings**  
**Rough Grassland** **Heath** **Culvert**  
**Direction of water flow** **Triangulation Station** **Antiquity (site of)**  
**Electricity Transmission Line** **Electricity Pylon**  
**B.M. 221.60m** **Bench Mark** **Buildings with Building Seed**  
**Roofed Building** **Glazed Roof Building**  
**Civil parish/community boundary**  
**District boundary**  
**County boundary**  
**Boundary post/stone**  
**Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)**  
**Bks** **Barracks** **P** **Pillar, Pole or Post**  
**Bty** **Battery** **PO** **Post Office**  
**Cemry** **Cemetery** **PC** **Public Convenience**  
**Chy** **Chimney** **Pp** **Pump**  
**Cis** **Cistern** **Ppg Sta** **Pumping Station**  
**Dismtd Rly** **Dismantled Railway** **PW** **Place of Worship**  
**EI Gen Sta** **Electricity Generating Station** **Sewage Ppg Sta** **Sewage Pumping Station**  
**EI P** **Electricity Pole, Pillar** **SB, S Br** **Signal Box or Bridge**  
**EI Sub Sta** **Electricity Sub Station** **SP, SL** **Signal Post or Light**  
**FB** **Filter Bed** **Spr** **Spring**  
**Fn / D Fn** **Fountain / Drinking Ftn.** **Tk** **Tank or Track**  
**Gas Gov** **Gas Valve Compound** **Tr** **Trough**  
**GVC** **Gas Governor** **Wd Pp** **Wind Pump**  
**GP** **Guide Post** **Wr Pt, Wr T** **Water Point, Water Tap**  
**MH** **Manhole** **Wks** **Works (building or area)**  
**MP, MS** **Mile Post or Mile Stone** **W** **Well**



## Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Yorkshire	1:2,500	1893	2
Yorkshire	1:2,500	1906	3
Yorkshire	1:2,500	1919	4
Ordnance Survey Plan	1:2,500	1962	5
Supply of Unpublished Survey Information	1:2,500	1976	6
Ordnance Survey Plan	1:2,500	1978 - 1985	7
Additional SIMs	1:2,500	1978 - 1988	8
Additional SIMs	1:2,500	1982 - 1988	9
Additional SIMs	1:2,500	1992	10
Large-Scale National Grid Data	1:2,500	1993	11
Large-Scale National Grid Data	1:2,500	1997	12

## Historical Map - Segment A13



## Order Details

Order Number: 27703209\_1\_1  
 Customer Ref: 4942  
 National Grid Reference: 441020, 411140  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 100

## Site Details

Brierley Hall, Church Street, Brierley, BARNLSLEY, South Yorkshire, S72 9HT



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

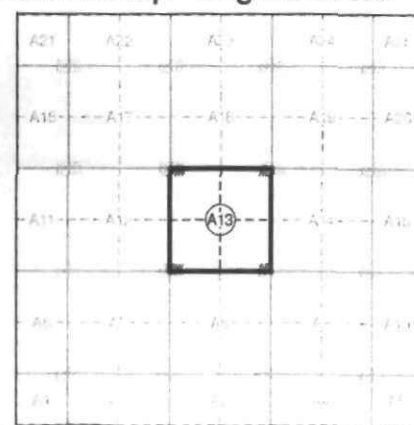
**Yorkshire**  
**Published 1893**  
**Source map scale - 1:2,500**

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

**Map Name(s) and Date(s)**

263_10	1893	12,500
263_14	1893	12,500

**Historical Map - Segment A13**

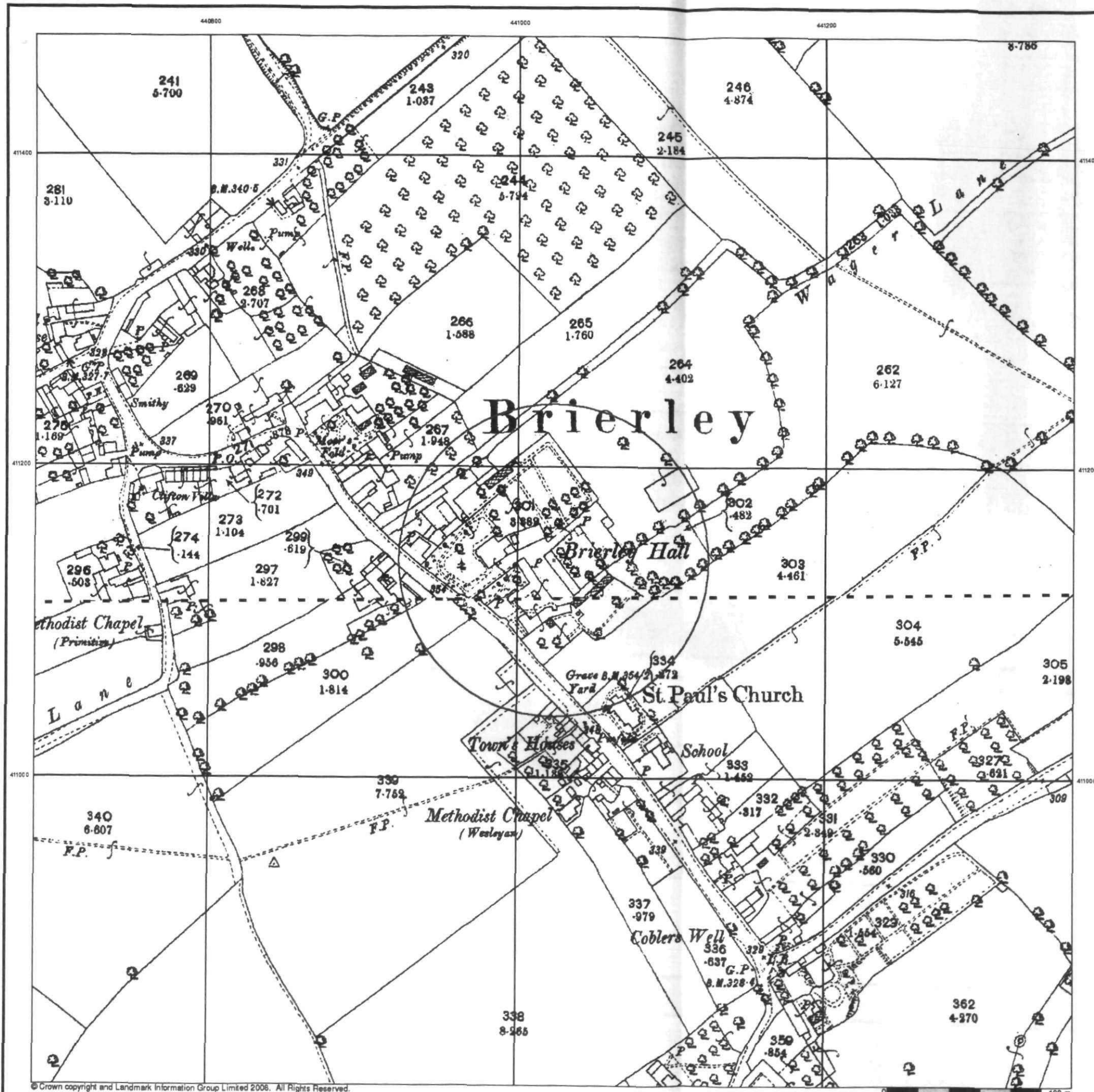


**Order Details**

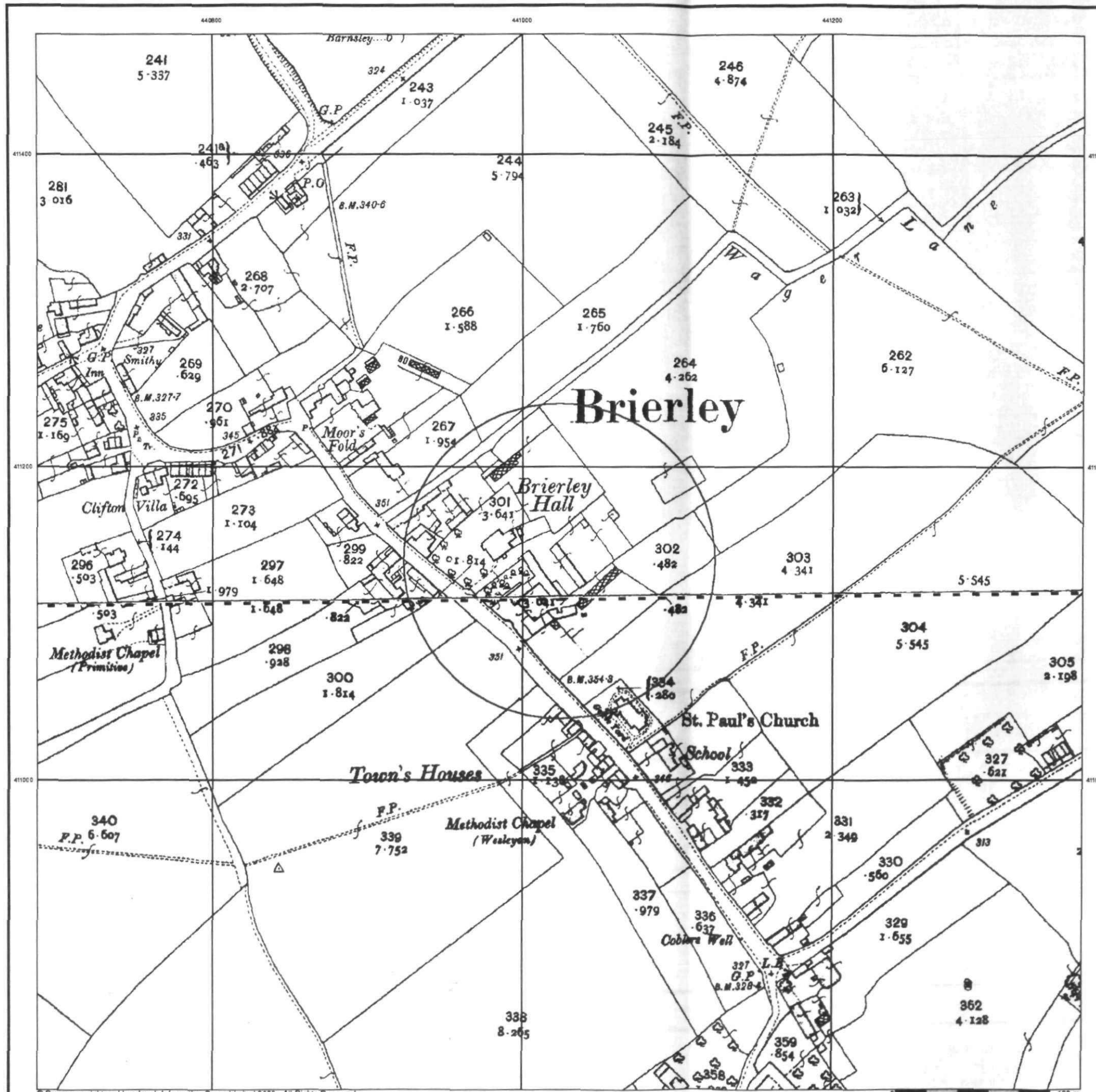
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Customer Ref: 4942  
National Grid Reference: 441020, 411140  
Slice: A  
Site Area (Ha): 0.01  
Search Buffer (m): 100

**Site Details**

Brierley Hall, Church Street, Brierley, BARNSELY, South Yorkshire, S72 9HT



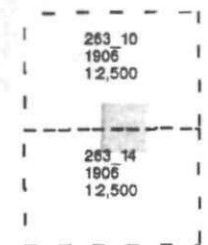
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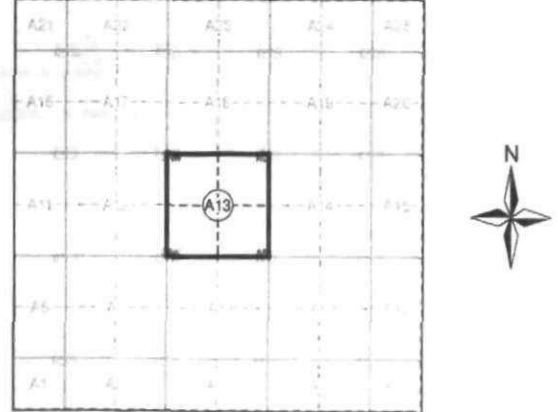
**Yorkshire**  
**Published 1906**  
**Source map scale - 1:2,500**

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

**Map Name(s) and Date(s)**



**Historical Map - Segment A13**



**Order Details**

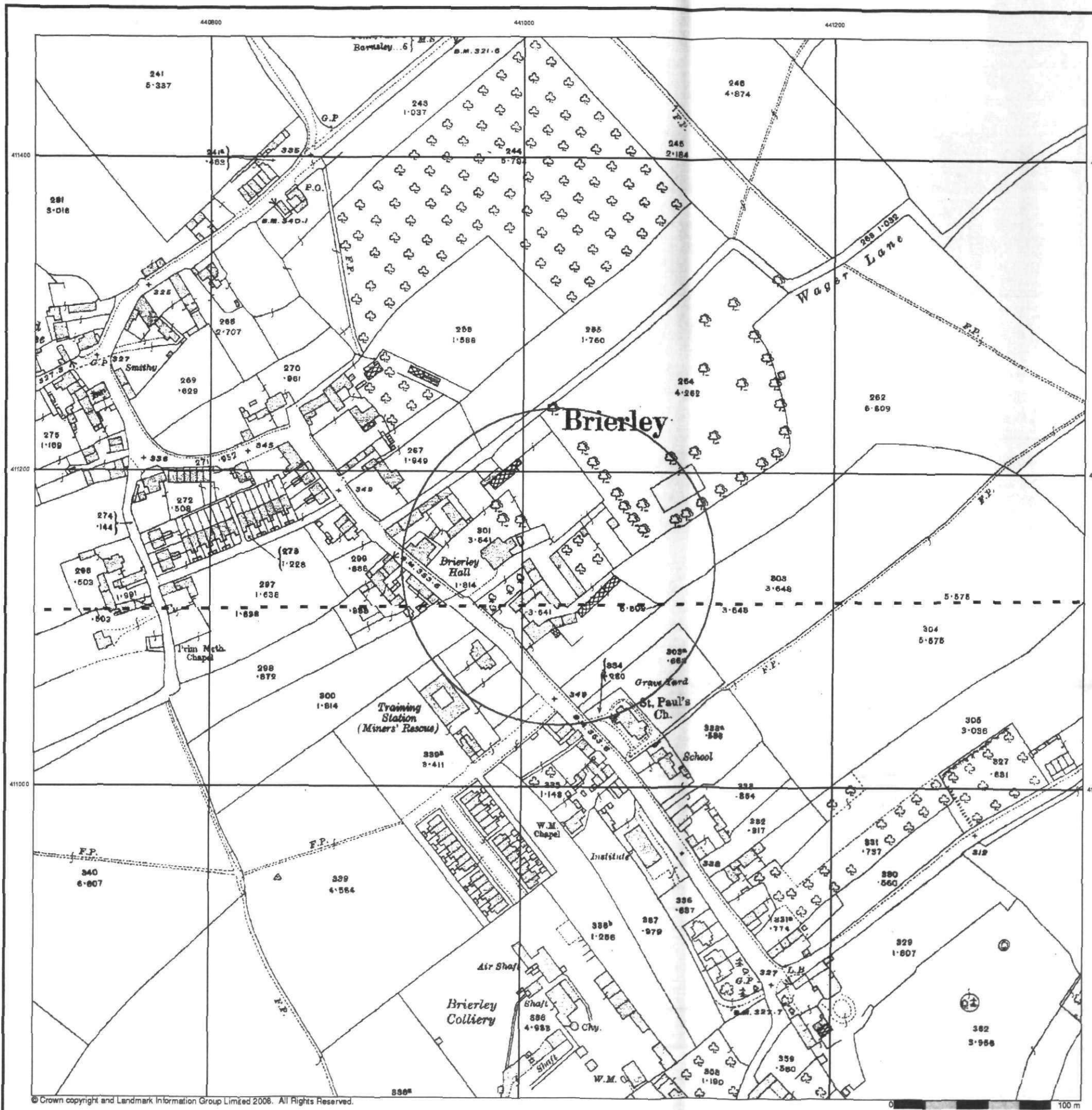
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 Customer Ref: 4942  
 National Grid Reference: 441020, 411140  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 100

**Site Details**

Brierley Hall, Church Street, Brierley, BARNSELY, South Yorkshire, S72 9HT



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



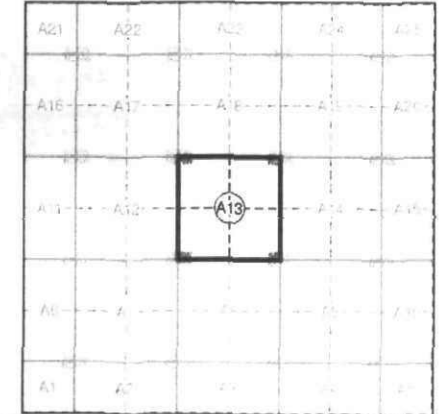
**Yorkshire**  
**Published 1919**  
**Source map scale - 1:2,500**

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

**Map Name(s) and Date(s)**

263_10	1919	1:2,500
263_14	1919	1:2,500

**Historical Map - Segment A13**



**Order Details**

Order Number: 27703209\_1\_1  
 Customer Ref: 4942  
 National Grid Reference: 441020, 411140  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 100

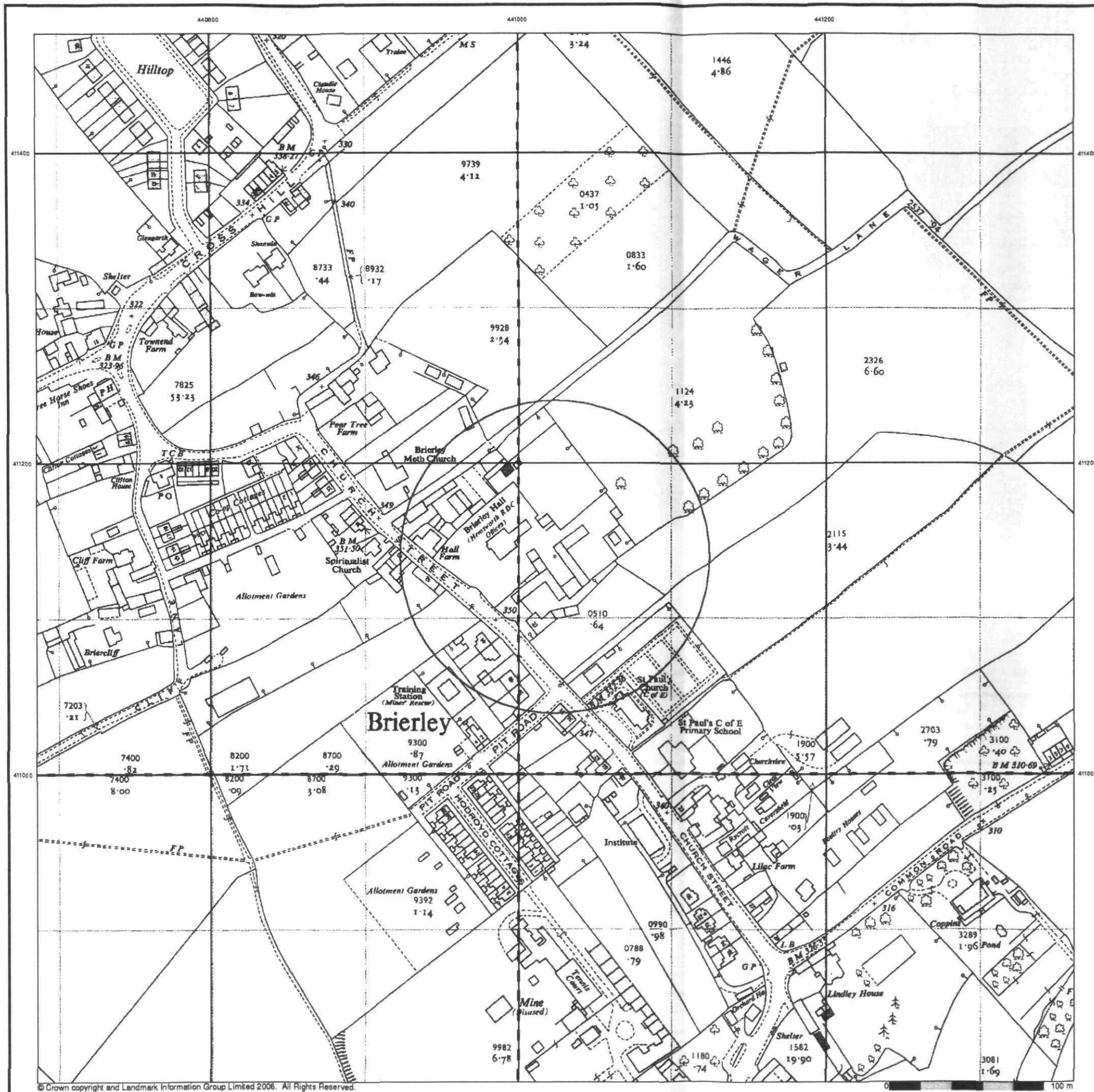
**Site Details**

Brierley Hall, Church Street, Brierley, BARNSELY, South Yorkshire, S72 9HT



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

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**Ordnance Survey Plan  
Published 1962**

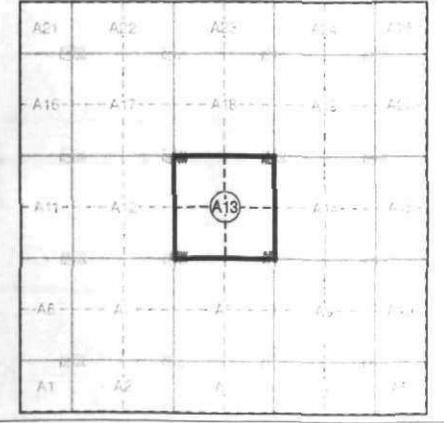
**Source map scale - 1:2,500**

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

**Map Name(s) and Date(s)**

SE4011 1962 12,500	SE4111 1962 12,500
SE4010 1962 12,500	SE4110 1962 12,500

**Historical Map - Segment A13**



**Order Details**

Order Number: 27703209\_1\_1  
 Customer Ref: 4942  
 National Grid Reference: 441020, 411140  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 100

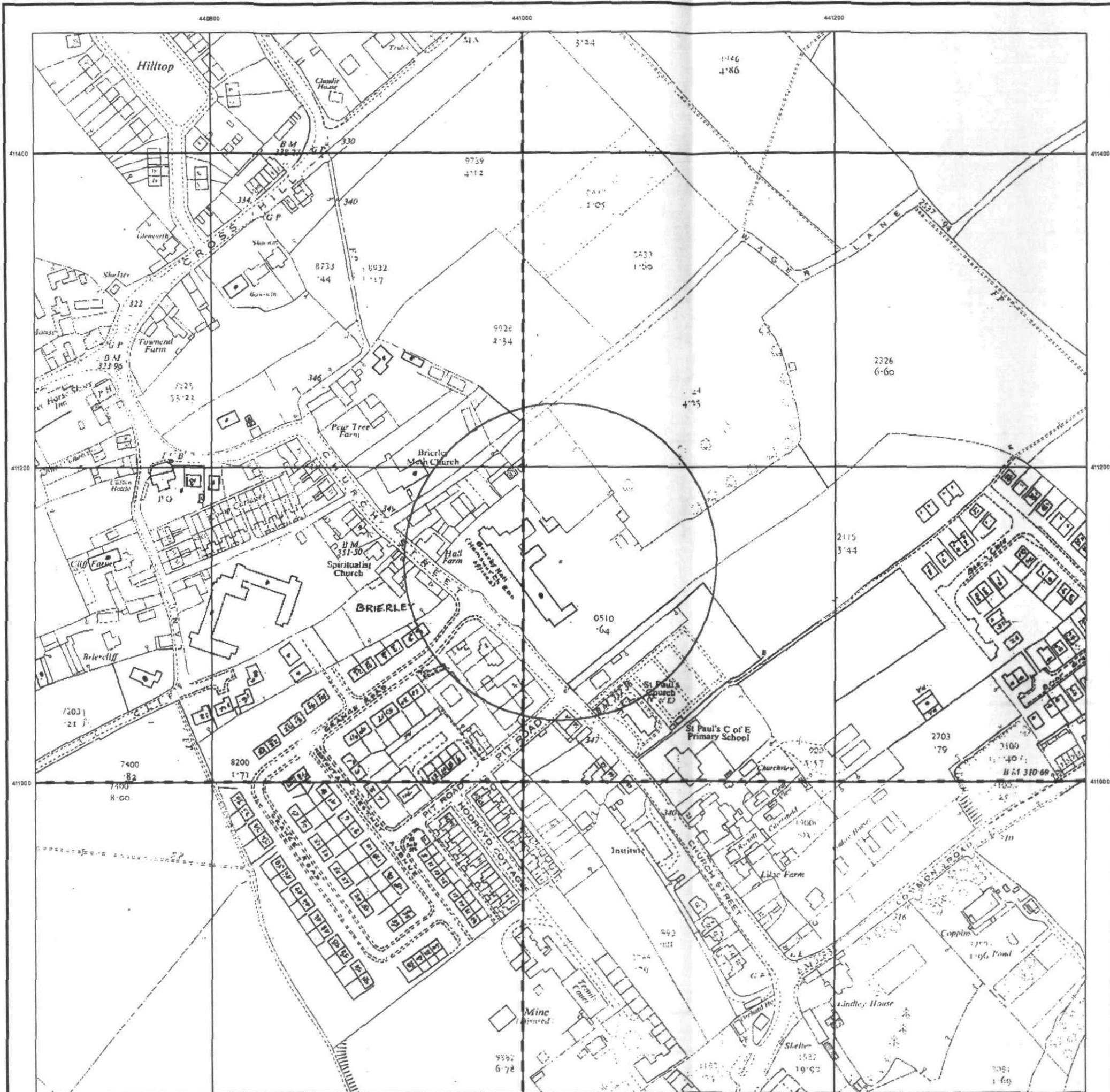
**Site Details**

Brierley Hall, Church Street, Brierley, BARNSELY, South Yorkshire, S72 9HT



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

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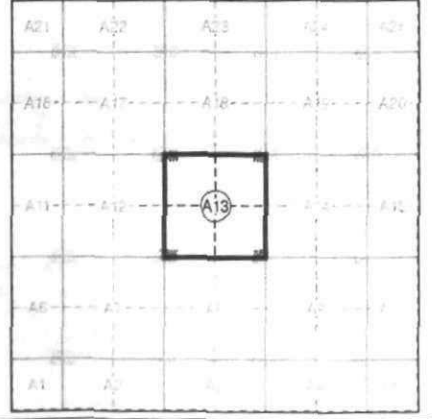
**Supply of Unpublished Survey Information**  
**Published 1976**  
**Source map scale - 1:2,500**

SUSI maps (Supply of Unpublished Survey Information) were produced between 1972 and 1977, mainly for internal use at Ordnance Survey. These were more of a 'work-in-progress' plan as they showed updates of individual areas on a map. These maps were unpublished, and they do not represent a single moment in time. They were produced at both 1:2,500 and 1:1,250 scales.

**Map Name(s) and Date(s)**

SE4011 1976 1:2,500	SE4111 1976 1:2,500
SE4010 1976 1:2,500	SE4110 1976 1:2,500

**Historical Map - Segment A13**



**Order Details**

Order Number: 27703209\_1\_1  
 Customer Ref: 4942  
 National Grid Reference: 441020, 411140  
 Slice: A  
 Site Area (Ha): 0.01  
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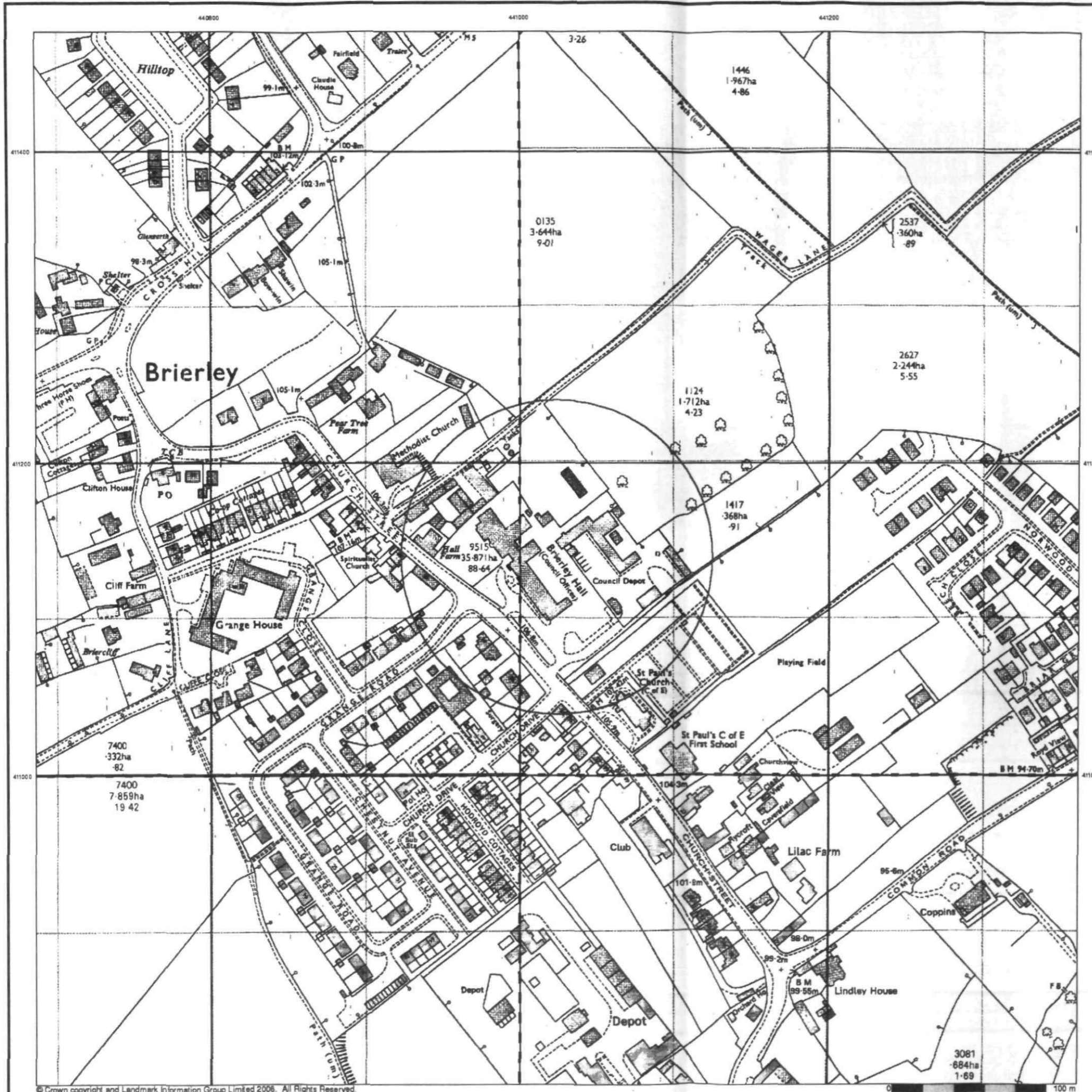
**Site Details**

Brierley Hall, Church Street, Brierley, BARNSELY, South Yorkshire, S72 9HT



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

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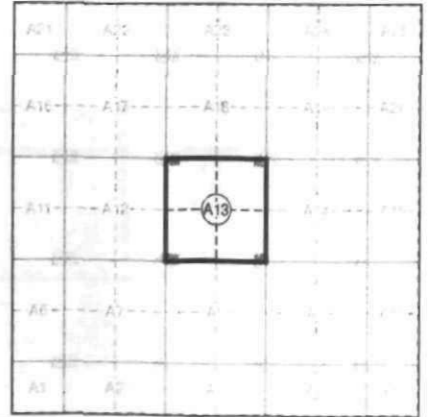
**Ordnance Survey Plan  
Published 1978 - 1985  
Source map scale - 1:2,500**

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

**Map Name(s) and Date(s)**

SE4011 1978 12,500	SE4111 1978 12,500
SE4010 1985 12,500	SE4110 1985 12,500

**Historical Map - Segment A13**



**Order Details**

Order Number: 27703209\_1\_1  
 Customer Ref: 4942  
 National Grid Reference: 441020, 411140  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 100

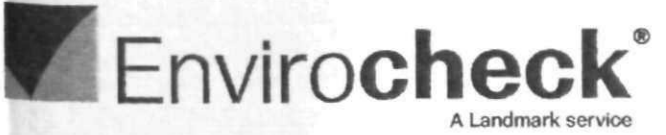
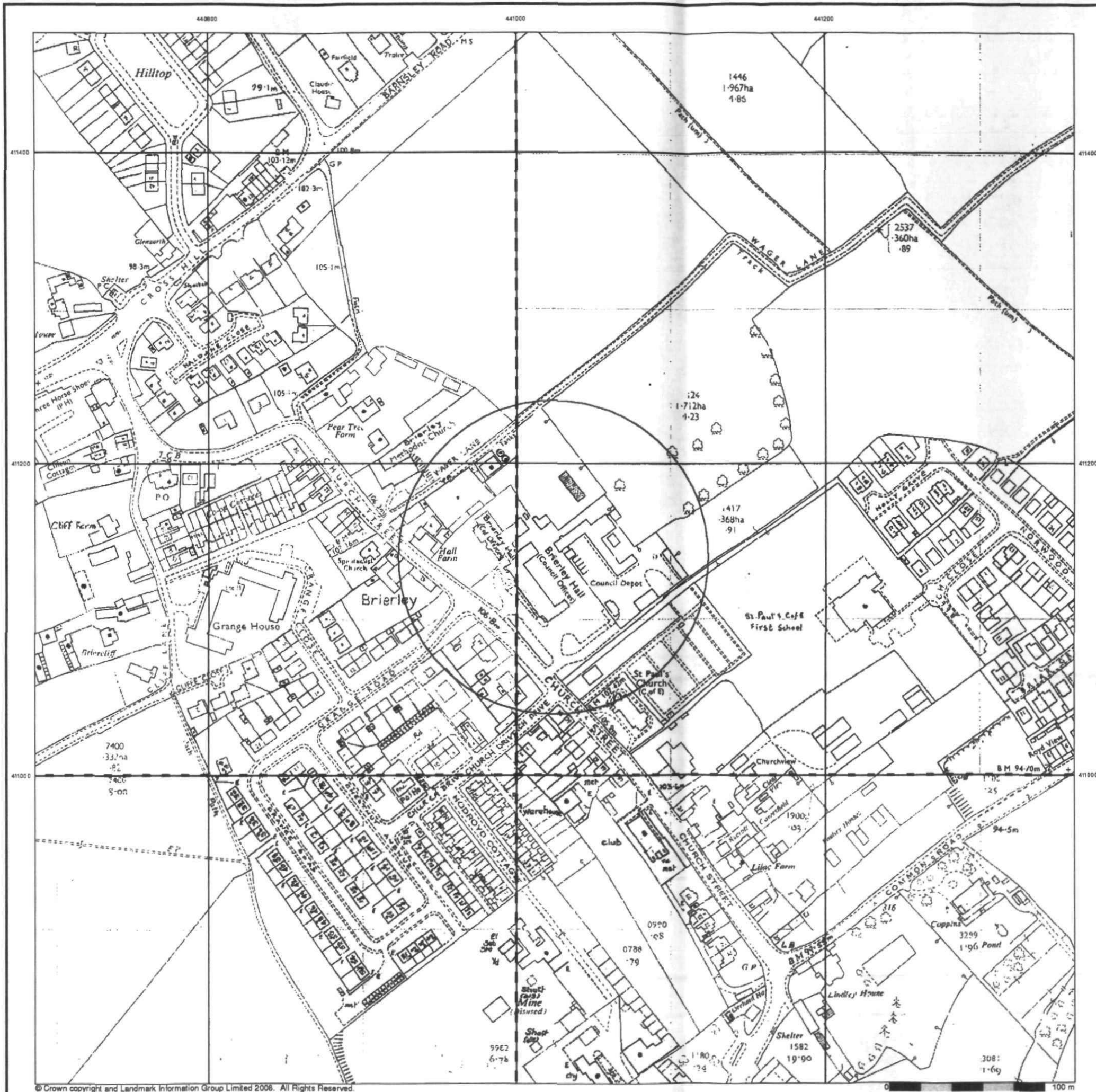
**Site Details**

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

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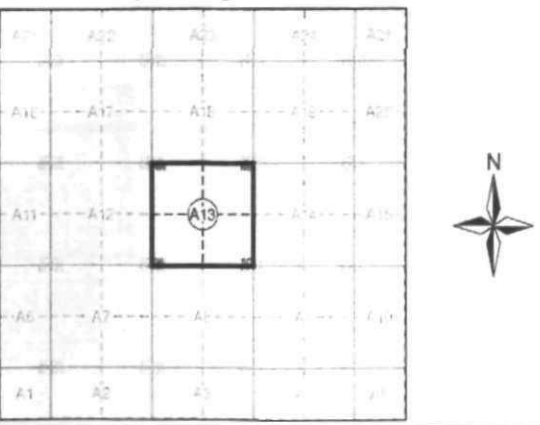
**Additional SIMs**  
**Published 1978 - 1988**  
**Source map scale - 1:2,500**

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

**Map Name(s) and Date(s)**

SE4011 1988 1:2,500	SE4111 1982 1:2,500
SE4010 1978 1:2,500	SE4110 1978 1:2,500

**Historical Map - Segment A13**



**Order Details**

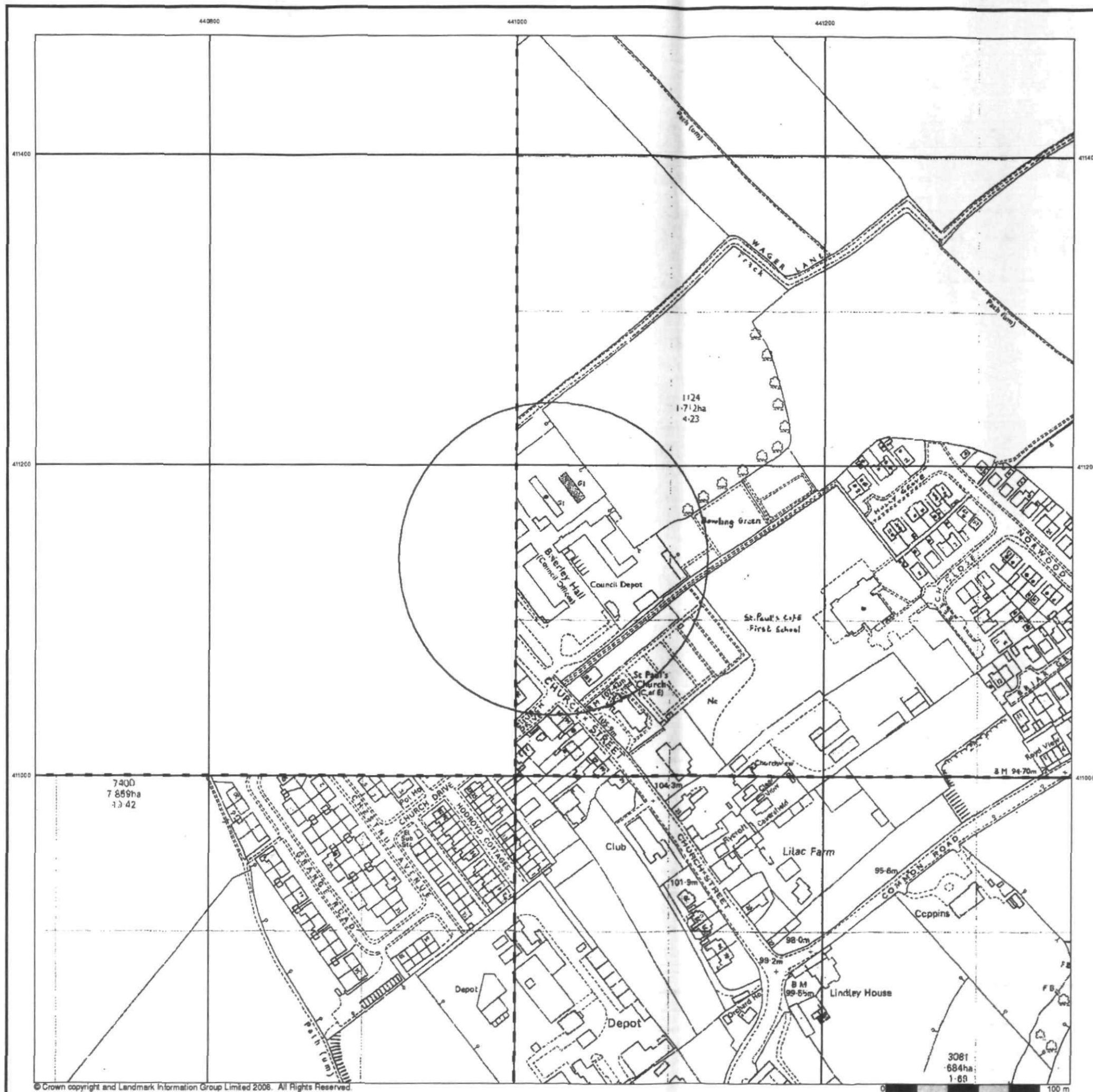
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 Search Buffer (m): 100

**Site Details**

Brierley Hall, Church Street, Brierley, BARNSELY, South Yorkshire, S72 9HT



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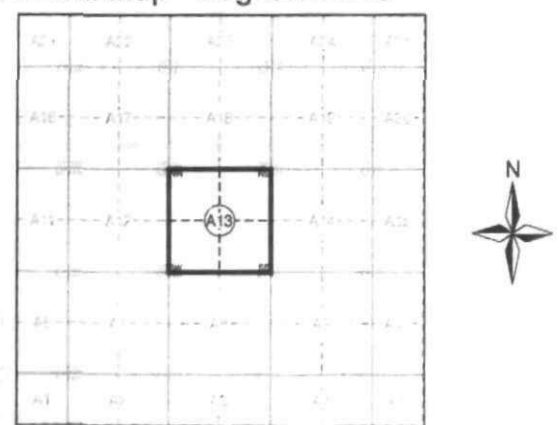
**Additional SIMs**  
**Published 1982 - 1988**  
**Source map scale - 1:2,500**

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

**Map Name(s) and Date(s)**

SE4111	1988	1:2,500
SE4010	1982	1:2,500
SE4110	1988	1:2,500

**Historical Map - Segment A13**

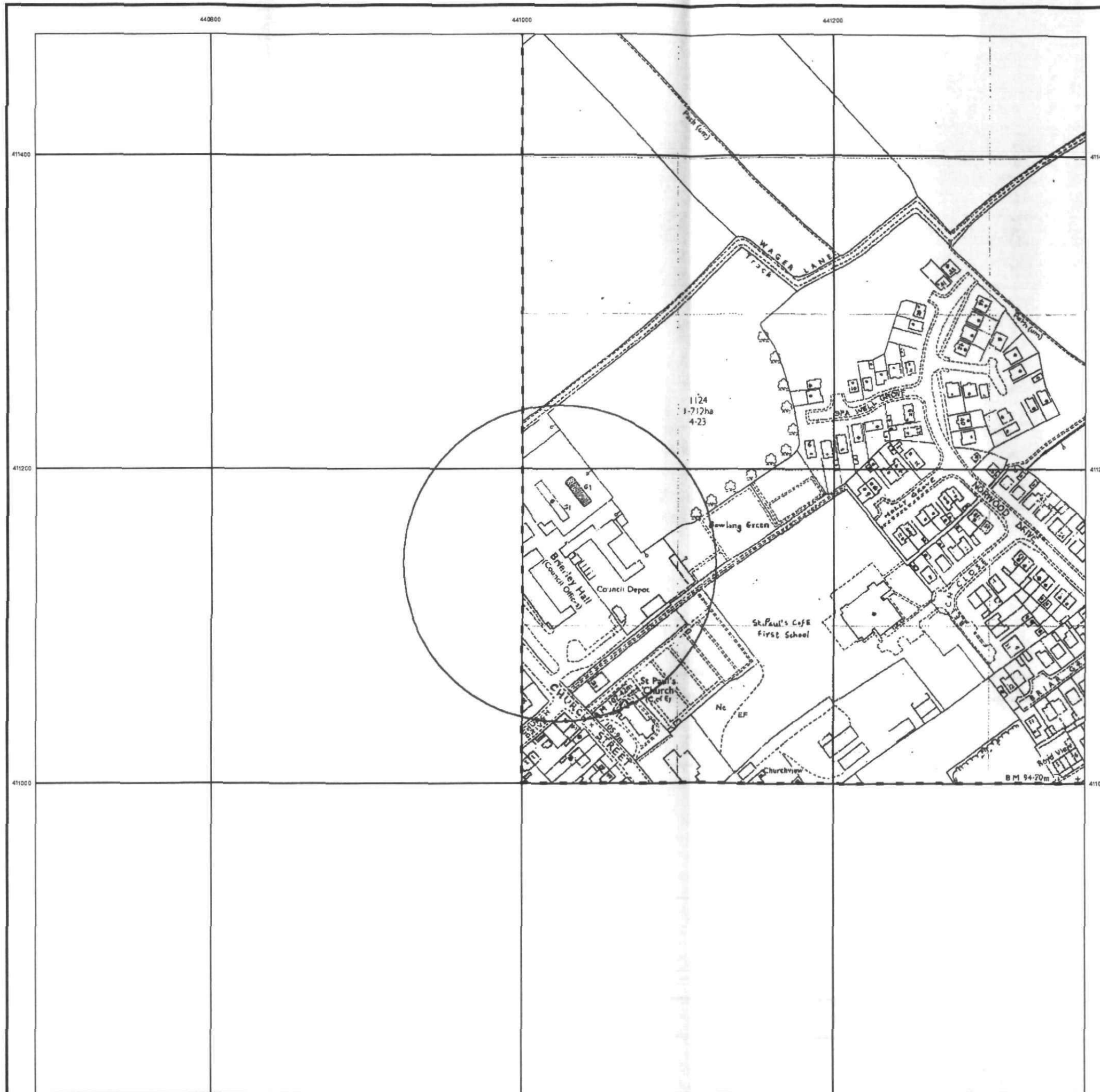


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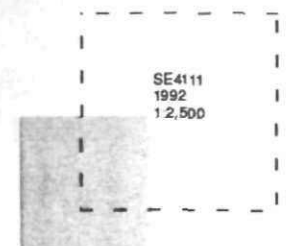
Brierley Hall, Church Street, Brierley, BARNSELY, South Yorkshire, S72 9HT



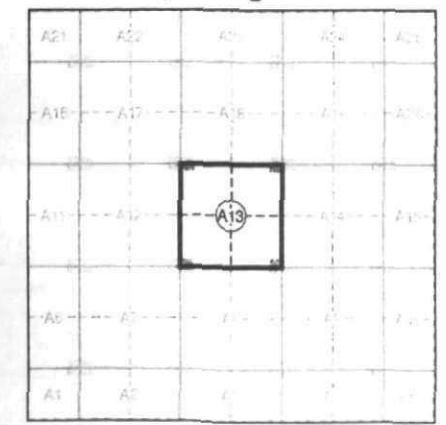
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Published 1992  
Source map scale - 1:2,500**

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

**Map Name(s) and Date(s)**



**Historical Map - Segment A13**



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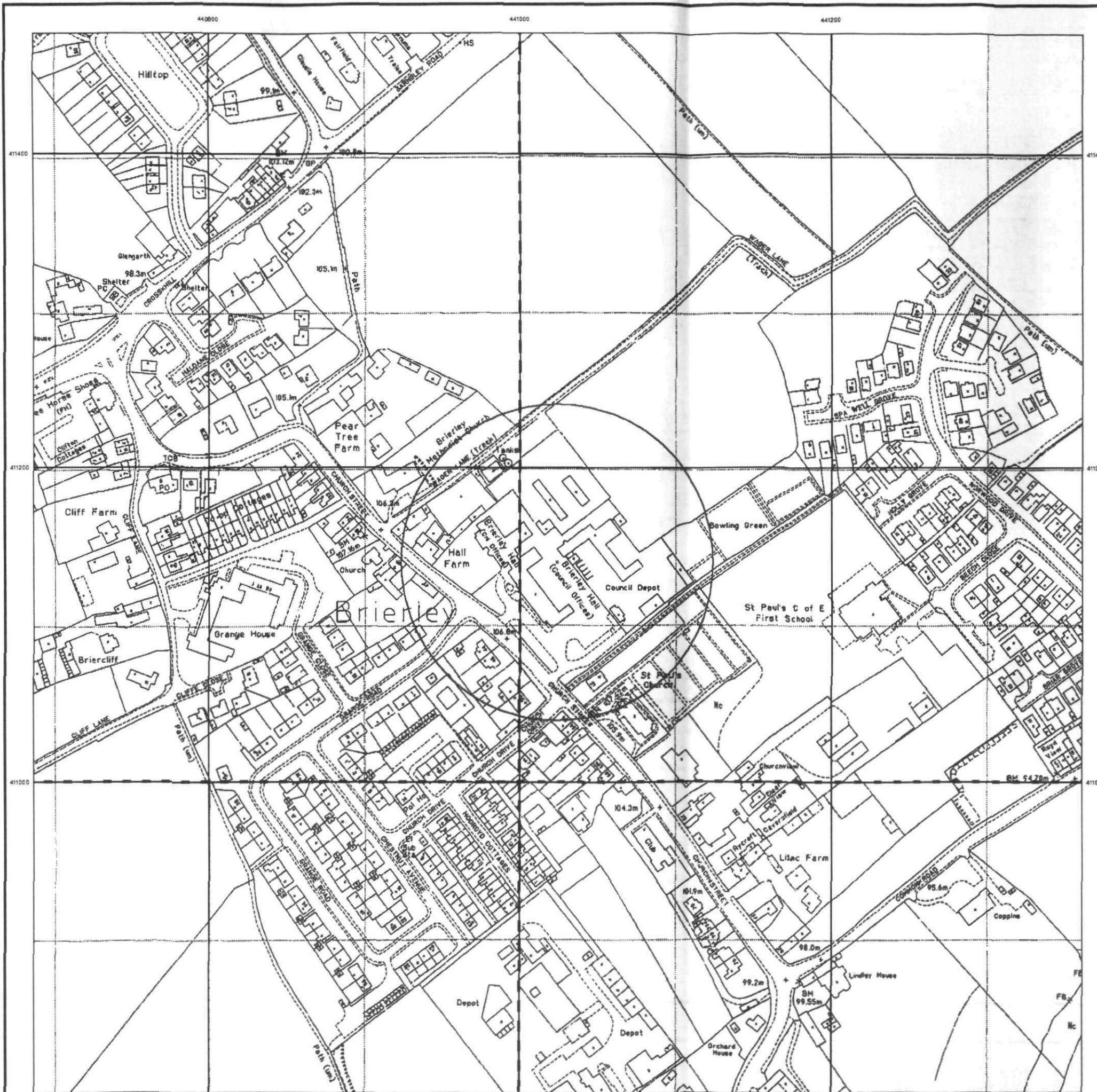
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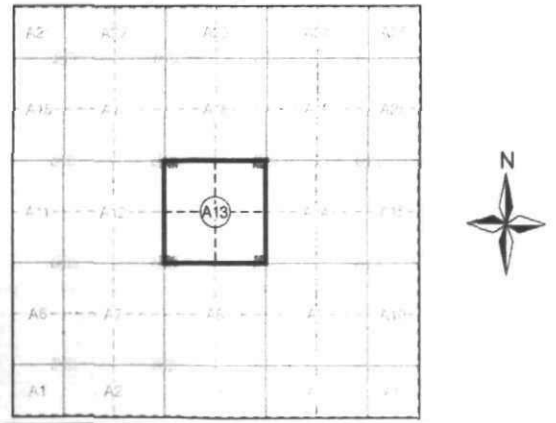
**Large-Scale National Grid Data  
Published 1993  
Source map scale - 1:2,500**

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

**Map Name(s) and Date(s)**

SE4011 1993 1:2,500	SE4111 1993 1:2,500
SE4010 1993 1:2,500	SE4110 1993 1:2,500

**Historical Map - Segment A13**



**Order Details**

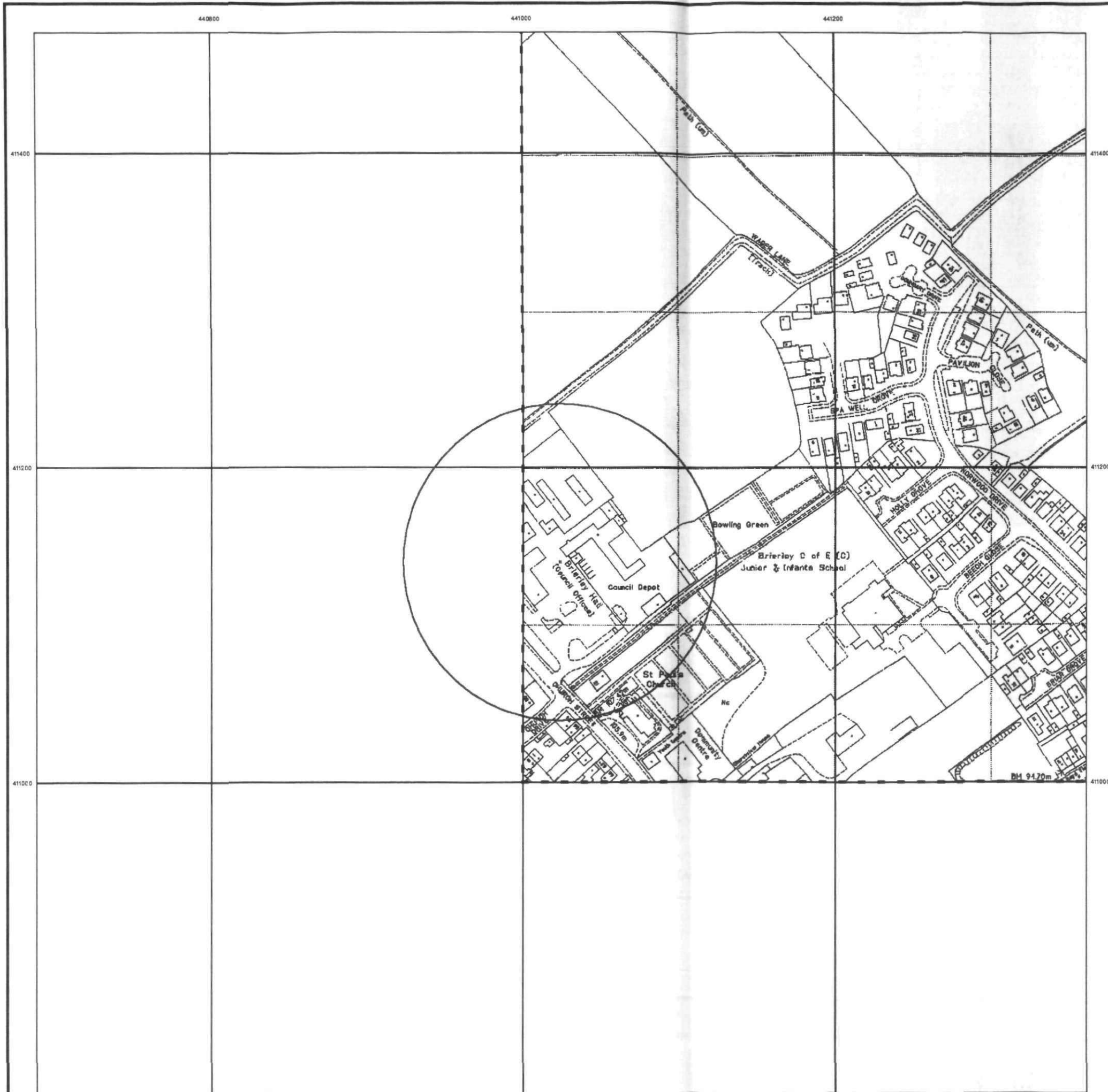
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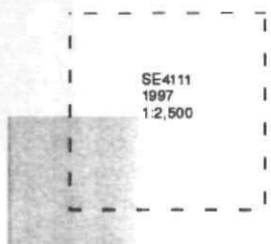


**Large-Scale National Grid Data  
Published 1997**

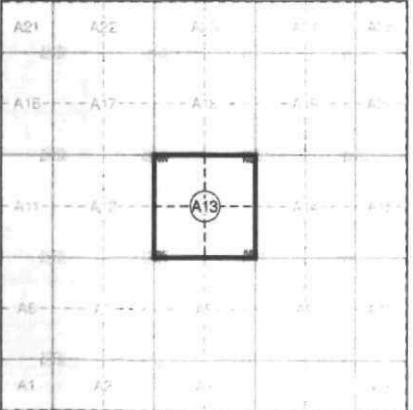
**Source map scale - 1:2,500**

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

**Map Name(s) and Date(s)**



**Historical Map - Segment A13**



**Order Details**

Order Number: 27703209\_1\_1  
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 National Grid Reference: 441020, 411140  
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# Historical Mapping Legends

## Ordnance Survey County Series 1:10,560

- Gravel Pit
- Sand Pit
- Other Pits
- Quarry
- Shingle
- Orchard
- Osiers
- Reeds
- Marsh
- Mixed Wood
- Deciduous
- Brushwood
- Fir
- Furze
- Rough Pasture
- Arrow denotes flow of water
- Trigonometrical Station
- Site of Antiquities
- Bench Mark
- Pump, Guide Post, Signal Post
- Well, Spring, Boundary Post
- 285** Surface Level
- Sketched Contour
- Instrumental Contour
- Main Roads
- Minor Roads
- Sunken Road
- Raised Road
- Road over Railway
- Railway over River
- Railway over Road
- Level Crossing
- Road over River or Canal
- Road over Stream
- Road over Stream
- County Boundary (Geographical)
- County & Civil Parish Boundary
- Administrative County & Civil Parish Boundary
- Co. Boro. Bdy. County Borough Boundary (England)
- Co. Burgh Bdy. County Burgh Boundary (Scotland)
- Rural District Boundary
- Civil Parish Boundary

## Ordnance Survey Plan 1:10,000

- Chalk Pit, Clay Pit or Quarry
- Gravel Pit
- Sand Pit
- Disused Pit or Quarry
- Refuse or Slag Heap
- Lake, Loch or Pond
- Dunes
- Boulders
- Coniferous Trees
- Non-Coniferous Trees
- Orchard
- Scrub
- Coppice
- Bracken
- Heath
- Rough Grassland
- Marsh
- Reeds
- Saltings
- Building
- Glasshouse
- Sloping Masonry
- Pylon
- Electricity Transmission Line
- Pole
- Cutting
- Embankment
- Standard Gauge Multiple Track
- Standard Gauge Single Track
- Siding, Tramway or Mineral Line
- Narrow Gauge
- Geographical County
- Administrative County, County Borough or County of City
- Municipal Borough, Urban or Rural District, Burgh or District Council
- Borough, Burgh or County Constituency
- Civil Parish
- BP, BS Boundary Post or Stone
- Ch Church
- CH Club House
- F E Sta Fire Engine Station
- FB Foot Bridge
- Fn Fountain
- GP Fountain
- GP Guide Post
- MP Mile Post
- MS Mile Stone
- Pol Sta Police Station
- PO Post Office
- PC Public Convenience
- PH Public House
- SB Signal Box
- Spr Spring
- TCB Spring
- TCP Telephone Call Box
- W Telephone Call Post
- W Well
- BM 123.45 m Bench mark (where shown)
- Point feature (e.g. Guide Post or Mile Stone)
- Site of (antiquity)
- General Building

## 1:10,000 Raster Mapping

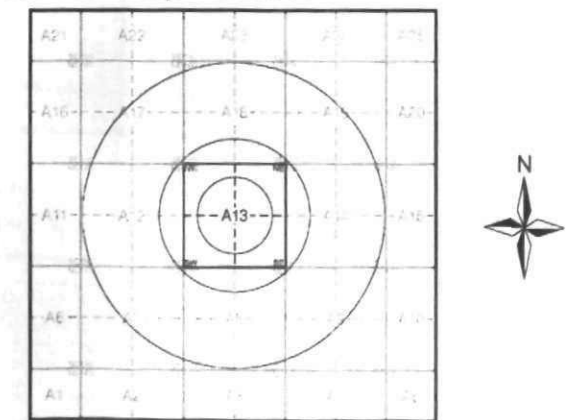
- Gravel Pit
- Rock
- Boulders
- Shingle
- Sand
- Slopes
- Refuse tip or slag heap
- Rock (scattered)
- Boulders (scattered)
- Mud
- Sand Pit
- Top of cliff
- General detail
- Underground detail
- Overhead detail
- Narrow gauge railway
- Multi-track railway
- Single track railway
- County boundary (England only)
- Civil, parish or community boundary
- District, Unitary, Metropolitan, London Borough boundary
- Constituency boundary
- Area of wooded vegetation
- Non-coniferous trees
- Coniferous trees (scattered)
- Coniferous trees (scattered)
- Orchard
- Rough Grassland
- Scrub
- Water feature
- MHW(S) Mean high water (springs)
- Telephone line (where shown)
- BM 123.45 m Bench mark (where shown)
- Point feature (e.g. Guide Post or Mile Stone)
- Site of (antiquity)
- General Building
- Non-coniferous trees
- Positioned tree
- Coppice or Osiers
- Heath
- Marsh, Salt Marsh or Reeds
- Flow arrows
- MLW(S) Mean low water (springs)
- Electricity transmission line (with poles)
- Triangulation station
- Pylon, flare stack or lighting tower
- Glasshouse
- Important Building



### Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Yorkshire	1:10,560	1894	2
Yorkshire	1:10,560	1907	3
Yorkshire	1:10,560	1930	4
Yorkshire	1:10,560	1933	5
Yorkshire	1:10,560	1938	6
Yorkshire	1:10,560	1938 - 1948	7
Yorkshire	1:10,560	1948	8
Ordnance Survey Plan	1:10,000	1955 - 1956	9
Ordnance Survey Plan	1:10,000	1966 - 1967	10
Ordnance Survey Plan	1:10,000	1974	11
Ordnance Survey Plan	1:10,000	1981 - 1984	12
Ordnance Survey Plan	1:10,000	1989	13
Ordnance Survey Plan	1:10,000	1990 - 1993	14
10K Raster Mapping	1:10,000	2000	15
10K Raster Mapping	1:10,000	2008	16

### Historical Map - Slice A



### Order Details

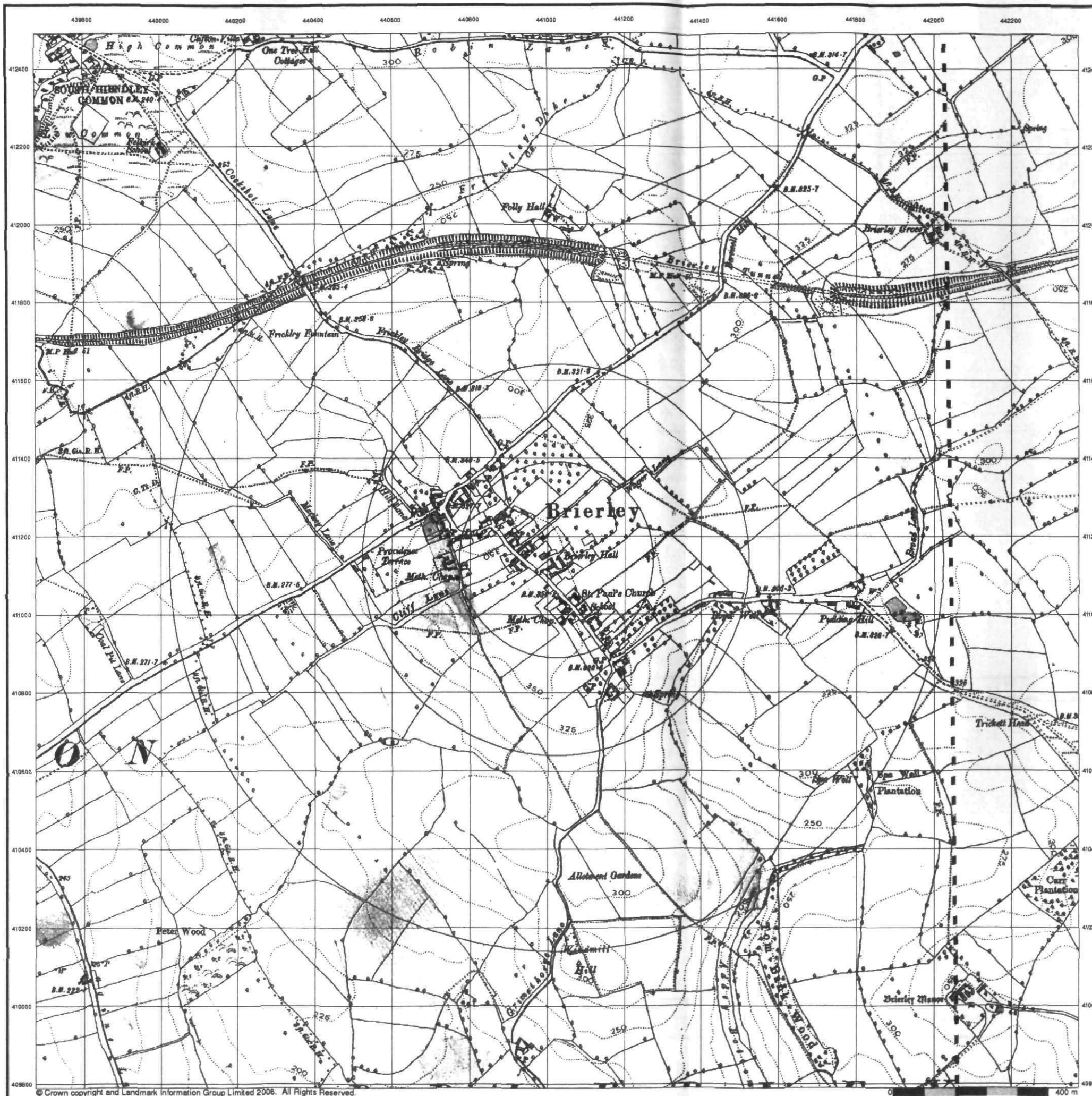
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### Site Details

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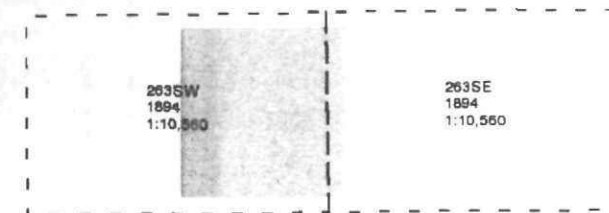
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 Fax: 0844 844 9951  
 Web: www.envirocheck.co.uk



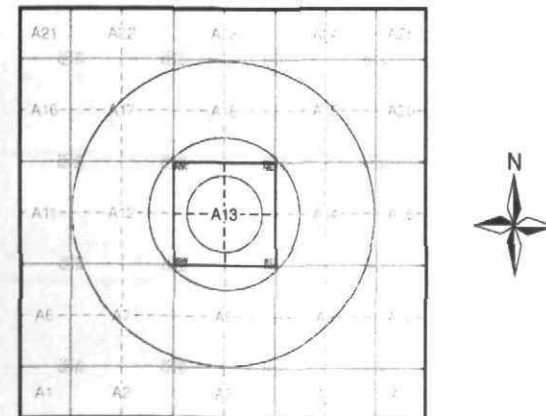
**Yorkshire**  
**Published 1894**  
**Source map scale - 1:10,560**

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

**Map Name(s) and Date(s)**



**Historical Map - Slice A**



**Order Details**

Order Number: 27703209\_1\_1  
 Customer Ref: 4942  
 National Grid Reference: 441020, 411140  
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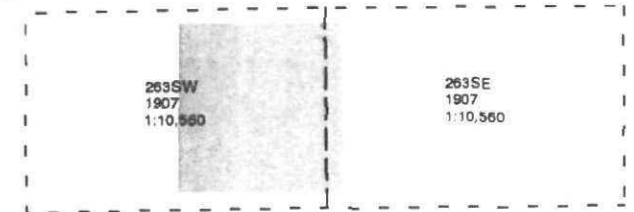
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Yorkshire  
Published 1907

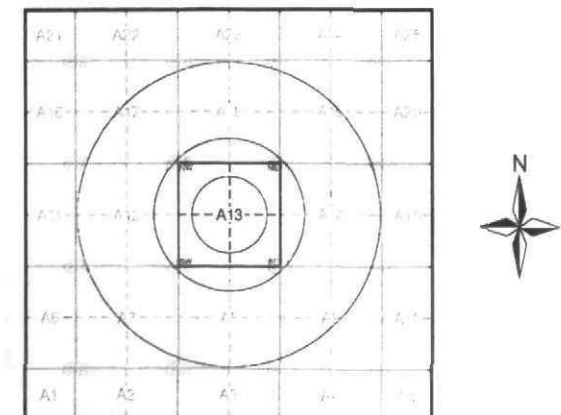
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### Map Name(s) and Date(s)



### Historical Map - Slice A

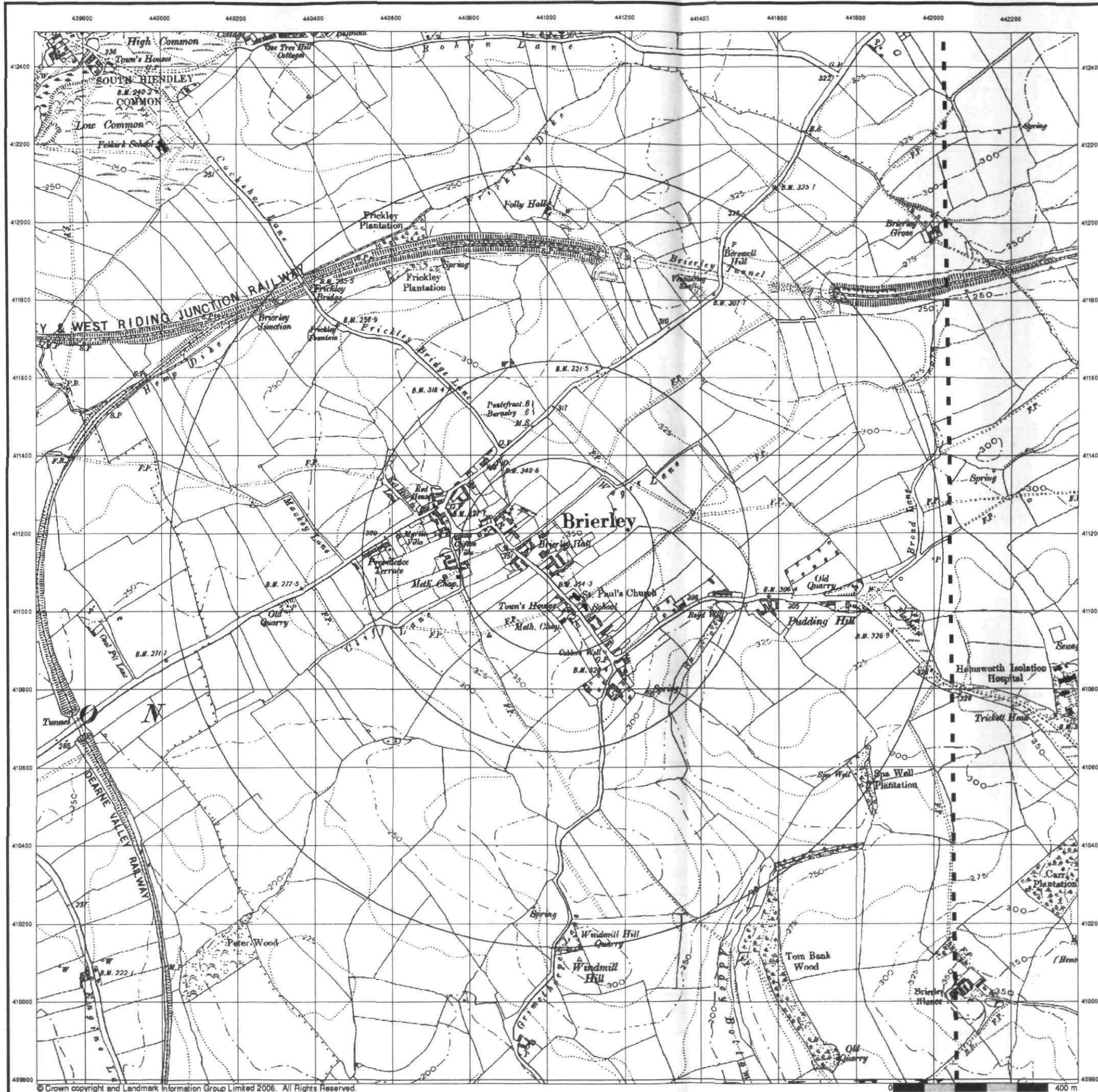


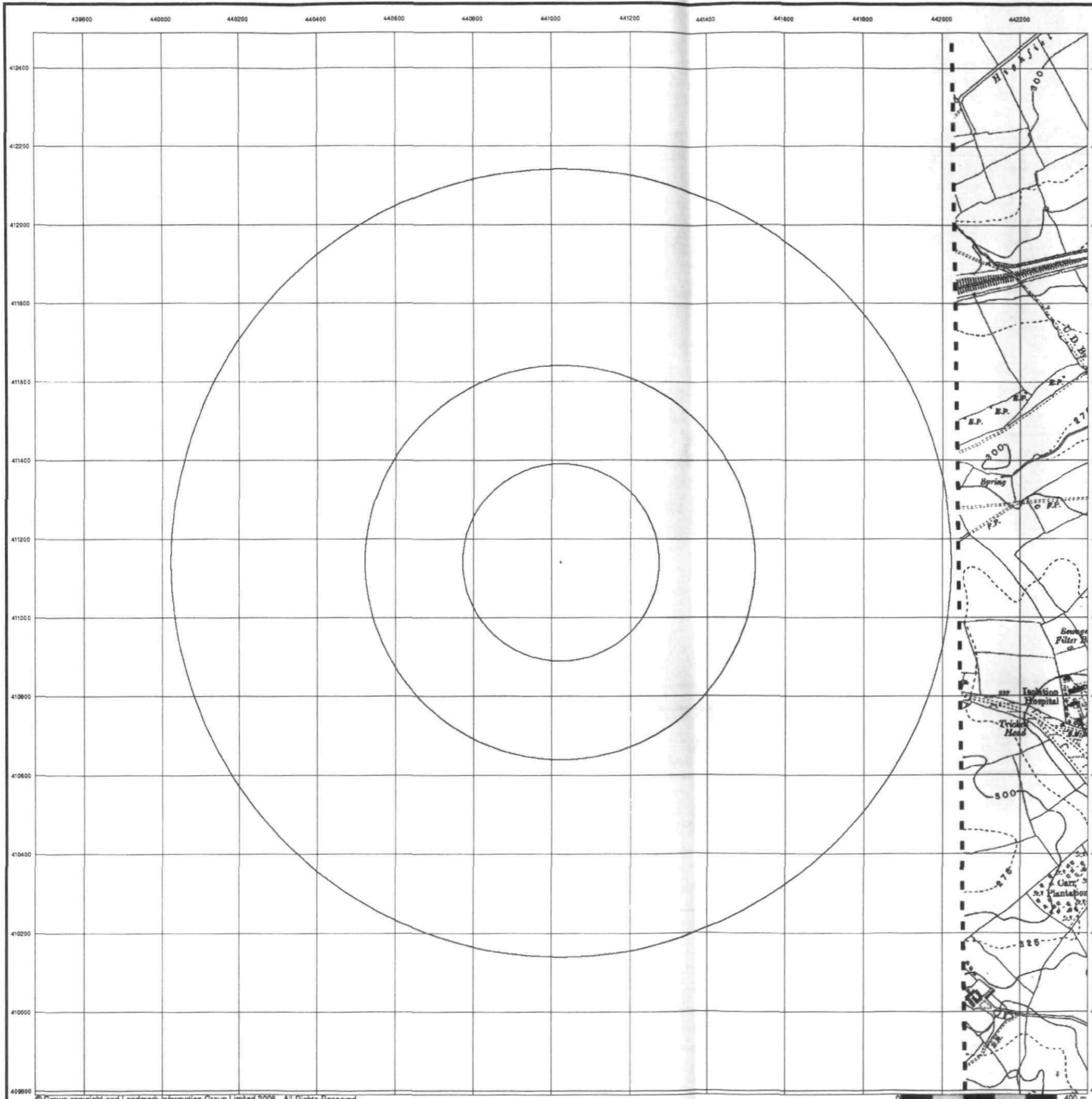
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### Site Details

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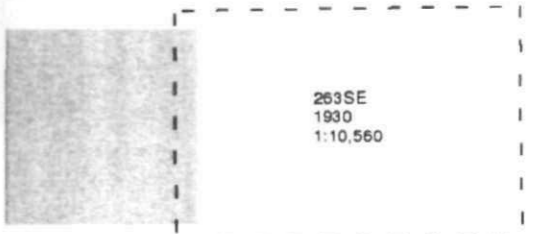




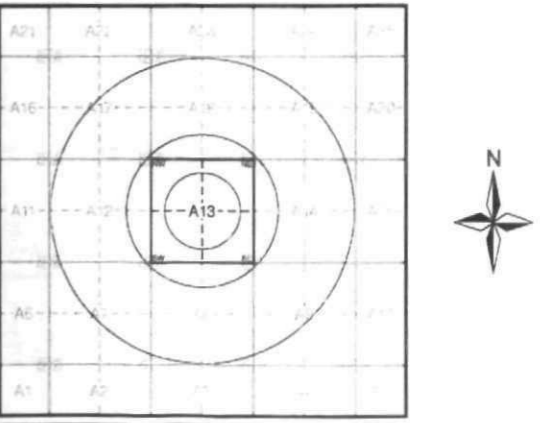
**Yorkshire**  
**Published 1930**  
**Source map scale - 1:10,560**

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

**Map Name(s) and Date(s)**



**Historical Map - Slice A**



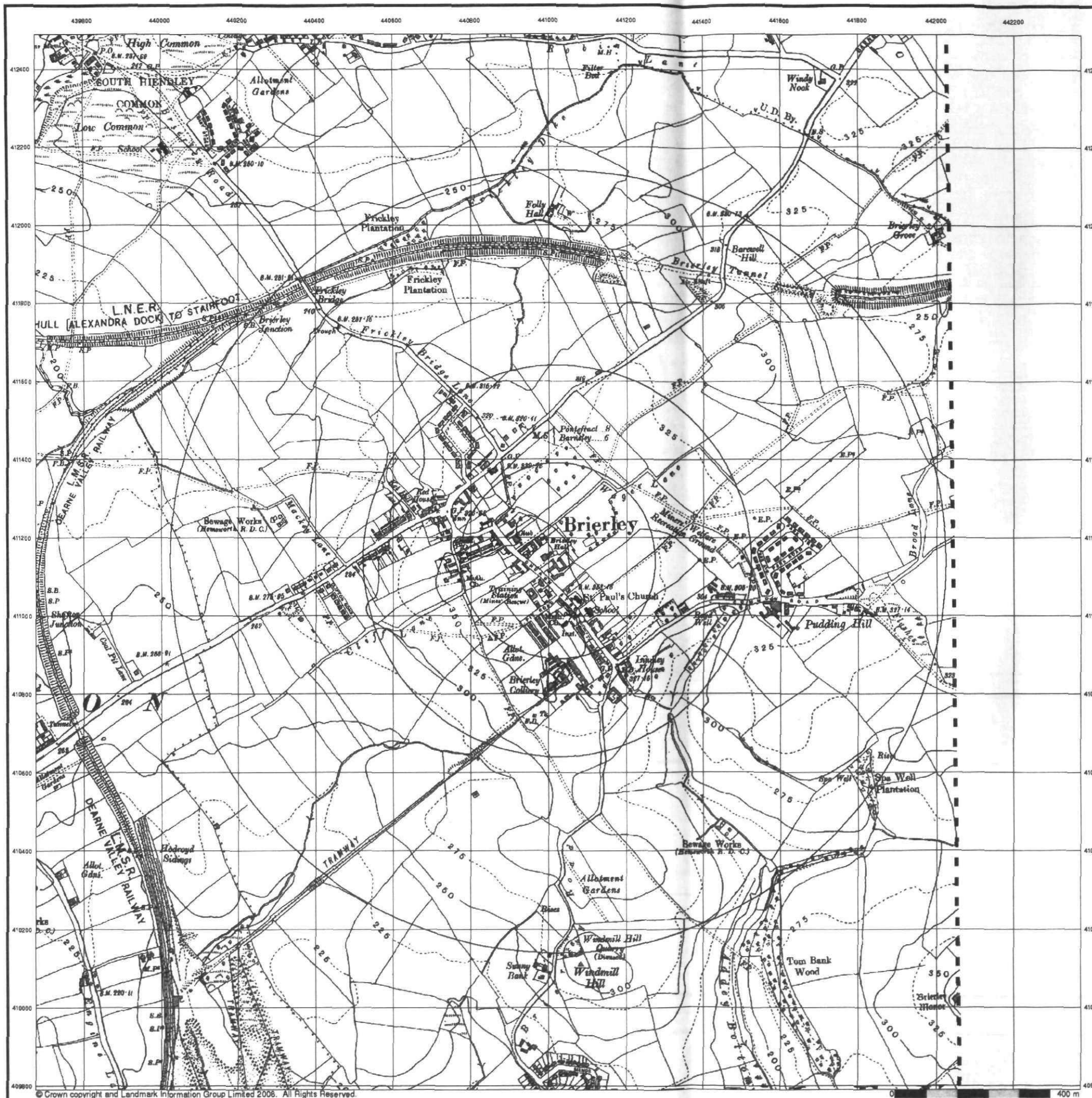
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Brierley Hall, Church Street, Brierley, BARNSELY, South Yorkshire, S72 9HT

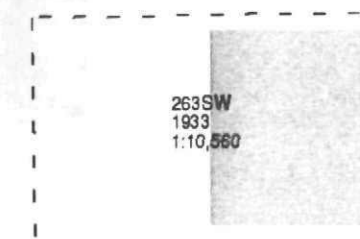
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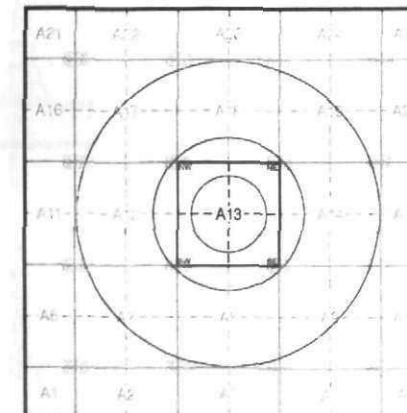
**Yorkshire**  
**Published 1933**  
**Source map scale - 1:10,560**

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**Map Name(s) and Date(s)**



**Historical Map - Slice A**

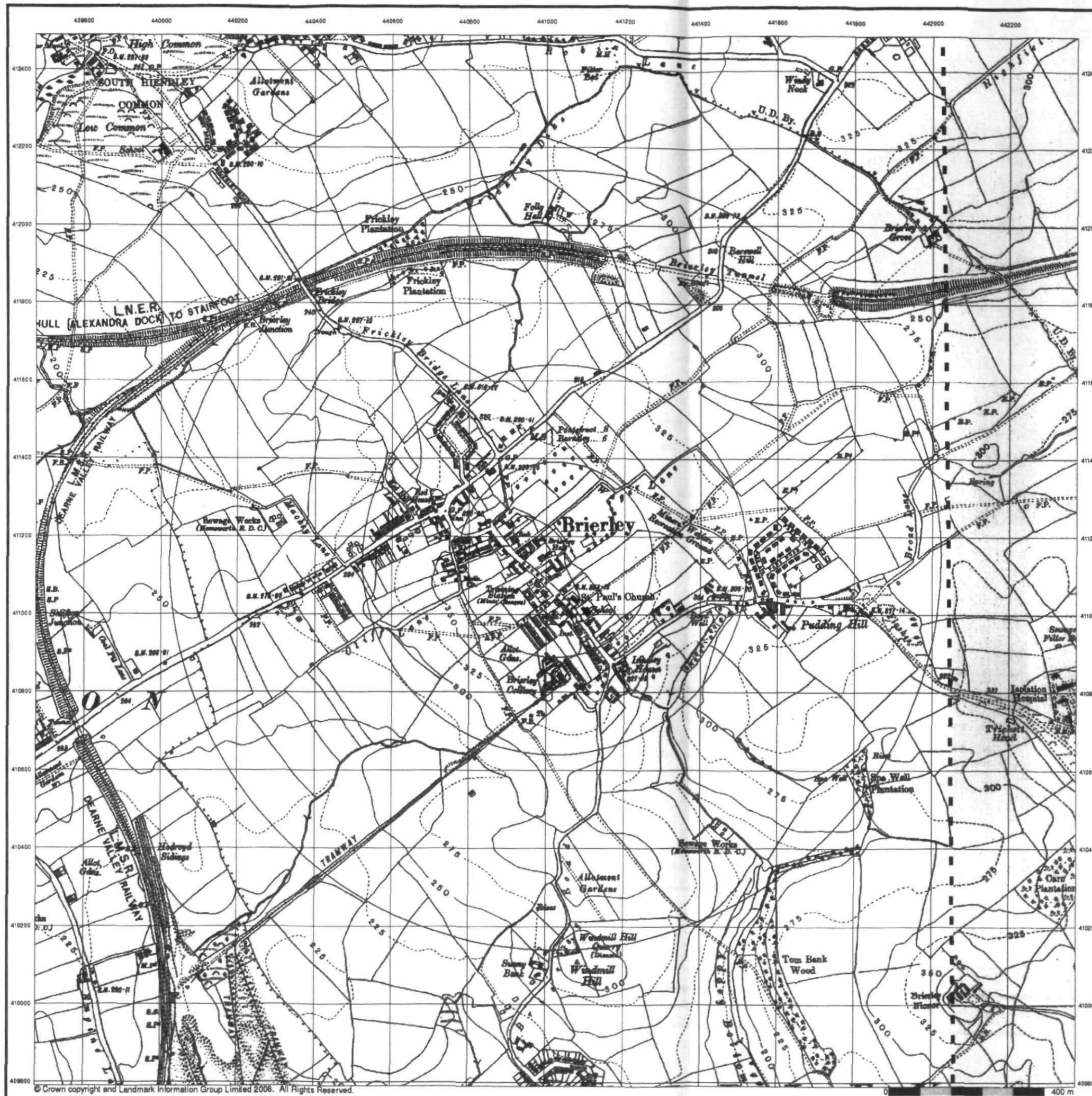


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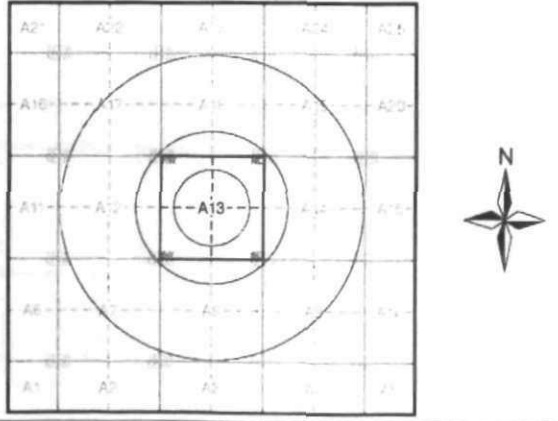
**Yorkshire**  
**Published 1938**  
**Source map scale - 1:10,560**

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**Map Name(s) and Date(s)**

263SW 1938 1:10,560	263SE 1938 1:10,560
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**Historical Map - Slice A**

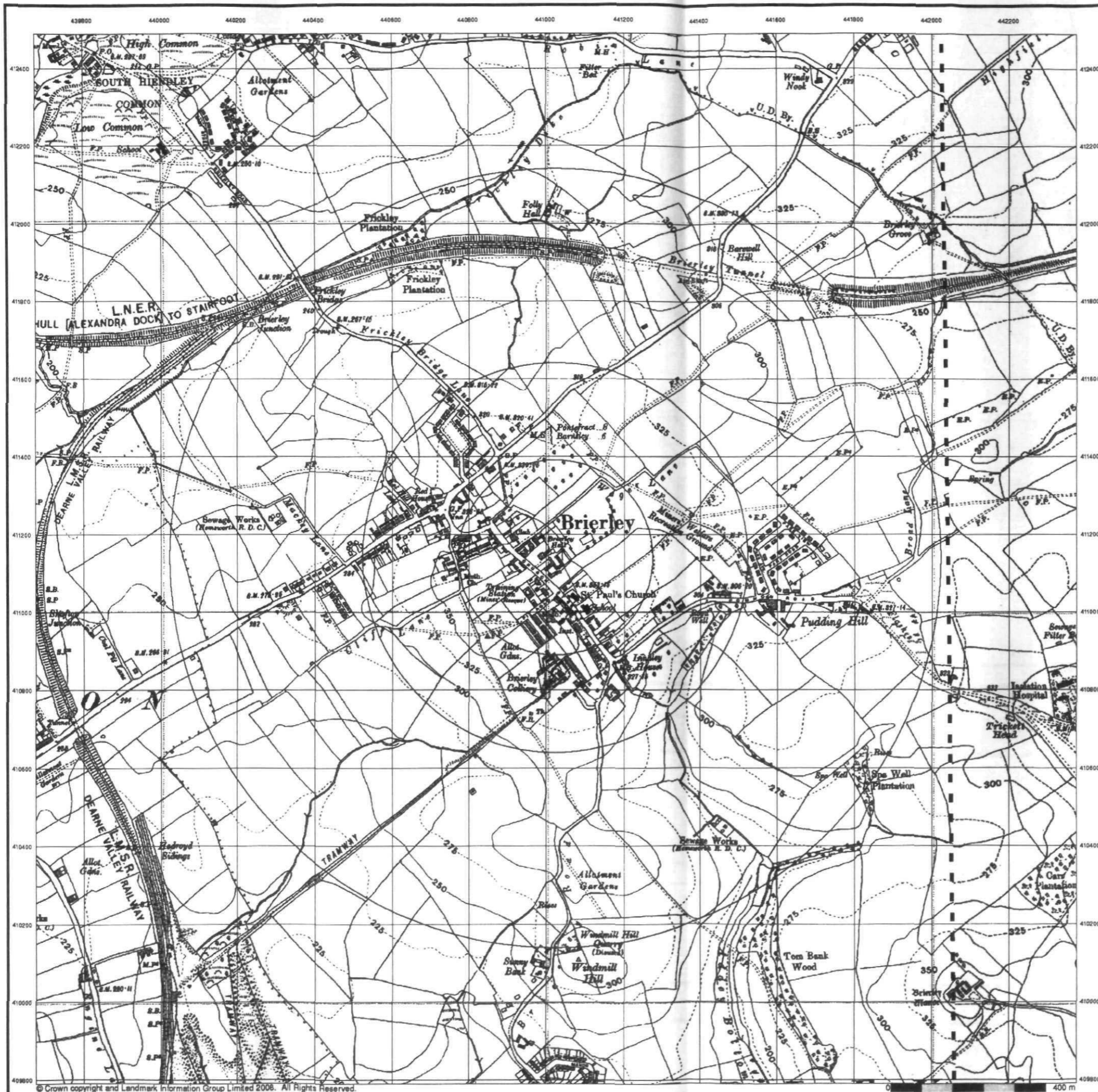


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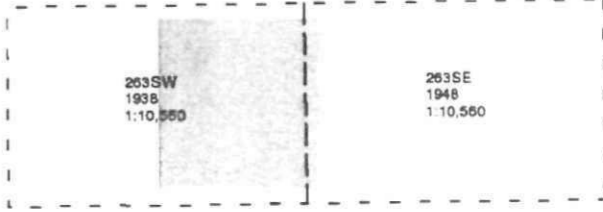
Brierley Hall, Church Street, Brierley, BARNSELY, South Yorkshire, S72 9HT



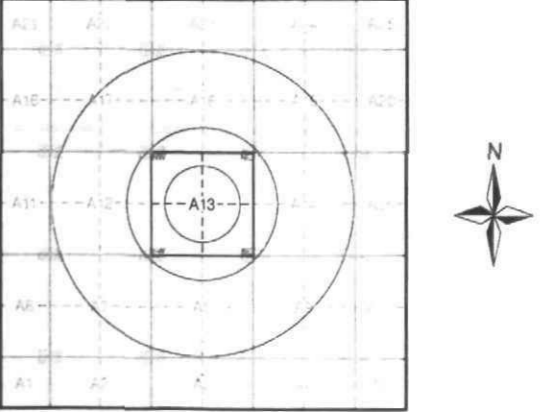
**Yorkshire**  
**Published 1938 - 1948**  
**Source map scale - 1:10,560**

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

**Map Name(s) and Date(s)**



**Historical Map - Slice A**



**Order Details**

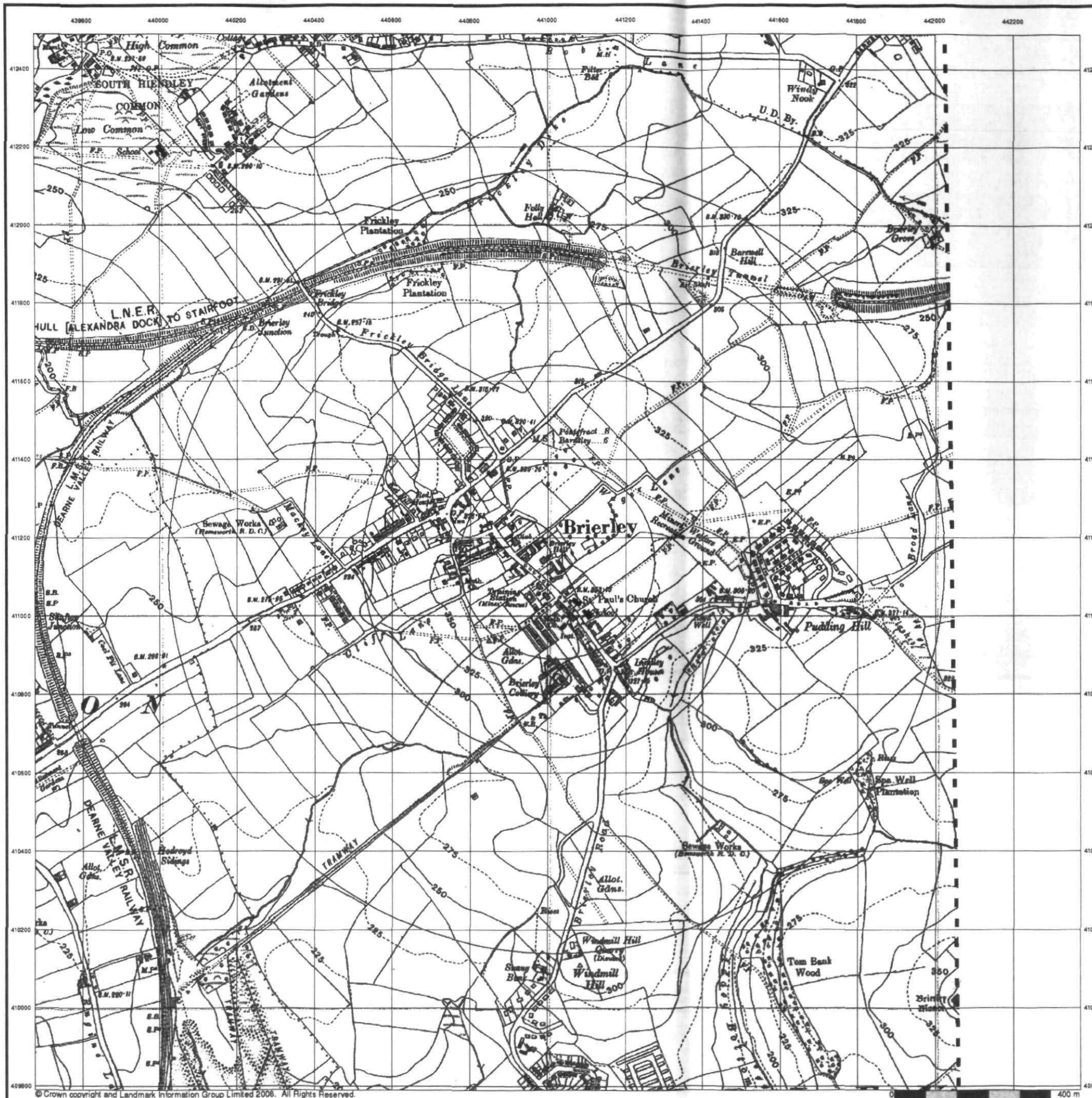
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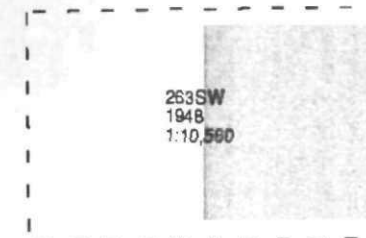
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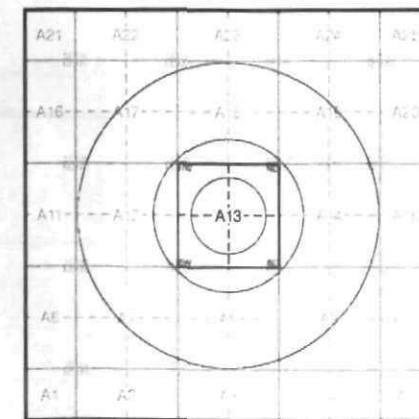
**Yorkshire**  
**Published 1948**  
**Source map scale - 1:10,560**

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

**Map Name(s) and Date(s)**



**Historical Map - Slice A**



**Order Details**

Order Number: 27703209\_1\_1  
Customer Ref: 4942  
National Grid Reference: 441020, 411140  
Slice: A  
Site Area (Ha): 0.01  
Search Buffer (m): 1000

**Site Details**

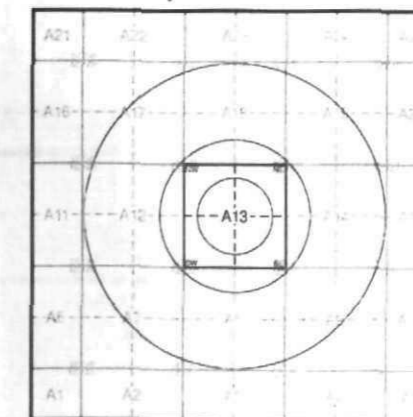
Brierley Hall, Church Street, Brierley, BARNSELY, South Yorkshire, S72 9HT

**Ordnance Survey Plan  
 Published 1955 - 1956**
**Source map scale - 1:10,000**

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

**Map Name(s) and Date(s)**

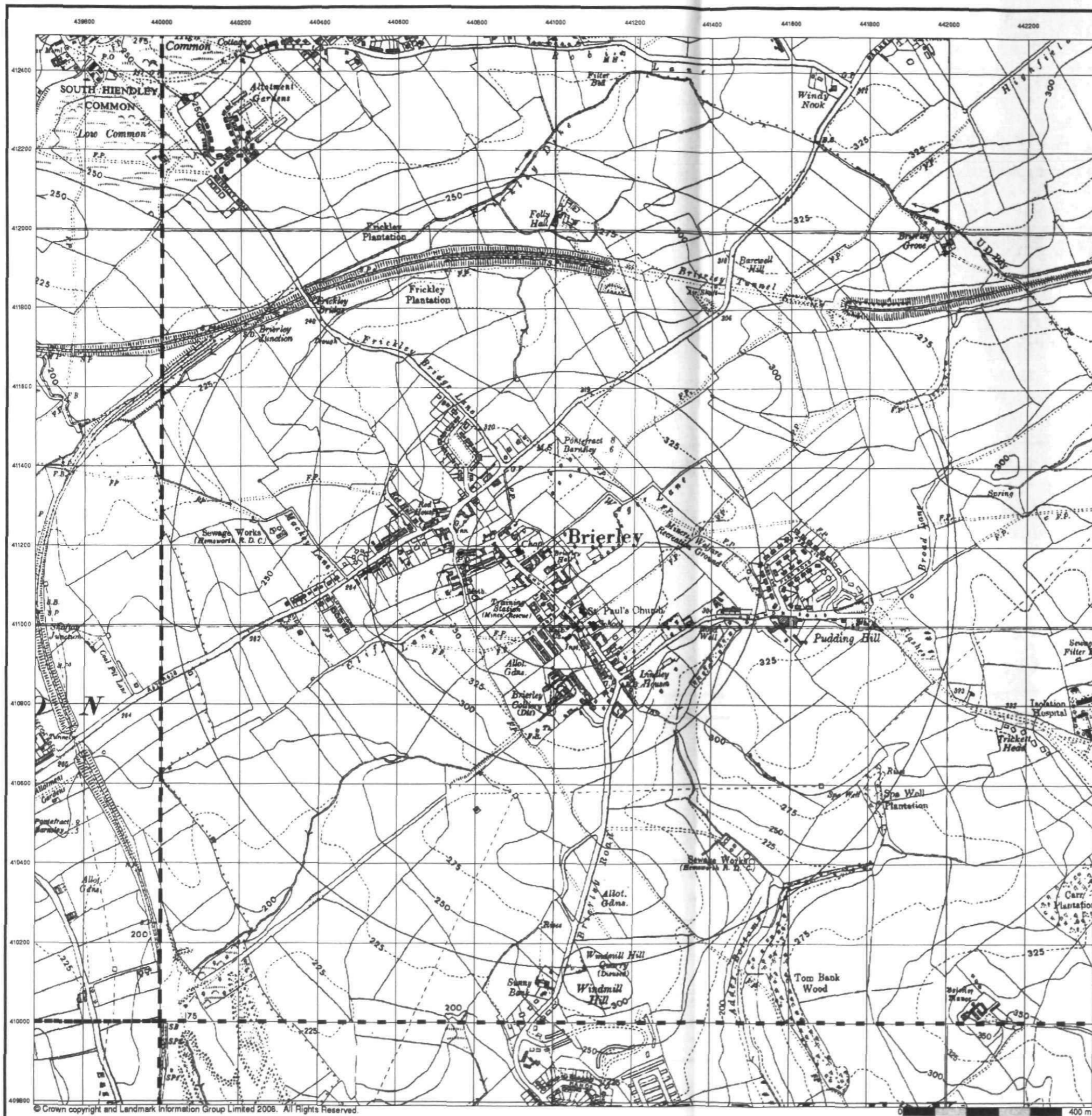
SE31 SE 1956 1:10,560	SE41 SW 1956 1:10,560
SE30 NE 1955 1:10,560	SE40 NW 1955 1:10,560

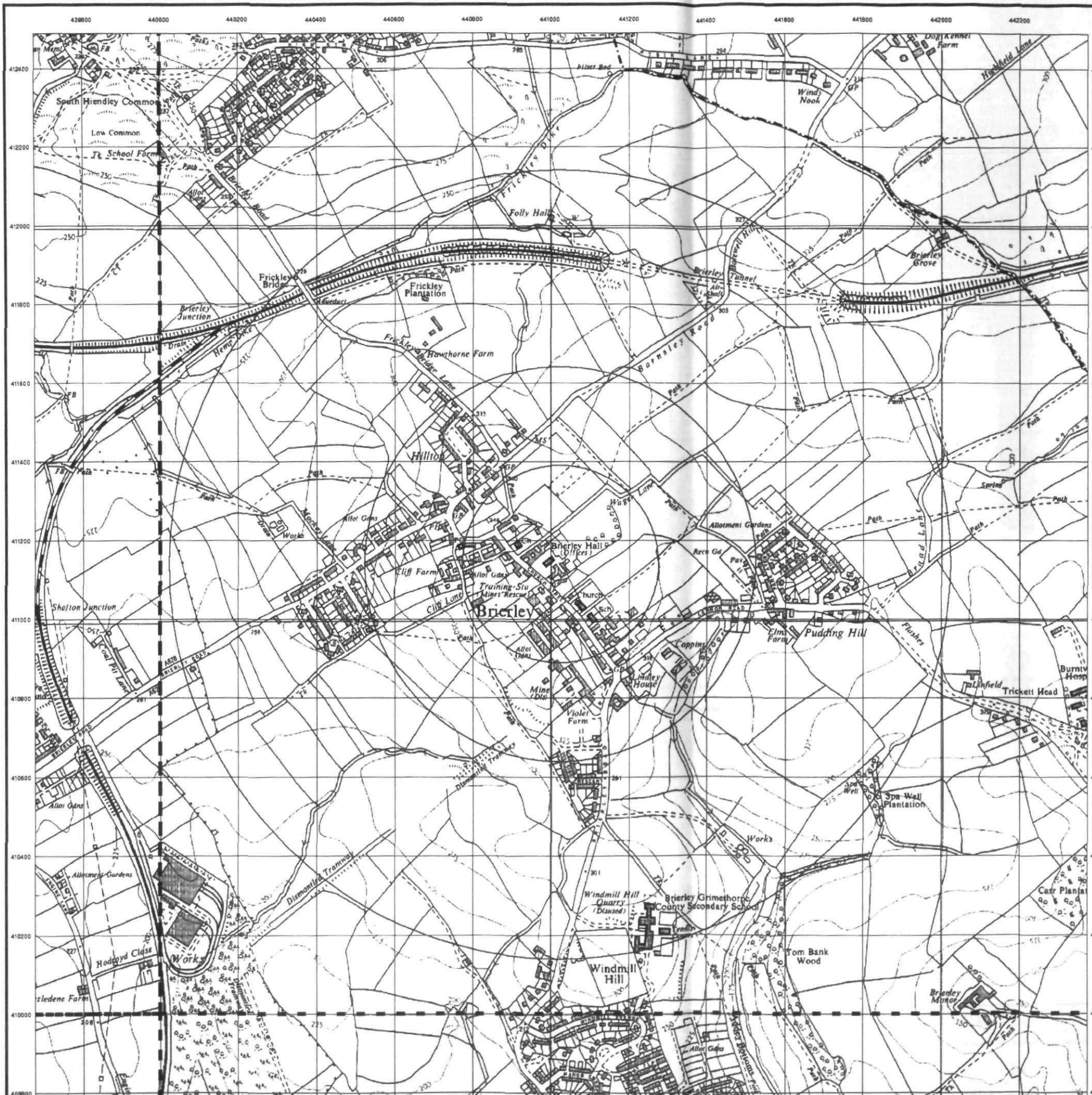
**Historical Map - Slice A**

**Order Details**

Order Number: 27703209\_1\_1  
 Customer Ref: 4942  
 National Grid Reference: 441020, 411140  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 1000

**Site Details**

Brierley Hall, Church Street, Brierley, BARNSELY, South Yorkshire, S72 9HT





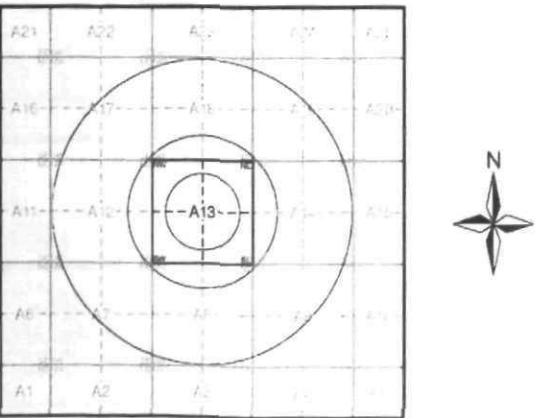
**Ordnance Survey Plan**  
**Published 1966 - 1967**  
**Source map scale - 1:10,000**

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

**Map Name(s) and Date(s)**

SE31SE	SE41SW
1966	1967
1:10,560	1:10,560
SE30NE	SE40NW
1966	1967
1:10,560	1:10,560

**Historical Map - Slice A**

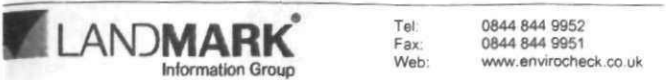


**Order Details**

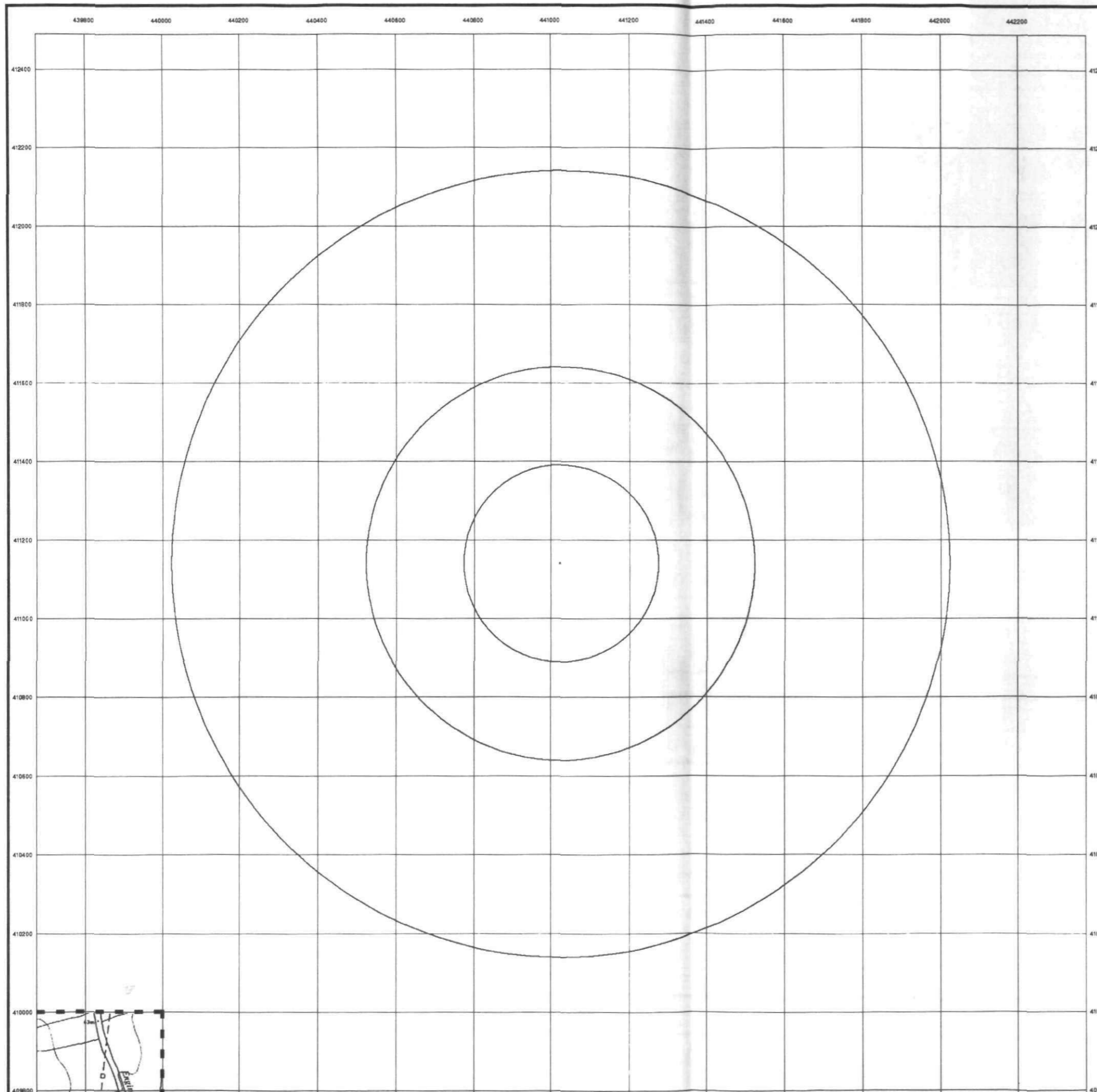
Order Number: 27703209\_1\_1  
 Customer Ref: 4942  
 National Grid Reference: 441020, 411140  
 Slice: A  
 Site Area (Ha): 0.01  
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**Site Details**

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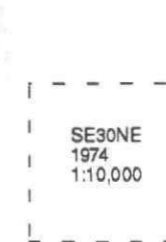


**Ordnance Survey Plan  
Published 1974**

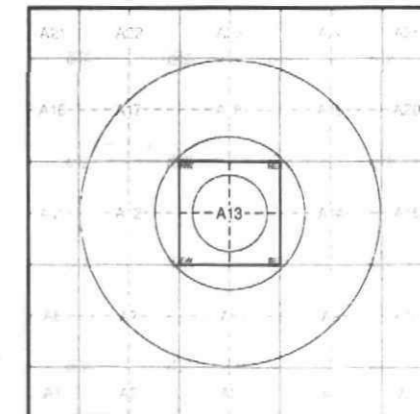
**Source map scale - 1:10,000**

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

**Map Name(s) and Date(s)**



**Historical Map - Slice A**



**Order Details**

Order Number: 27703209\_1\_1  
 Customer Ref: 4942  
 National Grid Reference: 441020, 411140  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 1000

**Site Details**

Brierley Hall, Church Street, Brierley, BARNSELY, South Yorkshire, S72 9HT



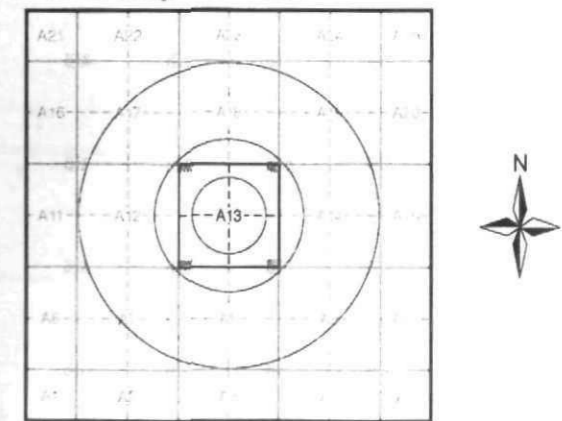
**Ordnance Survey Plan  
Published 1981 - 1984  
Source map scale - 1:10,000**

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

**Map Name(s) and Date(s)**

SE31 SE 1981 1:10,000	SE41 SW 1984 1:10,000
SE30 NE 1984 1:10,000	SE40 NW 1983 1:10,000

**Historical Map - Slice A**



**Order Details**

Order Number: 27703209\_1\_1  
 Customer Ref: 4942  
 National Grid Reference: 441020, 411140  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 1000

**Site Details**

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



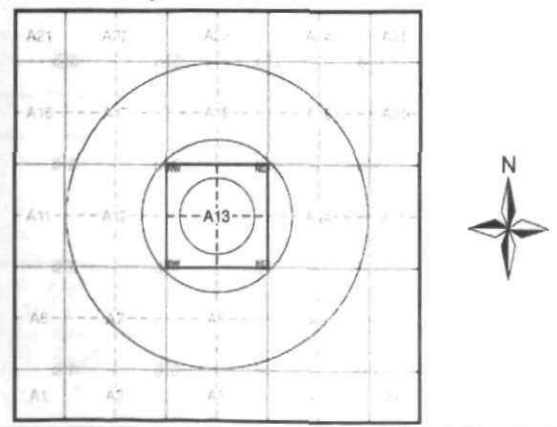
**Ordnance Survey Plan  
Published 1989  
Source map scale - 1:10,000**

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

**Map Name(s) and Date(s)**

- SE41SW  
1989  
1:10,000
- SE40NW  
1989  
1:10,000

**Historical Map - Slice A**



**Order Details**

Order Number: 27703209\_1\_1  
 Customer Ref: 4942  
 National Grid Reference: 441020, 411140  
 Slice: A  
 Site Area (Ha): 0.01  
 Search Buffer (m): 1000

**Site Details**

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 Web: www.envirocheck.co.uk

**Ordnance Survey Plan**
**Published 1990 - 1993**
**Source map scale - 1:10,000**

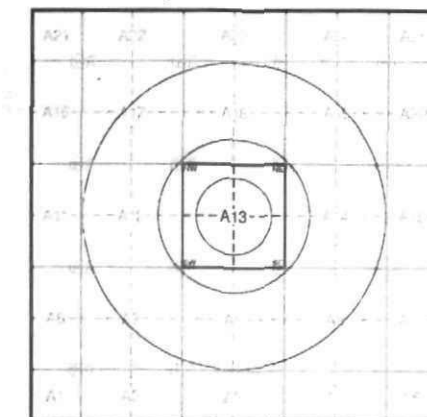
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

**Map Name(s) and Date(s)**

SE31 SE
1990
1:10,000

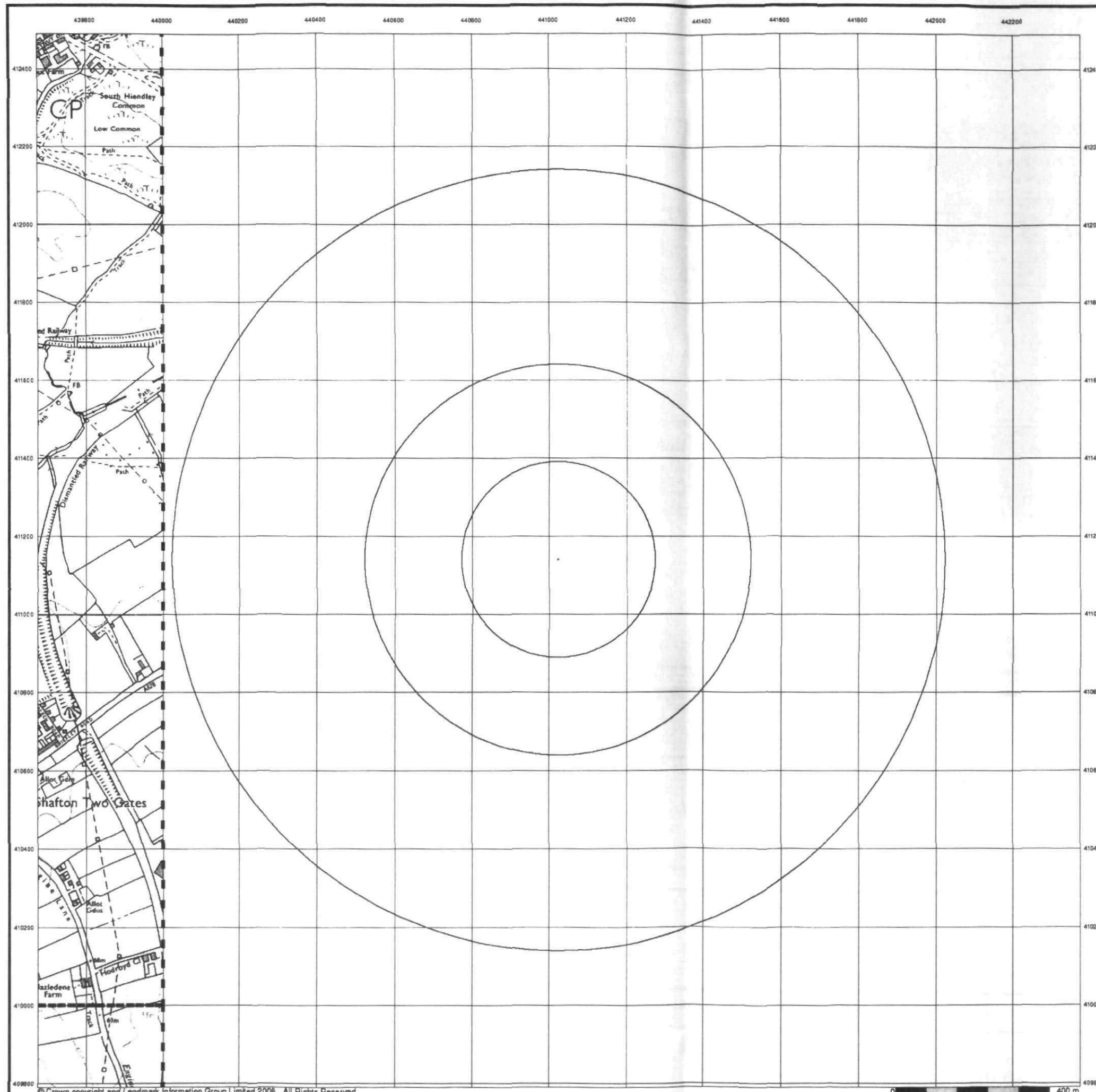
SE30 NE
1993
1:10,000

**Historical Map - Slice A**

**Order Details**

Order Number:	27703209_1_1
Customer Ref:	4942
National Grid Reference:	441020, 411140
Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	1000

**Site Details**

Brierley Hall, Church Street, Brierley, BARNSELY, South Yorkshire, S72 9HT



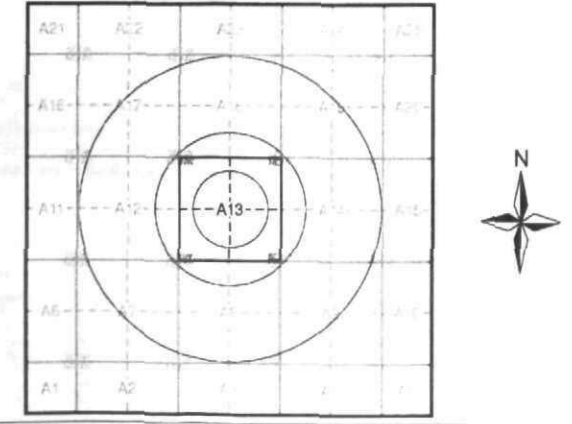
**10k Raster Mapping**  
**Published 2000**  
**Source map scale - 1:10,000**

The historical maps shown were produced from the Ordnance Survey's 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

**Map Name(s) and Date(s)**

SE31 SE 2000 1:10,000	SE41 SW 2000 1:10,000
SE30 NE 2000 1:10,000	SE40 NW 2000 1:10,000

**Historical Map - Slice A**



**Order Details**

Order Number: 27703209\_1\_1  
Customer Ref: 4942  
National Grid Reference: 441020, 411140  
Slice: A  
Site Area (Ha): 0.01  
Search Buffer (m): 1000

**Site Details**

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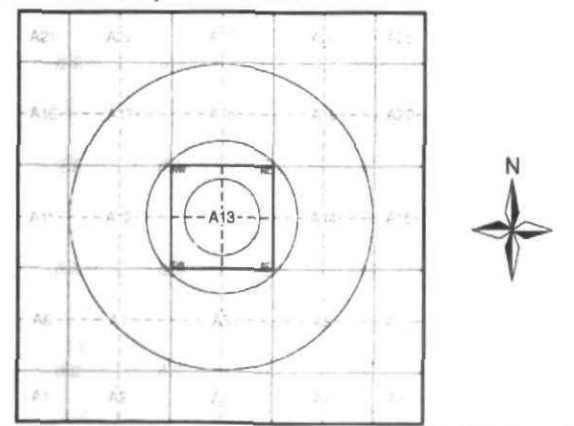
**10k Raster Mapping**  
**Published 2008**  
**Source map scale - 1:10,000**

The historical maps shown were produced from the Ordnance Survey's 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

**Map Name(s) and Date(s)**

SE31SE 2008 1:10,000	SE41SW 2008 1:10,000
SE30NE 2008 1:10,000	SE40NW 2008 1:10,000

**Historical Map - Slice A**



**Order Details**

Order Number: 27703209\_1\_1  
Customer Ref: 4942  
National Grid Reference: 441020, 411140  
Slice: A  
Site Area (Ha): 0.01  
Search Buffer (m): 1000

**Site Details**

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