Eastwood & Partners
CONSULTING ENGINEERS

GEOTECHNICAL AND GEO-ENVIRONMENTAL SITE INVESTIGATION

THE ROCK, GREEN MOOR BARNSLEY

FOR

SHEPHERD HOMES LIMITED

ISSUE 1



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1.0 EXECUTIVE SUMMARY

1. This report presents the findings of a geotechnical and geo-environmental site investigation carried out by Eastwood & Partners for Shepherd Homes Limited.

2. The site is that of the former 'The Rock' public house and associated car parking and garden area, located on the southern side of Green Moor Road, in Green Moor, Barnsley. It is around 0.45 hectares in area.

3. Green Moor Road forms the site's northern boundary. Beyond the other boundaries the ground rises, the western boundary being a quarry face between approximately 6 m and 9 m in height.

4. The site is located within the boundaries of a historical, backfilled sandstone quarry.

5. Precautions against the effects of shallow coal mining should not be required.

6. The site overlies a Secondary A aquifer and is not within 2 km of a Groundwater Source Protection Zone.

7. The nearest surface water course is the river Don around 300 m north of the site.

8. Radon precautions are not required.

9. The site and surrounding area has been quarried, although this seems to have been substantially complete prior to 1855. Backfilling of some areas is evident from the current ground levels. The backfill appears to have been in place for a considerable number of years and is likely to comprise natural materials from the quarrying activities. Made ground up to 4.0 m deep was encountered across the site. This is predominantly quarry backfill of sandstone cobbles and boulders in a clayey sand and did not contain significant biodegradable material. Due to the nature and age of the backfill significant generation of ground gas is not expected and gas monitoring or protective measures are not considered to be required.

10. The site is not within a flood plain.

11. Made ground was encountered in nine of the ten trial pits. This is predominantly quarry backfill of sandstone cobbles and boulders in a clayey sand. Sandstone was encountered beneath the quarry backfill between 2.5 m and 4.0 m. The sandstone was encountered at 1.2 m in the remaining trial pit.

12. The most appropriate foundation solution will be to excavate the top 1 m of made ground beneath the plots and then re-compact this material. 450 mm thick reinforced strip footings founded at 900 mm depth will then be appropriate. An allowable bearing capacity of at least 150 kN/m² would be expected to be achieved post compaction of the made ground.

13. Reinforced suspended slabs or precast concrete floors would be appropriate.

14. Connection to the 300 mm combined sewer in Green Moor Road opposite the site entrance is expected to be the most appropriate solution for surface water drainage.

15. Provided that the made ground, when excavated, is not left exposed to the air for an extended period and then replaced near concrete in the ground, it is considered that a maximum classification of DS3 AC3 could be taken.

16. It is considered that a minimum of 300 mm to 450 mm of suitable subsoil and 150 mm of topsoil will need to be placed in garden areas to provide a suitable growing medium, tree pits may need to be deeper.

17. At this stage you should assume that the topsoil will not be able to remain at the surface in garden areas and a capping of 300 mm would need to be placed over it were it to be retained on site.

18. The conclusions made in this report in relation to contamination are subject to agreement by the approving bodies, the Local Authority and your warranty provider.

2.0 INTRODUCTION

2.1 Terms of Reference

This report presents the findings of a geotechnical and geo-environmental site investigation carried out by Eastwood & Partners (Consulting Engineers) Ltd for, and on the instructions of, Shepherd Homes Limited. Any other parties using the information in this report do so at their own risk and any duty of care is excluded.

2.2 Context

Eastwood & Partners completed a desk top study of the site for Chris Carr Associates in August 2006. No other investigations are known to exist, although there was evidence of previous trial pits when we visited site.

2.3 Aims and Objectives

The aims and objectives of this investigation were as follows.

- Assimilate Phase 1 data to derive an outline conceptual model identifying potential contaminants, pathways and receptors, as well as possible linkages between these;
- Detail the ground conditions and their geotechnical properties enabling outline foundation proposals to be made;
- Carry out tiered risk assessment to establish the likely risks to future receptors, involving the use of generic assessment criteria and where unacceptable risks are identified, site specific assessment criteria within a detailed quantitative risk assessment;
- Identify feasible remediation options if unacceptable risks are highlighted; and
- Develop an appropriate remediation strategy where remediation is required.

2.4 Scope of Investigation

This document is split into two sections. These constitute the findings of the Phase 1 and Phase 2 investigations, consecutively.

2.4.1 Phase 1

The Phase 1 investigation involved a review of information extracted from published documentation as well as that obtained from a site reconnaissance. Information regarding the current and former

land uses both on and surrounding the site, as well as the environmental sensitivity of the site location as determined by factors including geology, hydrogeology and hydrology have been examined.

Information analysed in this section of the report has been obtained from a variety of sources and included the following:

- An Envirocheck Report; and
- Geological maps and associated geological memoirs

2.4.2 Phase 2

This part of the investigation consisted of intrusive works. The findings were used to test the conceptual model and produce a final risk assessment.

The intrusive works comprised trial pits, which were excavated to enable:

- Examination of the upper few metres of ground;
- Assessment of any contamination identified using visual and olfactory methods; and
- Collection of samples for geotechnical and chemical testing.

2.5 Limitations of Investigation

This report is based on the assumption that the site will be developed with two to four storey houses or apartments of conventional construction and that existing ground levels will not alter significantly. If this is not the case, then the advice given in this report may not be appropriate.

Where assessments of site areas affected in particular ways are given, these are approximate. All information, comments and opinions given in this report are based on the ground conditions encountered during the site work, on the results of laboratory testing carried out as part of the investigation and information gained from a historical, geological and environmental desk study. However, there may be conditions at the site that have not been taken into account, such as unpredictable soil strata and water conditions between or below investigation points.

This report considers the ground and groundwater and does not cover any buildings or their fabric. Generally, testing has only been carried out for contaminants identified as potentially present with no assessment made of biological contamination. Risks to ecological receptors, such as bats, have not been considered.

3.0 THE SITE

3.1 Description

The site is that of the former 'The Rock' public house and associated car parking and garden area. It is located on the southern side of Green Moor Road, in Green Moor, Barnsley. It is around 0.45 hectares and is centred on grid reference SE 4281 9430 (428190, 399430).

Green Moor Road forms the site's northern boundary. Beyond the other boundaries the ground rises, the western boundary being a quarry face between approximately 6 m and 9 m in height. Stone walls are located along the majority of the northern and eastern boundaries, being partially collapsed in places on the eastern boundary.

The footprint of 'The Rock' public house, now demolished, covers the eastern part of the site. Ground slabs, tiles and items from the pub are still present in this footprint. There is a level car park in the centre, with grassed hummocky ground to the north and south of this. The southern grassed area was formerly a children's play area and concrete surrounds for a sand pit and slide are present, as well as swings and plastic toys. Also present on this southern portion of the site is the metal frame for a large skip. Dumped debris such as glass and timber is present on the southern edge of the car park.

Small housing developments surround the site on the elevated ground to the west and south east, and there is a public footpath to the west. An historic well (belonging to Hunshelf Parish Council) is present just beyond the northern boundary.

The site is situated on top of a hill and is set slightly below Delph Mews which runs parallel with its eastern boundary and Green Moor Road to the north. Housing is also present at higher level on its southern and western sides.

The *'Exploratory Hole Location Plan'*, drawing 33849/002 revision A, in Appendix 1, shows the features described. Some photographs are also included in this Appendix.

3.2 History

Historical Ordnance Survey maps have been reviewed to assess the previous use of the site and surrounding area. Copies of the maps are presented in Appendix 2.

3.2.1 The Site

The First Edition Ordnance Survey map, dated 1855, shows that the site is already occupied by The Rock Inn. The public house is located in the northernmost part of a quarry named Green Moor Delf, which appears to have already been worked to much of its eventual extent.

The 1893 map is to a larger scale and shows a pump in the south east of the site, of which no trace remains now and is not shown after the 1939 map.

With the exception of changes to the small ancillary buildings there appears to have been little change to the layout of the site.

We understand that the public house was demolished at some point between 2006 and 2011.

3.2.2 The Surrounding Area

The First Edition Ordnance Survey map, from 1855, shows the surrounding area, outside Green Moor Delf quarry, to be agricultural fields and woodland.

The larger scale 1893 map shows an old quarry beyond the site's north western corner and quarry walls north of the site on the other side of Green Moor Road. There were only a few buildings comprising the village of Green Moor at this time.

With the abandonment of quarrying, housing has appeared in the past 40 years on land to the west, above the quarry face, and south, within formerly quarried areas. Quarrying seems to have been substantially complete prior to 1855, although the maps suggest small scale continuance until the early 20th Century, with piles of overburden/waste moving in location and size.

A Tip, labelled as disused is shown approximately 20 m north north west of the site on the 1993 map.

A small tank (around 2 m by 1 m) is shown approximately 205 m south of the south western corner of the site on the 1959 and 1993 maps. This appears to be associated with a sports field. This is at a distance where it would not be expected to affect the site.

3.3 Geology

The British Geological Survey map Sheet 282 SW (1:10,560 scale) shows the solid geology beneath the site to be Greenmoor Rock, a sandstone described in the Barnsley geological memoir as a fine grained, thickly-bedded, non-flaggy sandstone with occasional ironstone nodules and blue grey when fresh. The Greenmoor rock is inferred in this area to be 30 m thick, but the memoir notes

that only the top 12 m has been worked on Green Moor. The strata are expected to dip to the north east.

No faults or drift superficial deposits are shown on the site.

3.4 Hydrogeology

3.4.1 Groundwater Vulnerability

The site overlies a Secondary A aquifer comprising permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.

3.4.2 Groundwater Abstractions

The Envirocheck report, in Appendix 2, indicates that there are no groundwater abstractions within 400 m of the site.

3.5 Hydrology

The Envirocheck report states there are no surface water features within 250 m of the site. The Ordnance Survey maps indicate that the nearest surface water feature is the river Don, around 300 m to the north of the site.

There are no Groundwater Source Protection Zones within 2 km of the site.

The Envirocheck report indicates that there are no surface water abstractions within 1400 m of the site.

3.6 Mining

3.6.1 Coal

The shallowest coal is the Hard Bed Coal at a depth of approximately 60 m and of roughly 0.2 m in thickness and with associated fireclay approximately 1.2 m thick. Any workings in this should not affect the site. There are no shafts or adits shown in the area on the British Geological Survey map.

A Coal Authority mining report has been obtained. This confirms that the site is not within the zone of likely physical influence from former workings.

3.6.2 Sandstone

The site is located in a historical sandstone quarry.

3.7 Ground Gas

Information obtained from the Environment Agency's website indicates that there are no historical or currently licensed landfills within 250 m of the site. There are, however, two historical landfill sites within 600 m of the site. These are Well Hill Road Quarry, 569 m away to the east, and California Quarry, 536 m to the north. Well Hill Road Quarry's dates of operation and types of waste accepted are unknown, while California Quarry accepted industrial, commercial and liquid/sludge waste between 1977 and 1981. These are at a distance that they would not be expected to affect the site.

The site and surrounding area has been quarried and backfilling of some areas is evident from the current ground levels. The backfill is likely to have been in place for a considerable number of years and is also likely to comprise natural materials from the quarrying activities. Significant generation of ground gas is therefore not expected.

Information provided within BRE 211 states that no radon precautions will be required for residential development on this site.

3.8 Pollution Incidents to Controlled Waters

The Envirocheck report, in Appendix 2, does not list any pollution incidents within 100 m of the site. In 1991 there was a minor incident 197 m south of the site involving sewage pollution to a stream. This would not be expected to be significant.

3.9 Discharge Consents

The Envirocheck report does not record any discharge consents within 500 m of the site.

3.10 Flooding

The site is not shown to be within a flood plain.

4.0 OUTLINE CONCEPTUAL MODEL

The following table details the possible sources and associated contaminants of concern, pathways and receptors, highlighted by the Phase 1 investigation as potentially present.

4.1 Solid or Liquid Contaminants

Table 4.1 – Solid or Liquid Contaminants Outline Conceptual Model

Source	Potential Contaminants	Potential Pathways	Potential Receptors
Made Ground (Quarry backfill)	Commonly encountered contaminants including: metals/metalloids, sulphates, polycyclic aromatic hydrocarbons (PAH) and asbestos.	Ingestion, inhalation, direct contact Migration through ground	Site workers, future residents Plants Concrete products Plastic water supply pipes Secondary A aquifer
Naturally elevated concentrations of contaminants	Naturally occurring contaminants such as arsenic and pyrite (resulting in elevated levels of sulphate), as well as anthropogenically influenced contamination such as PAHs.	Ingestion, inhalation, direct contact Migration through ground	Site workers, future residents Plants Concrete products Plastic water supply pipes Secondary A aquifer

4.2 Ground Gas

Table 4.2 – Ground Gas Outline Conceptual Model

Source	Potential Contaminants	Pathway	Receptor	Risk Assessment
Biodegradable material in quarry backfill potentially present beneath the site and in the surrounding area	Carbon dioxide and methane	Migration through relatively permeable sandstone and overlying sand deposits	Future residents and buildings	Table 8.5 in CIRIA C665 identifies “typical made ground” as representing a very low to low risk and as a typical source of generation leading to a gassing regime falling into Characteristic Situation 1 or 2, which would be considered of a similar order to a Green or Amber 1 gassing regime.

5.0 GROUND INVESTIGATION

5.1 Site Works

We visited site on 2 and 6 June 2011 and excavated 10 trial pits, referenced TP1 to TP10. These reached a maximum depth of 4.0 m below ground level.

Copies of the logs are presented in Appendix 3, and their locations are plotted on the 'Exploratory Hole Location Plan', Drawing number 33849/002 Revision A, in Appendix 1. Some photographs are also included in Appendix 3.

5.2 Laboratory Testing

Disturbed samples were obtained from each of the trial pits and were generally taken of each strata, as well as where any visual or olfactory evidence of potential contamination was recorded. Sampling comprised 1 kg plastic tubs and 250 ml amber glass jars. Chemical testing was undertaken by Chemtest using MCERTs accredited methodologies, where available. Geotechnical testing was completed by Professional Soil Laboratory.

The geotechnical test results are presented in Appendix 4 and discussed in Section 7.0.

The chemical test results are presented in Appendix 5 and discussed in Section 8.0.

6.0 GROUND CONDITIONS

6.1 Surface Covering

A car park, comprising of tarmacadam overlying hardcore, covers the central area of the site (TP5 and TP8 to TP10). The eastern section of the site is covered by the footprint of the Rock Inn (TP1 and TP6) and comprises demolition rubble. The remainder of the site is covered with topsoil, between 0.15 m and 0.5 m thick.

6.2 Made Ground

Beneath the former public house, up to 0.7 m of made ground was encountered comprising concrete and brick rubble. Beneath this was quarry backfill comprising sandstone cobbles and boulders in a clayey sand to a depth of 3.75 m below ground level (bgl), but is possibly deeper as the natural rock was not reached.

All trial pits, with the exception of TP7, encountered quarry backfill, comprising sandstone cobbles and boulders in a clayey sand, starting from depths of between 0.1 m and 0.7 m and extending to depths of 2.5 m to 4.0 m bgl. The thickness of the backfill varied from 2 m to 3.5 m.

6.3 Natural Ground

The natural ground beneath the site was generally found to be slightly clayey gravelly cobbly sand over yellow sandstone. The sandstone was reached under the quarry backfill at a depth of 2.5 m in trial pits TP4 and TP5, 3.75 m in TP6, and 4.0 m bgl in TP10. TP7 found the slightly clayey gravelly cobbly sand at 0.3 to 1.2 m, then the sandstone at 1.2 m bgl.

6.4 Obstructions

A large sandstone boulder, or the edge of a sandstone shelf, was encountered in TP10 between 2.5 m and 2.7 m bgl.

Sandstone was also encountered at the base of five trial pits.

6.5 Groundwater

The table overleaf displays the groundwater observations from this investigation:

Location	Observation	Depth (m bgl)
TP2	Damp backfill	3.0
TP3	Slightly damp at top of backfill	0.15
TP4	Wet at base of backfill	2.5
TP5	Slightly wet backfill	1.7
TP6	Damp backfill	3.4
TP8	Damp backfill on tree side	0.9
TP9	Wet backfill	0.7

6.6 Evidence of Contamination

A layer of dark grey gravelly sand and sandstone boulders with a slight hydrocarbon odour between 0.7 and 1.0 m bgl was encountered in TP6.

7.0 GEOTECHNICAL APPRAISAL

7.1 Foundations

Made ground was encountered in nine of the ten trial pits. This is generally quarry backfill; sandstone cobbles and boulders in clayey gravelly sand. Sandstone was encountered beneath the quarry backfill between 2.5 m and 4.0 m. The sandstone was encountered at 1.2 m in the remaining trial pit.

Two samples of the quarry backfill, taken from TP7 at 1.0 m and TP8 at 1.4 m, were confirmed to be non plastic. The test results (PSL11/1402) are in Appendix 4. Precautions against trees will therefore not be required.

The essentially granular quarry backfill has been in place for very many years. The most appropriate foundation solution will therefore be to excavate the top 1 m of made ground beneath the plots and then re-compact this material. 450 mm thick strip footings reinforced with one layer of B785 mesh founded at 900 mm depth will then be appropriate.

An allowable bearing capacity of at least 150 kN/m² would be expected to be achieved post compaction of the made ground.

7.2 Ground Floors

Reinforced suspended slabs or precast concrete floors would be appropriate.

7.3 Superstructure Precautions

No additional superstructure precautions will be required due to the ground conditions encountered.

7.4 Excavation Problems

The quarry backfill was found to be relatively unstable in trial pits. Support will be required in accordance with current Health & Safety Regulations wherever access is required to trenches deeper than 1.2 m or less where there is risk of collapse.

Sandstone bedrock could be encountered at relatively shallow depth across the site but would be expected to be below the founding depth for the plot footings.

7.5 Obstructions

A large boulder or edge of a quarry shelf was encountered in three of the ten trial pits.

Relic foundations and infrastructure associated with the former public house is likely to be present.

7.6 Roadworks

The made ground encountered in the upper 600 mm generally comprised sand and gravel. This is likely to have a CBR value of at least 5%. It is recommended that this value is used as a guide only and that full scale CBR tests are undertaken along roadways prior to construction so that accurate values can be obtained to satisfy the Local Authority. We also recommend that a contingency for removing and infilling local soft spots is allowed.

7.7 Surface Water

Connection to the 300 mm combined sewer in Green Moor Road opposite the site entrance is expected to be the most appropriate solution for surface water drainage.

Soakaway tests have not been undertaken.

8.0 REFINEMENT OF OUTLINE CONCEPTUAL MODEL

8.1 Source Characterisation

An outline conceptual model, detailing the possible sources and associated contaminants of concern, potential pathways and receptors identified in the Phase 1 report was detailed in section 4.0.

This section of the report documents the works undertaken to obtain information to test and refine this model enabling a risk assessment to be produced and, where significant risks are expected, remediation recommendations.

8.2 Ground Conditions

There is no reason to suspect that the materials recorded on site, being predominantly natural or comprising generally inert extraneous materials in the made ground, will contain any specific contaminants although may contain elevated concentrations of common contaminants such as metals/metalloids, sulphates, polycyclic aromatic hydrocarbons (PAH) and asbestos. The chemical analysis undertaken for these materials is discussed below.

There is no reason to suspect that the natural ground would contain significantly elevated concentrations of contaminants.

8.3 Ground Gas

There is up to 4 m of made ground present on the site. This is predominantly quarry backfill of sandstone cobbles and boulders in a clayey sand. With the exception of rootlets, textile and timber sections amongst the extraneous material recorded in the demolition rubble encountered beneath the former public house and timber in the topsoil in another trial pit biodegradable material was not recorded.

8.4 Unexpected Contamination

The only visual or olfactory observation of unexpected contamination was a slight hydrocarbon odour between 0.7 and 1.0 m bgl was encountered in TP6. The chemical analysis undertaken for this material is discussed below.

8.5 Chemical Testing

Four samples of the made ground were tested for the contaminants listed overleaf. Three samples of the topsoil samples were also tested for the same contaminants, excluding the sulphate suite.

Contaminant Type	Actual Contaminants
Metals/Metalloids	Arsenic, cadmium, chromium (hexavalent and total), lead, mercury, nickel, copper and zinc
pH	pH
Polycyclic aromatic hydrocarbons (PAHs)	Speciated PAH
Sulphates	Water soluble sulphate, total sulphur and acid soluble sulphate

The sample taken from TP6 at 0.8 m bgl (made ground) was also tested for a total petroleum hydrocarbons screen at Chemtech Environmental Limited.

All testing includes an asbestos screen.

8.6 Assessment Criteria

The proposed development of the site is to be residential with associated gardens. Therefore the assessment criteria relating to a residential end use with plant uptake have been used. Tables detailing the relevant assessment concentrations used are included in Appendix 5.

8.7 Chemical Test Results

Copies of the chemical test results (Chemtest 117876 and Chemtech PSL42733) are presented in Appendix 5.

8.7.1 Topsoil

The samples of topsoil recorded the following elevated contaminants:

Contaminant	Elevated Concentrations (mg/kg)	Assessment Value (mg/kg)
Mercury	0.53, 0.49, **4.4**	1.0
Benzo(a)pyrene	0.8, **2.3** and **1.7**	1.0

8.7.2 Made Ground

None of the five samples of made ground recorded elevated concentrations of contaminants.

8.7.3 Sulphates

In accordance with BRE Special Digest 1, the made ground comes under the classification of 'Brownfield'. The highest water soluble sulphate result was 1700 mg/l, being 30 mg/l or less in the other three. The sulphur results indicate total potential sulphate contents of 0.87% to 4.5%. The total sulphate results are <0.01 to 0.83%. The pH is above 6.6.

The total potential sulphate concentrations of up to 4.5% are above normal limits for the design of concrete. We are asking the laboratory to check the sulphur results. This may arise from the material being disturbed by excavation, allowed to mix with the air and oxidising. The water soluble sulphate concentration however is within DS2 AC2. Provided that this material, when excavated, is not left exposed to the air for an extended period and then replaced near concrete in the ground, it is considered that a maximum classification of DS3 AC3 could be taken.

8.8 Significant Pollutant Linkages

The significant pollutant linkages consequently identified are documented in the table below:

Source	Pathway	Receptor
Benzo(a)pyrene and mercury in topsoil	Ingestion, inhalation, direct contact	Future residents Construction workers Visitors
Sulphates in the made ground	Direct Contact	Below ground cementitious products
Ground gas	Migration through ground, inhalation	Future residents Construction workers Visitors Buildings

9.0 RISK ASSESSMENT

9.1 Human Health

9.1.1 Topsoil

Three samples of topsoil were tested. Two samples (TP3 at 0.1 m and TP4 at 0.3 m) recorded elevated benzo(a)pyrene concentrations of 2.3 mg/kg and 1.7 mg/kg compared to a generic assessment concentration of the order of 1.0 mg/kg. Elevated concentrations of benzo(a)pyrene of the levels recorded are not unusual.

One sample of topsoil (TP4 at 0.3 m) also recorded an elevated mercury level of 4.4 mg/kg, compared to its generic assessment concentration of 1 mg/kg. Mercury is most commonly encountered in the environment in elemental form, as inorganic mercuric compounds, or as monomethylmercury compounds. Soil guideline values (SGVs) have been derived for the three different chemical forms of mercury. Science Report SC050021 states that *'For general surface contamination and to simplify the assessment, the SGVs for inorganic mercury can normally be compared with chemical analysis for total mercury content because the equilibrium concentrations of elemental and methylmercury compounds are likely to be very low.'* The soil guideline value for inorganic mercury is 170 mg/kg and therefore significant risks to human health would not be expected from the concentrations recorded.

We recommend that, due to the elevated concentrations of benzo(a)pyrene, a capping of 300 mm of imported topsoil is placed over the existing topsoil where it is to be reused in garden areas. This is based on the assumption the clean imported topsoil placed over this is likely to have a benzo(a)pyrene concentration of less than about 0.4 mg/kg. Assuming that this is able to completely mix with 300 mm of the existing topsoil beneath, likely to have an average benzo(a)pyrene concentration of 1.6 mg/kg, would give an overall average of around 1 mg/kg for the top 600 mm in garden areas. Further testing may demonstrate that this capping thickness can be reduced. Similarly, if only 150 mm of the existing topsoil were to be used a capping thickness of 150 mm of imported topsoil would be acceptable.

9.1.2 Made Ground

It is considered that a minimum of 300 mm to 450 mm of suitable subsoil and 150 mm of topsoil will need to be placed in garden areas to provide a suitable growing medium, tree pits may need to be deeper.

9.2 Controlled Waters

The levels of contaminants recorded would not be expected to pose significant risks to controlled waters

9.3 Construction Materials

Appropriate concrete products should be used. See Section 8.7.3.

This report should also be forwarded to the relevant water supplier.

9.4 Ground Gas

No radon precautions are required. Made ground up to 4.0 m deep was encountered across the site. This is predominantly quarry backfill of sandstone cobbles and boulders in a clayey sand and did not contain significant biodegradable material. Due to the nature and age of the backfill significant generation of ground gas is not expected and gas monitoring or protective measures are not considered to be required.

10.0 CONTAMINATION - RECOMMENDATIONS AND APPROVALS

1. Radon precautions are not required.

2. Gas monitoring or protective measures are not considered to be required.*

3. Provided that the made ground, when excavated, is not left exposed to the air for an extended period and then replaced near concrete in the ground, it is considered that a maximum classification of DS3 AC3 could be taken.

4. It is considered that a minimum of 300 mm to 450 mm of suitable subsoil and 150 mm of topsoil will need to be placed in garden areas to provide a suitable growing medium, tree pits may need to be deeper.

5. At this stage you should assume that the topsoil will not be able to remain at the surface in garden areas and a capping of 300 mm would need to be placed over it were it to be retained on site.

6. The conclusions made in this report in relation to contamination are subject to agreement by the approving bodies, the Local Authority and your warranty provider.

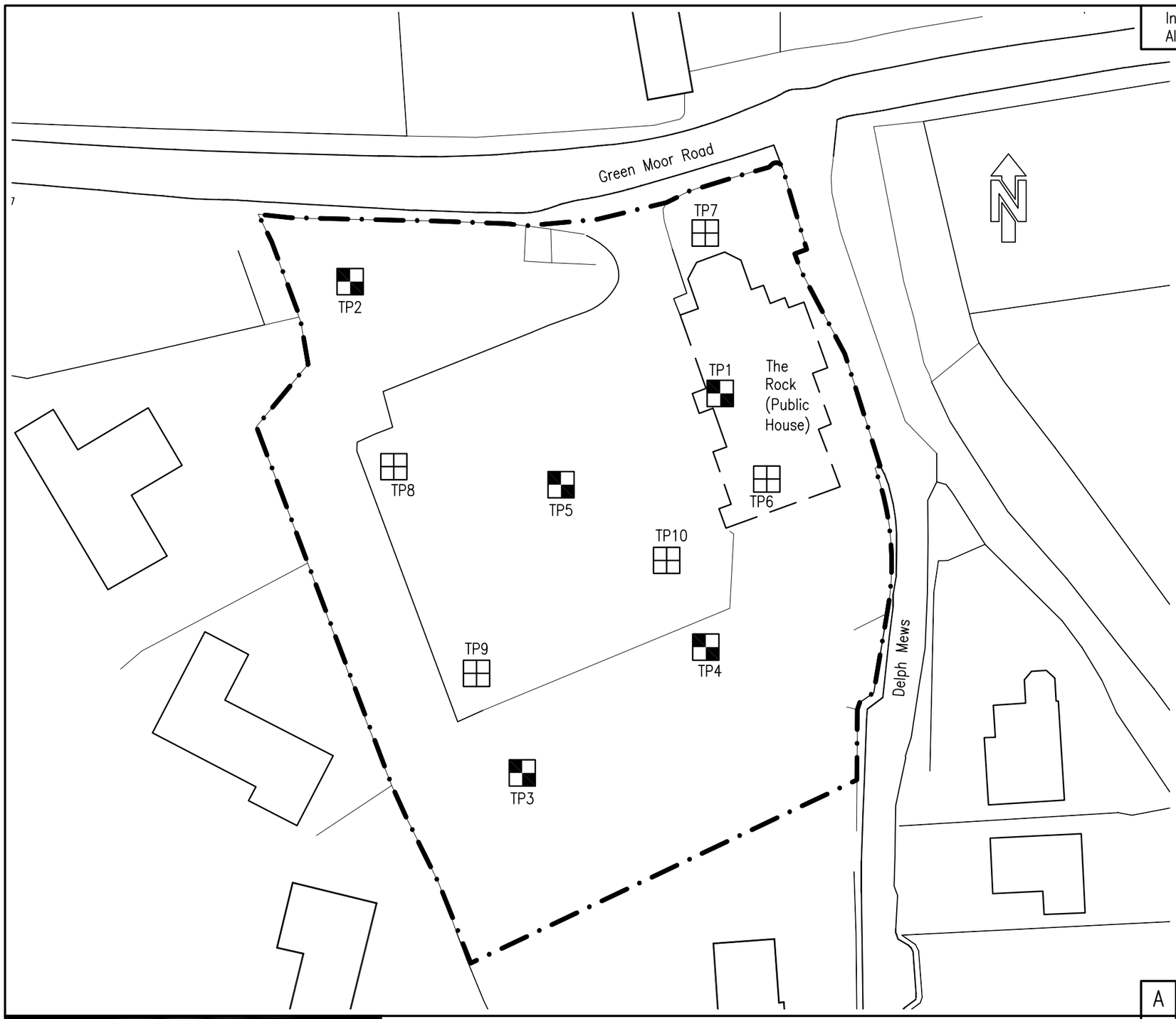
* We have discussed this with John Scott, the Contaminated Land Officer at Barnsley Metropolitan Borough Council, and understand that he is agrees with this in principle.

Appendix 1

Exploratory Hole Location Plan - drawing 33849/002, Revision A

Site Photographs

Information within this drawing is not necessarily produced to scale.
Always use figured dimensions and co-ordinates – if in doubt, ask.



Key

Approximate Site Boundary.

Approximate location of trial pit excavated by Eastwood & Partners on 02/06/11.

Approximate location of trial pit excavated by Eastwood & Partners on 06/06/11.

Eastwood & Partners
CONSULTING ENGINEERS

St. Andrew's House
23 Kingfield Road
Sheffield
S11 9AS
Tel 0114 255 4554
Fax 0114 255 4330
mail@eastwoodandpartners.com
www.eastwoodandpartners.com

SHEPHERD HOMES LIMITED

THE ROCK, GREEN MOOR ROAD, GREEN MOOR

EXPLORATORY HOLE LOCATION PLAN

REV	DESCRIPTION	SIG	CHK	DATE
A	First Issue.			

SCALE WHEN PLOTTED AT A3	DRAWING STATUS
NTS	INFORMATION

DRAWN	CHECKED	DATE	DRAWING NUMBER	REV
TG	DES	02-06-11	33849/002	A

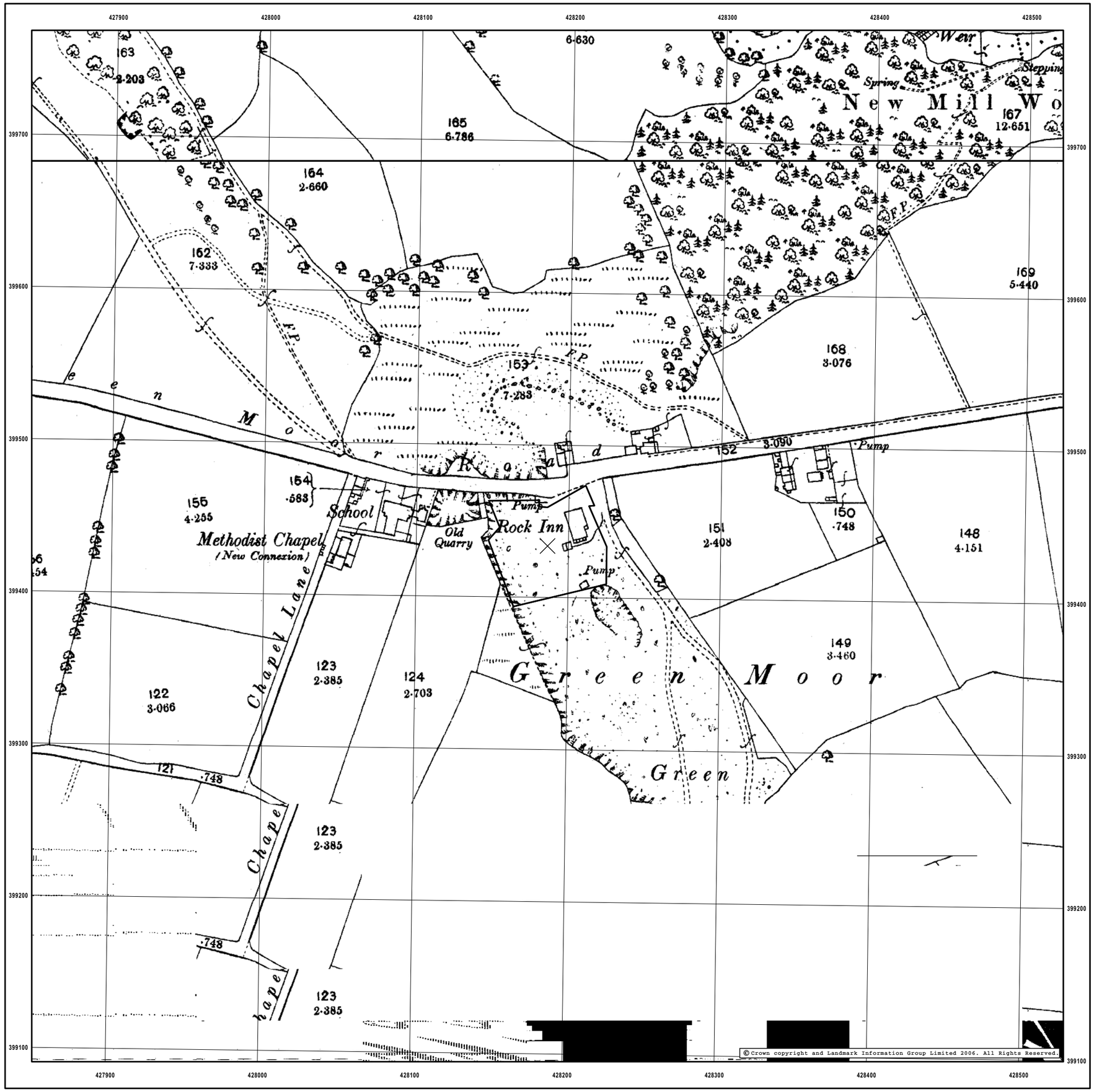




Appendix 2

Envirocheck report

Coal Authority mining report



Envirocheck®

CLIENT DETAILS Envirocheck Order No. EC20231749_1_1 (26-Jul-2006 16:32)

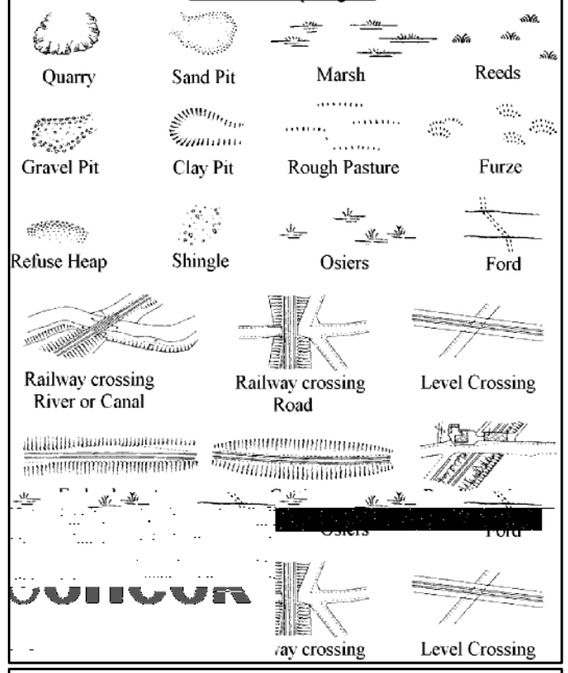
Customer Ref: Mr J Wood,JMW/RL/
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St Andrews House 23 Kingfield Road
Sheffield
S11 9AS

SITE DETAILS Grid Reference 428190 399430

The Rock,
Green Moor

Sheffield
South Yorkshire S35 7DQ

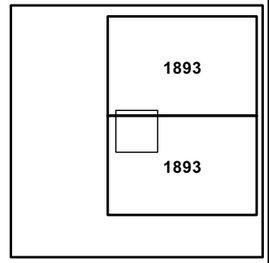
Historical Map Legend



Ordnance Survey County Series 1

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YORKSHIRE
Published 1893
Source map scale - 1:2,500

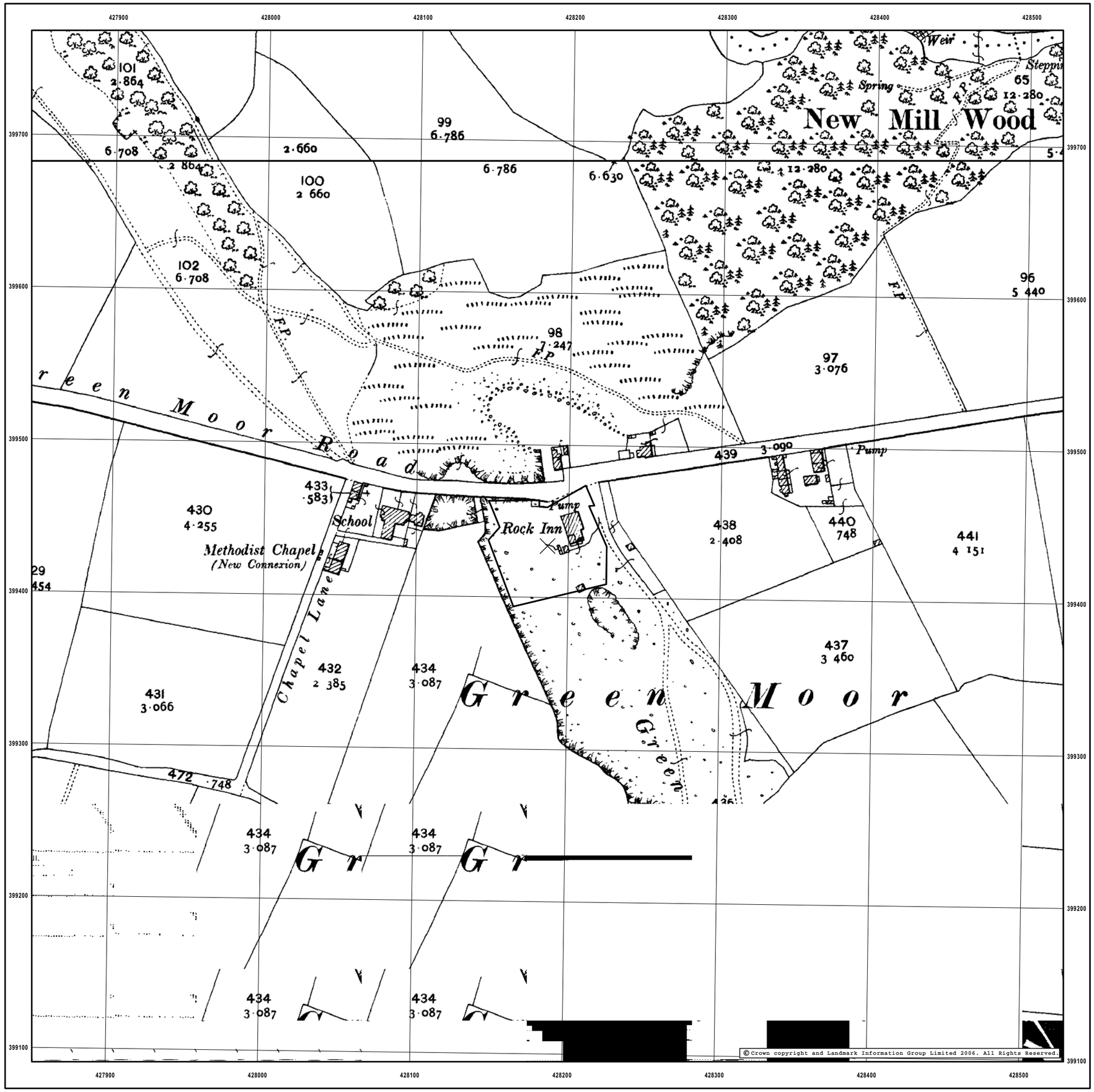


Date(s) of Publication 1 of 16

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CLIENT DETAILS Envirocheck Order No. EC20231749_1_1 (26-Jul-2006 16:32)

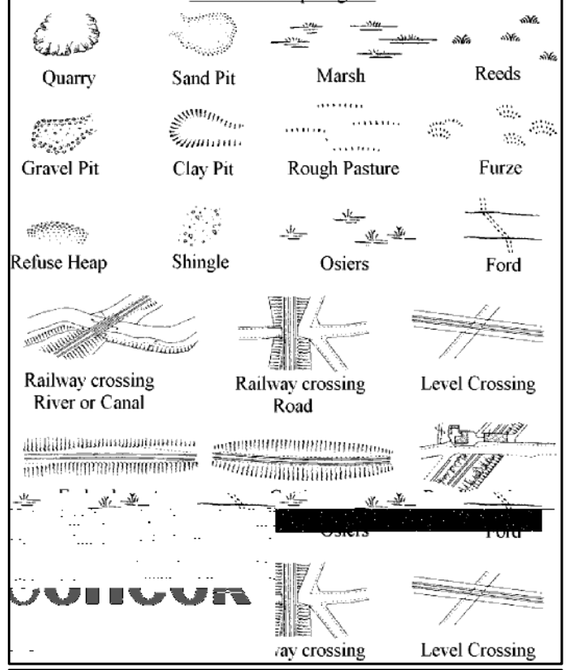
Customer Ref: Mr J Wood,JMW/RL/
Eastwood & Partners
St Andrews House 23 Kingfield Road
Sheffield
S11 9AS

SITE DETAILS Grid Reference 428190 399430

The Rock,
Green Moor

Sheffield
South Yorkshire S35 7DQ

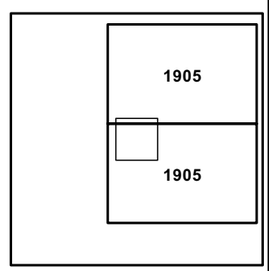
Historical Map Legend



Ordnance Survey County Series 2

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 on the right 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.

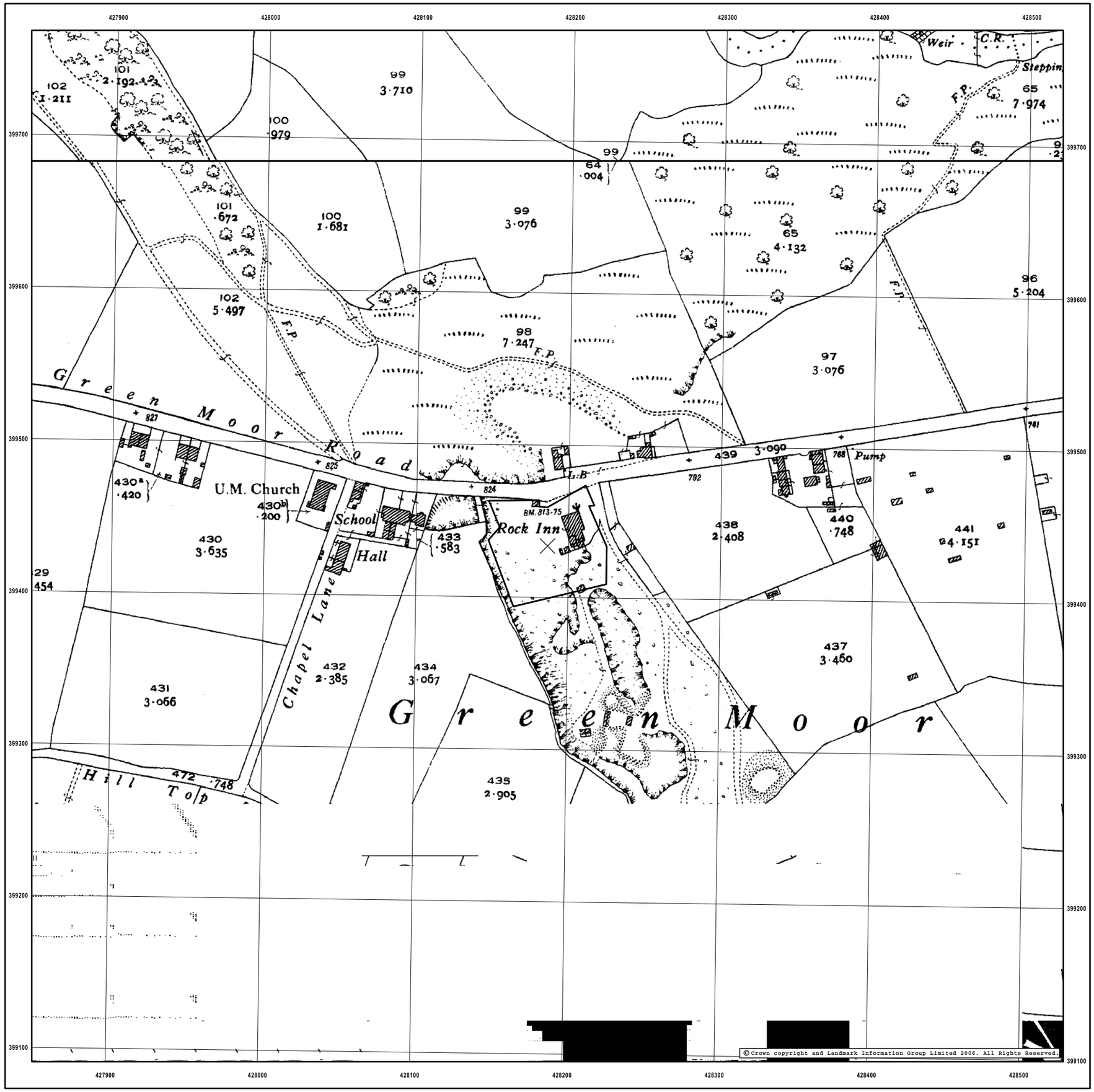
YORKSHIRE
Published 1905
Source map scale - 1:2,500



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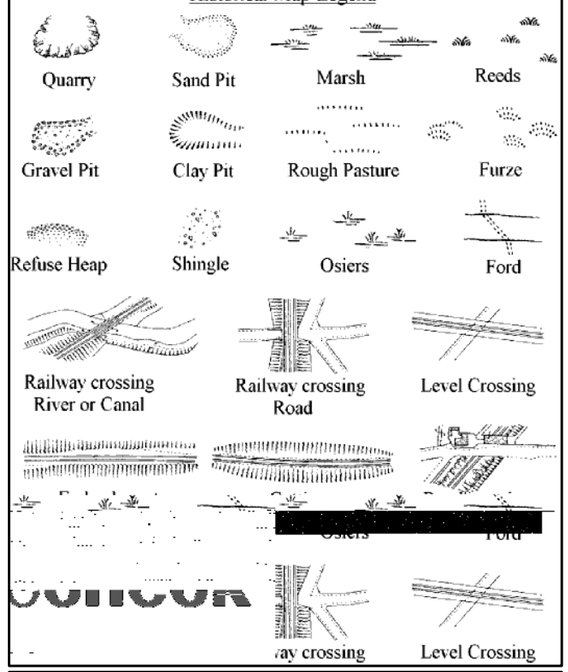
Customer Ref: Mr J Wood,JMW/RL/
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St Andrews House 23 Kingfield Road
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S11 9AS

SITE DETAILS Grid Reference 428190 399430

The Rock,
Green Moor

Sheffield
South Yorkshire S35 7DQ

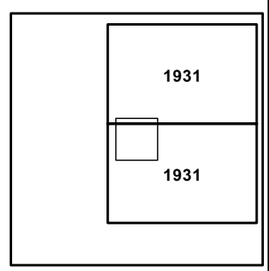
Historical Map Legend



Ordnance Survey County Series 3

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 on the right 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.

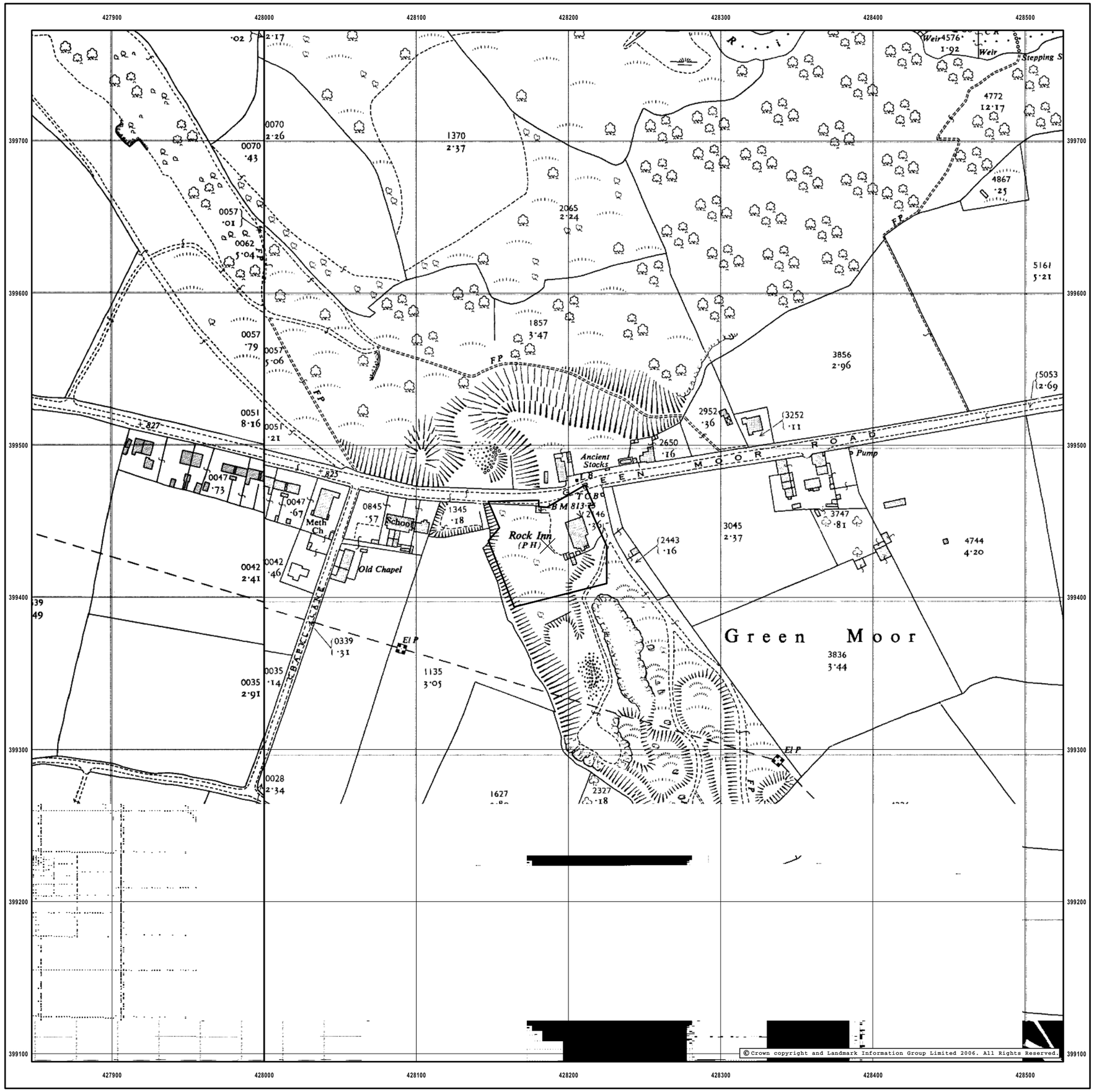
YORKSHIRE
Published 1931
Source map scale - 1:2,500



Date(s) of Publication 3 of 16

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S11 9AS

SITE DETAILS Grid Reference 428190 399430

The Rock,
Green Moor

Sheffield
South Yorkshire S35 7DQ

Historical Map Legend

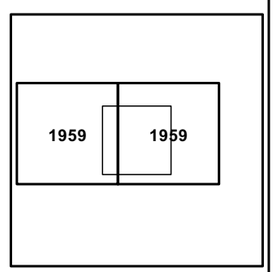
- Inactive Quarry, Chalk Pit or Clay Pit
- Active Quarry, Chalk Pit or Clay Pit
- Culvert
- Slope
- Slope
- Pylon
- Electricity Transmission Line
- Direction of Water flow
- Coppice, Osier
- Marsh
- Saltings
- Orchard Tree
- Reeds
- Rough Grassland
- Scrub
- Slope
- Bracken
- Slope
- Direction of Water flow
- Coppice, Osier
- Orchard Tree
- Reeds

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Ordnance Survey Plan 1

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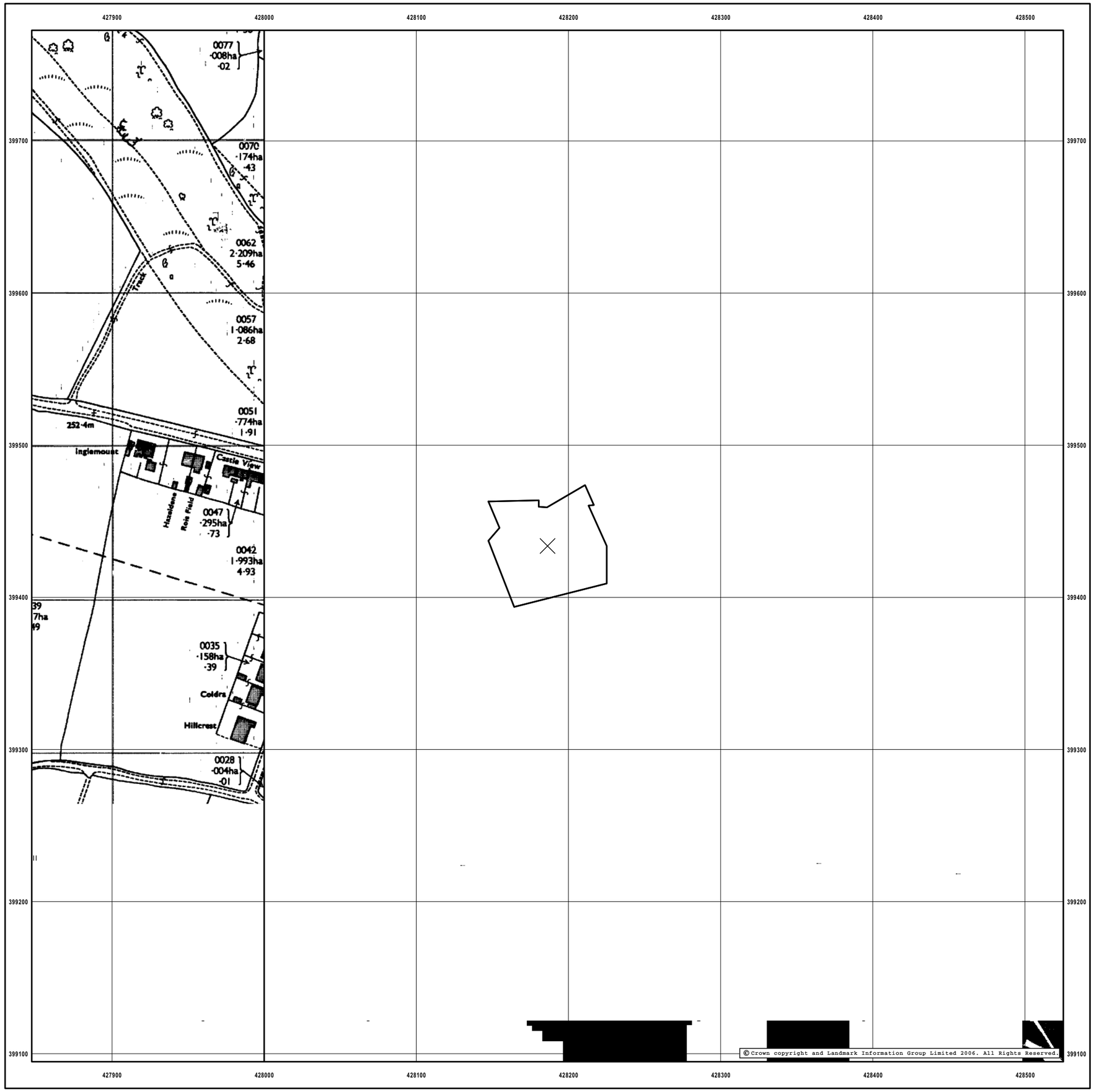
ORDNANCE SURVEY PLAN
Published 1959
Source map scale - 1:2,500



Date(s) of Publication 4 of 16

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CLIENT DETAILS **Envirocheck Order No. EC20231749_1_1**
(26-Jul-2006 16:33)

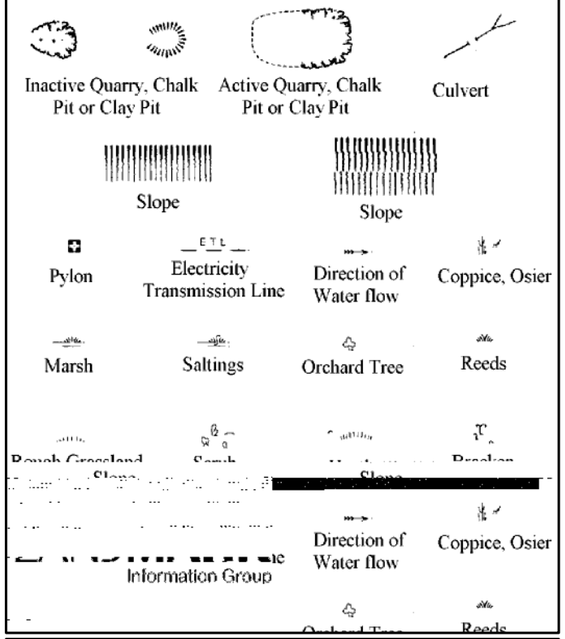
Customer Ref: Mr J Wood,JMW/RL/
Eastwood & Partners
St Andrews House 23 Kingfield Road
Sheffield
S11 9AS

SITE DETAILS **Grid Reference 428190 399430**

The Rock,
Green Moor

Sheffield
South Yorkshire S35 7DQ

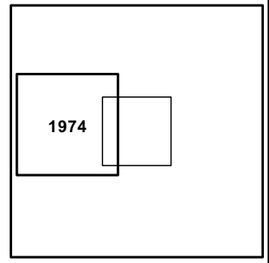
Historical Map Legend



Ordnance Survey Plan **2**

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 on the right 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.

ORDNANCE SURVEY PLAN
Published 1974
Source map scale - 1:2,500

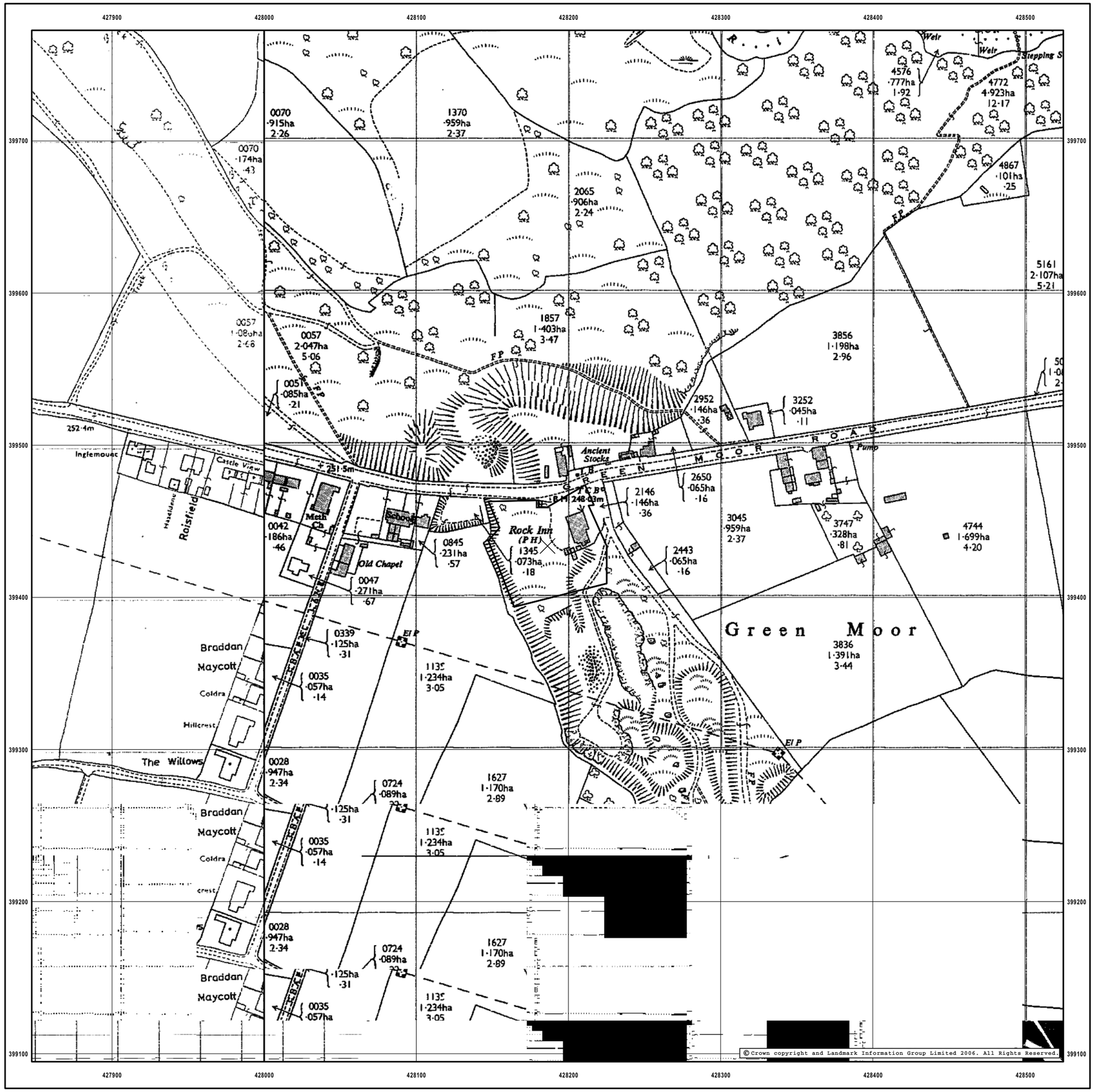


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Sheffield
S11 9AS

SITE DETAILS — **Grid Reference** 428190 399430

The Rock,
Green Moor

Sheffield
South Yorkshire S35 7DQ

Historical Map Legend

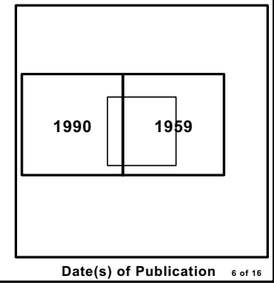
- Inactive Quarry, Chalk Pit or Clay Pit
- Active Quarry, Chalk Pit or Clay Pit
- Culvert
- Slope
- Slope
- Pylon
- Electricity Transmission Line
- Direction of Water flow
- Coppice, Osier
- Marsh
- Saltings
- Orchard Tree
- Reeds
- Rough Grassland
- Scrub
- Slope
- Direction of Water flow
- Coppice, Osier
- Orchard Tree
- Reeds

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Additional SIMs 1

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 1991, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

ORDNANCE SURVEY PLAN
Published 1959 to 1990
Source map scale - 1:2,500

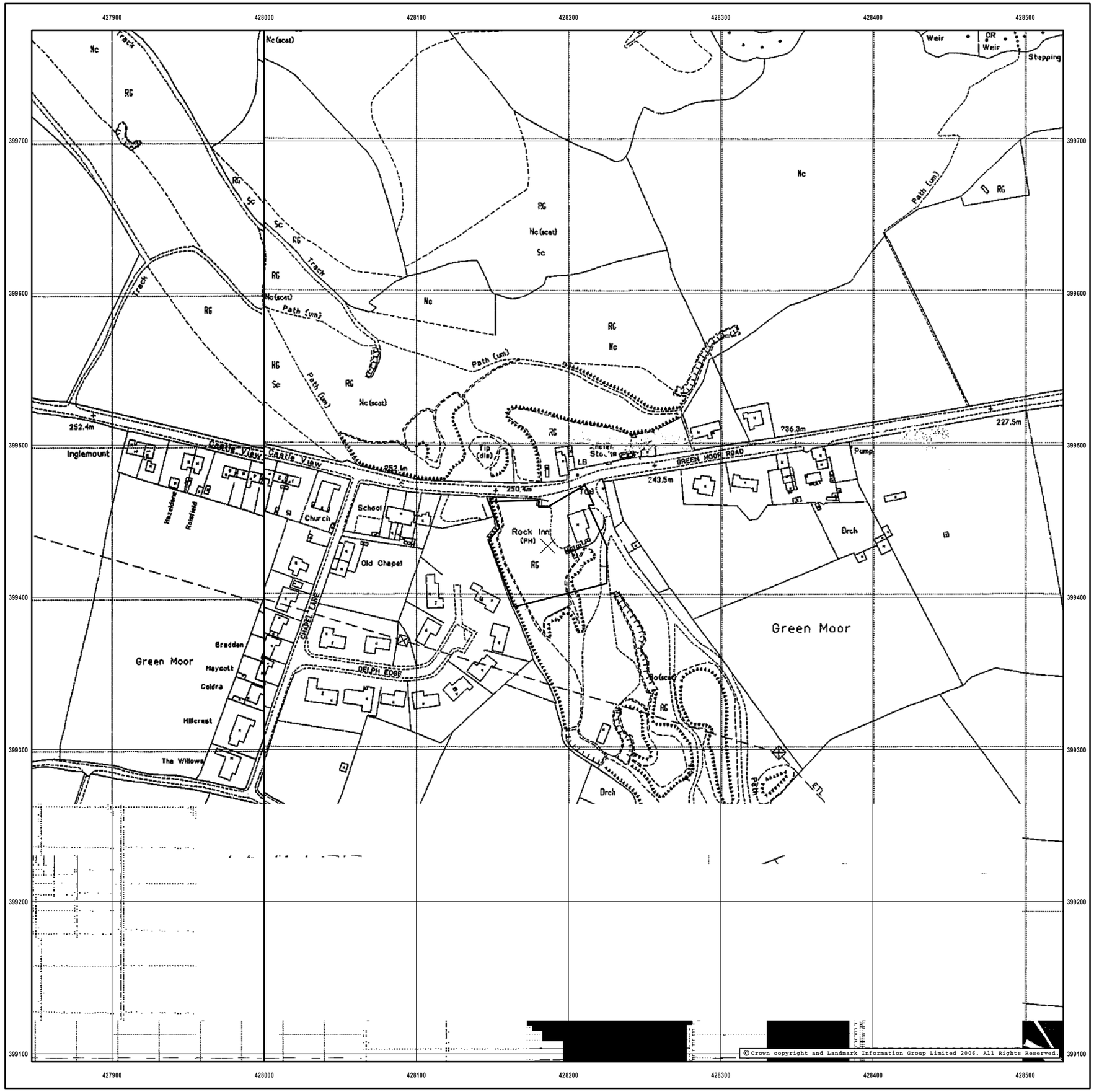


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Sheffield
S11 9AS

SITE DETAILS — **Grid Reference 428190 399430**

The Rock,
Green Moor

Sheffield
South Yorkshire S35 7DQ

Historical Map Legend

Slope

Slope

BM 231.60m
Bench Mark

Wells
Wells

Buildings with Building Seed

Direction of Water flow

Pylon

Electricity Transmission Line

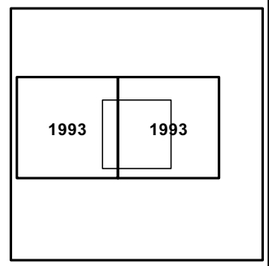
Administrative Boundaries

Civil parish/community boundary

Large-Scale National Grid Data 1

`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.

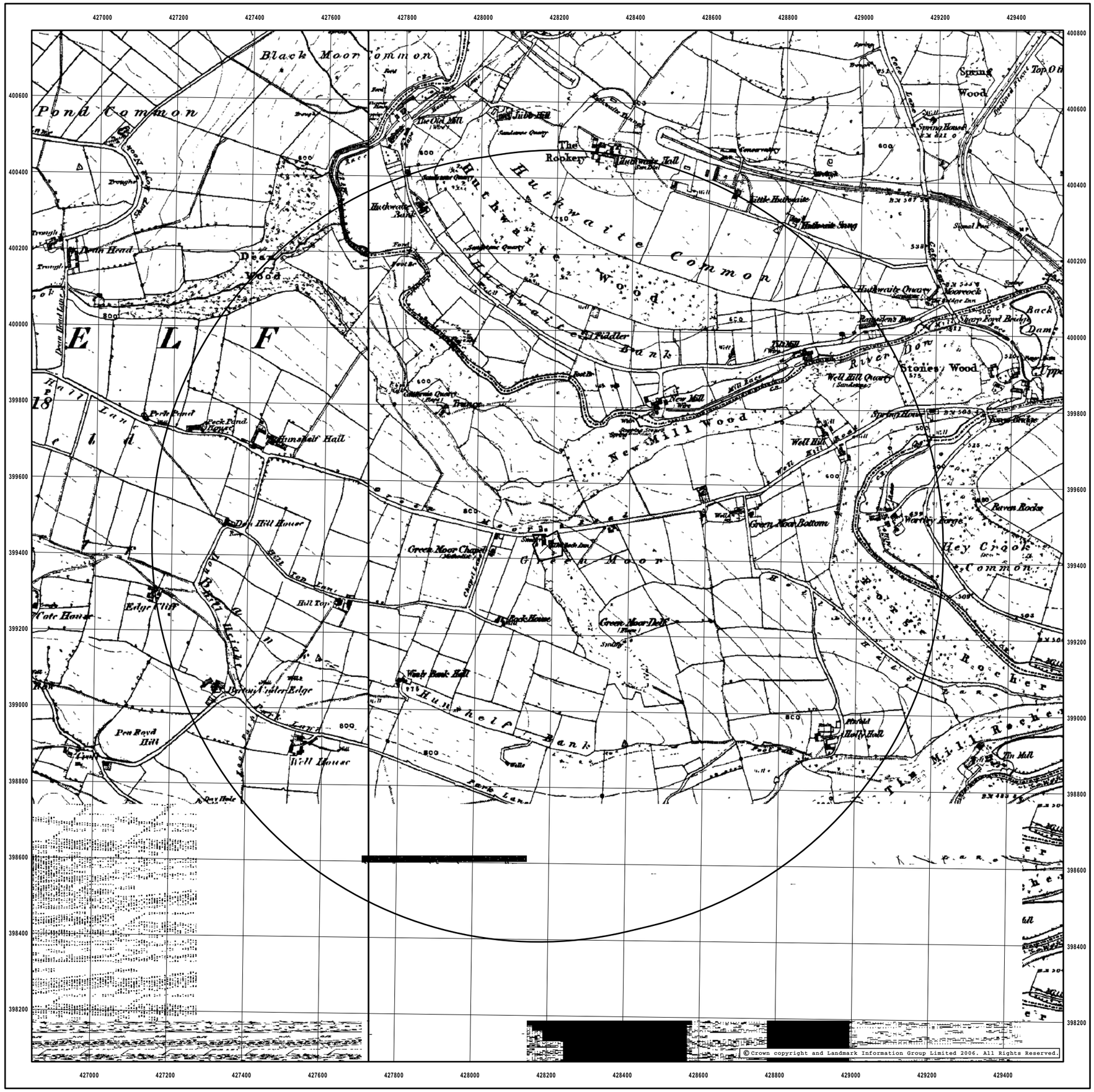
ORDNANCE SURVEY PLAN
Published 1993
Source map scale - 1:2,500



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SITE DETAILS Grid Reference 428190 399430

The Rock,
Green Moor

Sheffield
South Yorkshire S35 7DQ

Historical Map Legend

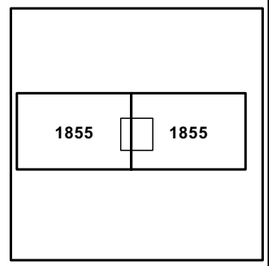
Quarry
Shingle
Railway over Road
Road over Railway
Gravel Pit
Sand Pit
Level Crossing
Railway over River
Other Pits
Road over Stream
Road over Stream
Rough Pasture
Furze
Road over River or Canal
Sunken Road

Ordnance Survey County Series 1

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 on the right 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.

YORKSHIRE
Published 1855
Source map scale - 1:10,560

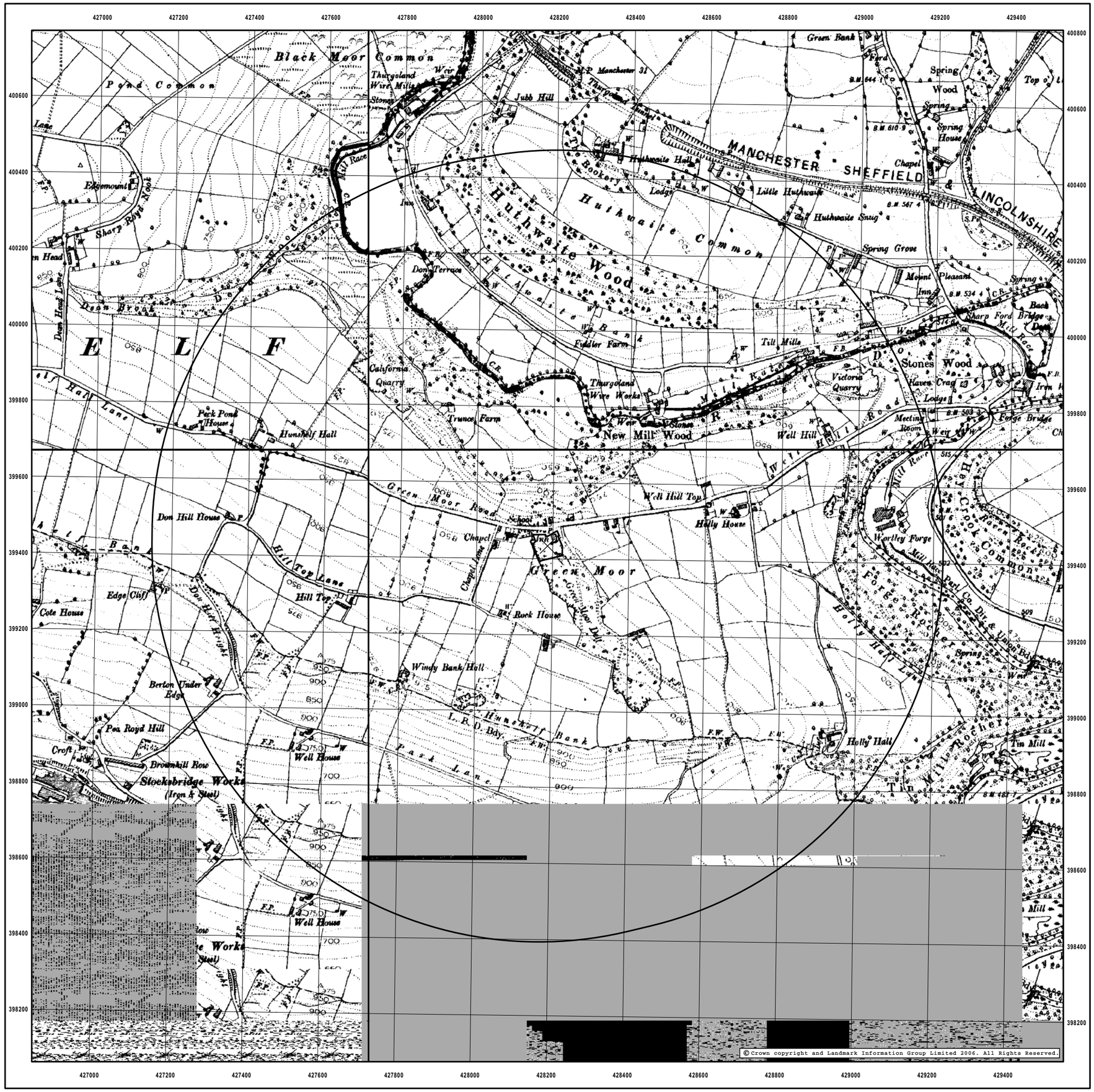


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Sheffield
S11 9AS

SITE DETAILS — Grid Reference 428190 399430

The Rock,
Green Moor

Sheffield
South Yorkshire S35 7DQ

Historical Map Legend

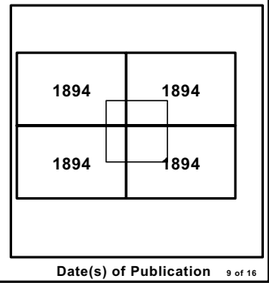
- Quarry
- Shingle
- Railway over Road
- Road over Railway
- Gravel Pit
- Sand Pit
- Level Crossing
- Railway over River
- Other Pits
- Road over Stream
- Road over Stream
- Rough Pasture
- Furze
- Road over River or Canal
- Sunken Road
- Water Flow
- Reeds

Ordnance Survey County Series 2

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 on the right 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.

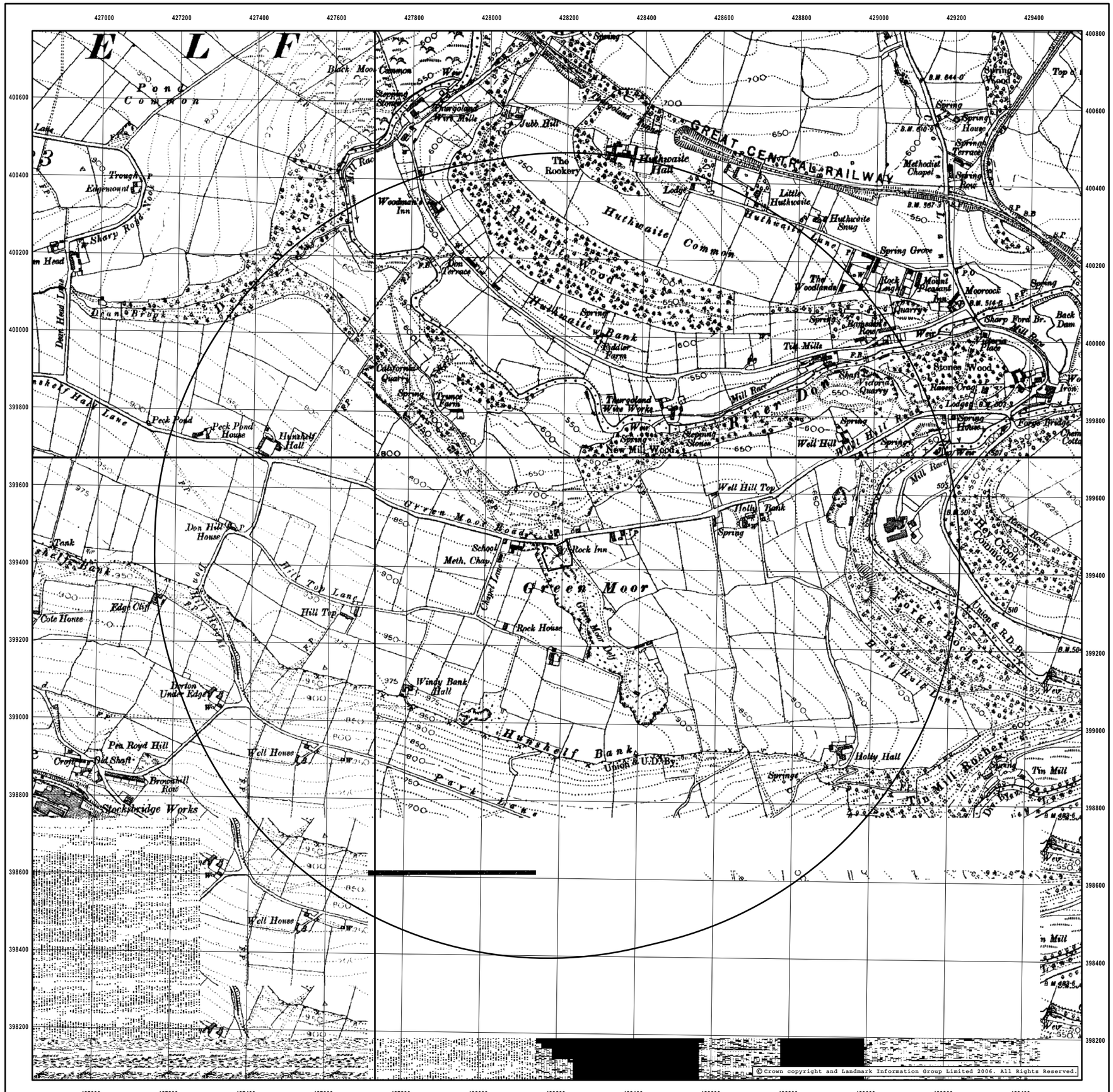
YORKSHIRE
Published 1894
Source map scale - 1:10,560



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Sheffield
S11 9AS

SITE DETAILS — **Grid Reference** 428190 399430

The Rock,
Green Moor

Sheffield
South Yorkshire S35 7DQ

Historical Map Legend

Quarry
Shingle
Railway over Road
Road over Railway
Gravel Pit
Sand Pit
Level Crossing
Railway over River
Other Pits
Road over Stream
Road over Stream
Rough Pasture
Furze
Road over River or Canal
Sunken Road
Water How
Reeds

Ordnance Survey County Series 3

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 on the right 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.

YORKSHIRE
Published 1906
Source map scale - 1:10,560

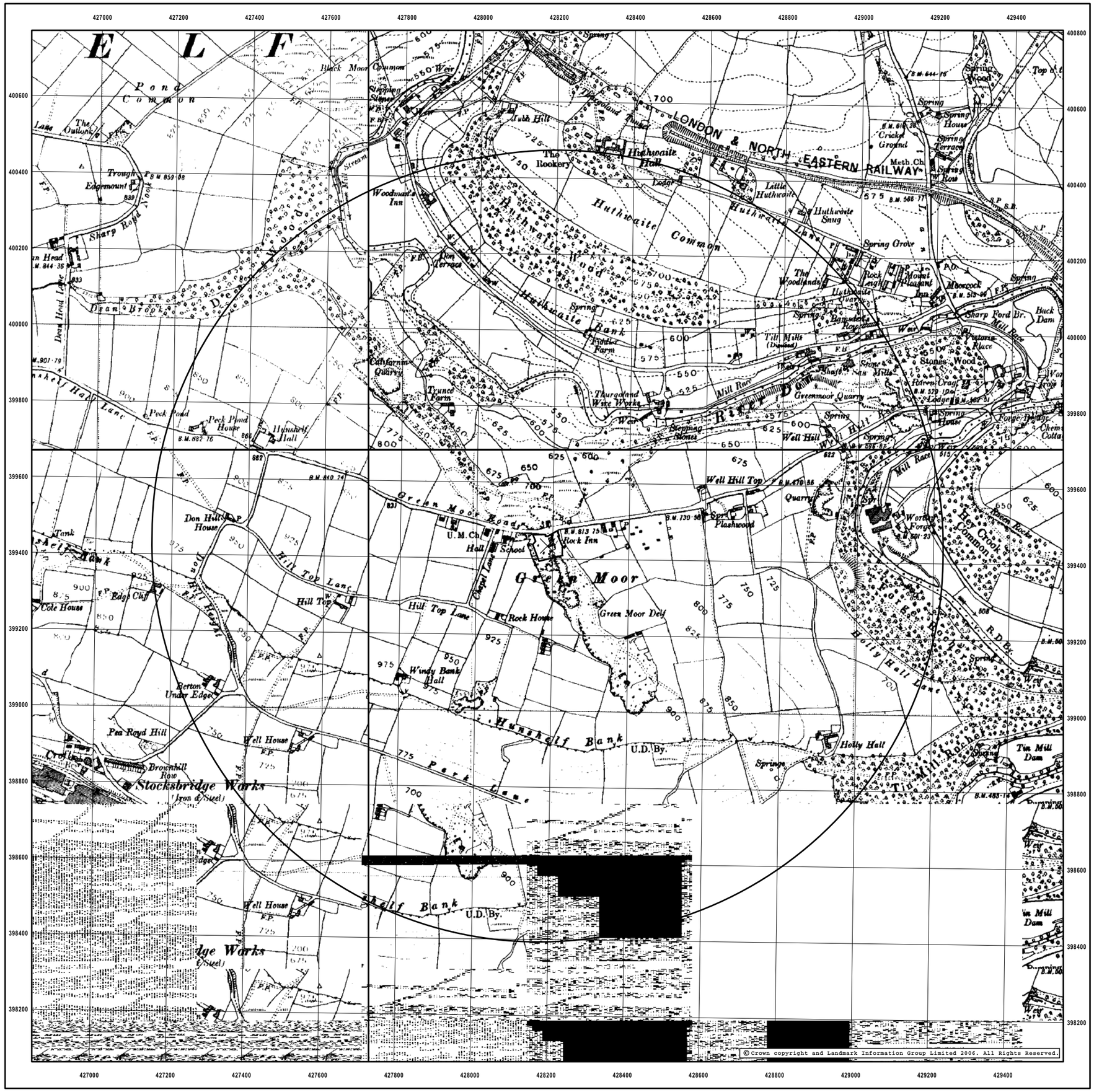
1906	1906
1906	1906

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Sheffield
S11 9AS

SITE DETAILS Grid Reference 428190 399430

The Rock,
Green Moor

Sheffield
South Yorkshire S35 7DQ

Historical Map Legend

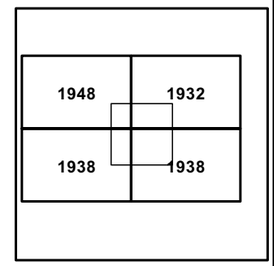
Quarry
Shingle
Railway over Road
Road over Railway
Gravel Pit
Sand Pit
Level Crossing
Railway over River
Other Pits
Road over Stream
Road over Stream
Rough Pasture
Furze
Road over River or Canal
Sunken Road
Water Flow
Reeds

Ordnance Survey County Series 4

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 on the right 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.

YORKSHIRE
Published 1932 to 1948
Source map scale - 1:10,560

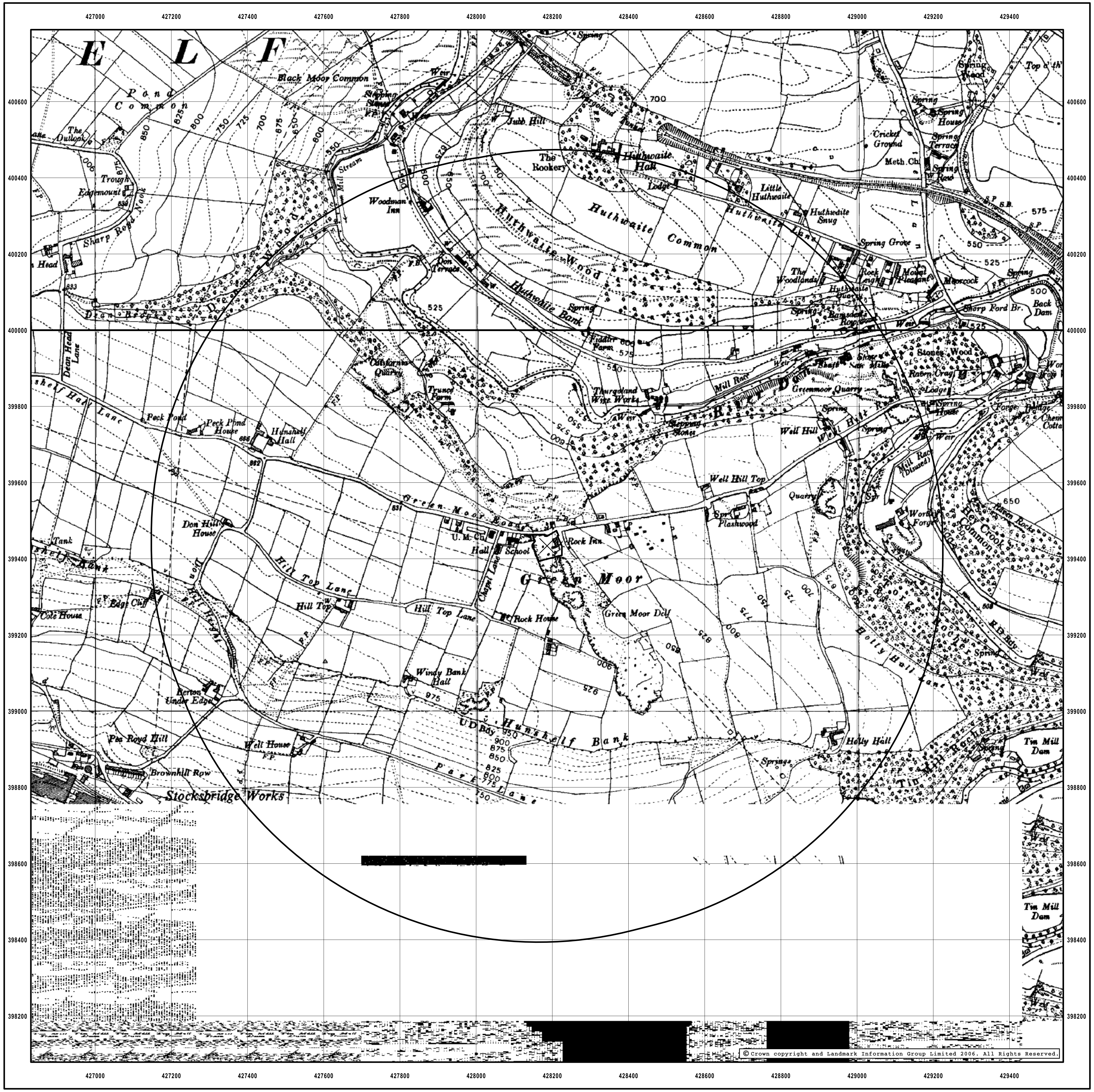


Date(s) of Publication 11 of 16

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CLIENT DETAILS

Envirocheck Order No. EC20231749_1_1
(26-Jul-2006 16:35)

Customer Ref: Mr J Wood,JMW/RL/
Eastwood & Partners
St Andrews House 23 Kingfield Road
Sheffield
S11 9AS

SITE DETAILS

Grid Reference 428190 399430

The Rock,
Green Moor

Sheffield
South Yorkshire S35 7DQ

Historical Map Legend

Chalk Pit, Clay Pit, or Quarry — Non-coniferous Trees — Bracken
Gravel Pit — Coniferous Trees — Heath
Sand Pit — Scrub — Rough Grassland
Disused Pit or Quarry — Lake, Loch or Pond — Reeds
Refuse or Slag Heap — Pylon / Pole — Electricity Transmission Line — Saltings
Direction of Flow of Water — Shingle — Sand — Marsh
Cutting — Embankment

[redacted]

Reeds
Electricity Transmission Line — Saltings
Marsh

Ordnance Survey Plan 1

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 on the right 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.

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ORDNANCE SURVEY PLAN
Published 1955
Source map scale - 1:10,560

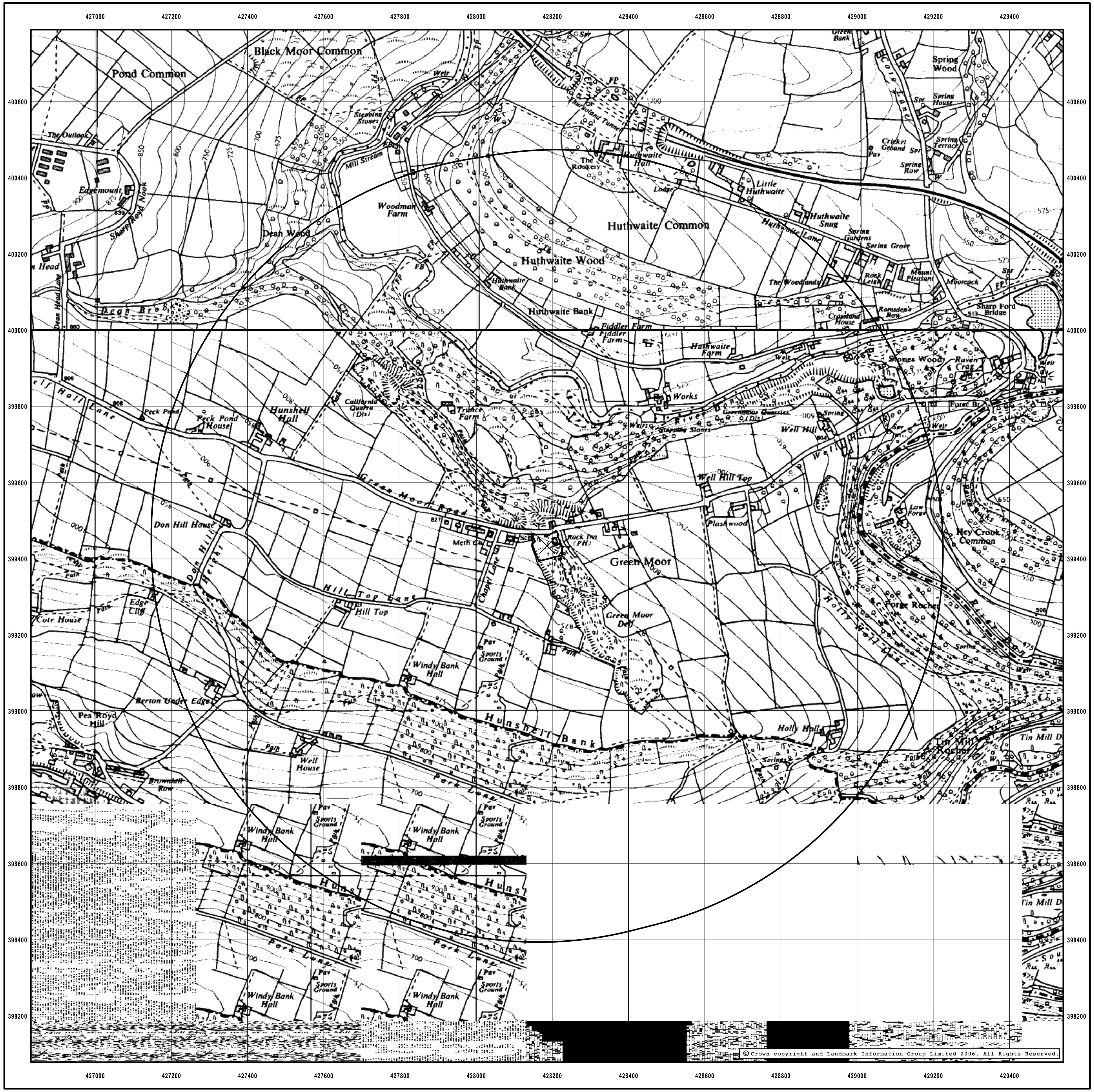
1955
1955

Date(s) of Publication

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Sheffield
S11 9AS

SITE DETAILS **Grid Reference 428190 399430**

The Rock,
Green Moor

Sheffield
South Yorkshire S35 7DQ

Historical Map Legend

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Gravel Pit — Coniferous Trees — Heath
Sand Pit — Scrub — Rough Grassland
Lake, Loch or Pond
Disused Pit or Quarry — Pylon — Reeds
Electricity Transmission Line
Refuse or Slag Heap — Pole — Saltings
Direction of Flow of Water — Marsh
Shingle
Sand
Cutting — Embankment
Reeds
Electricity Transmission Line — Saltings
Marsh

Ordnance Survey Plan 2

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 on the right 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.

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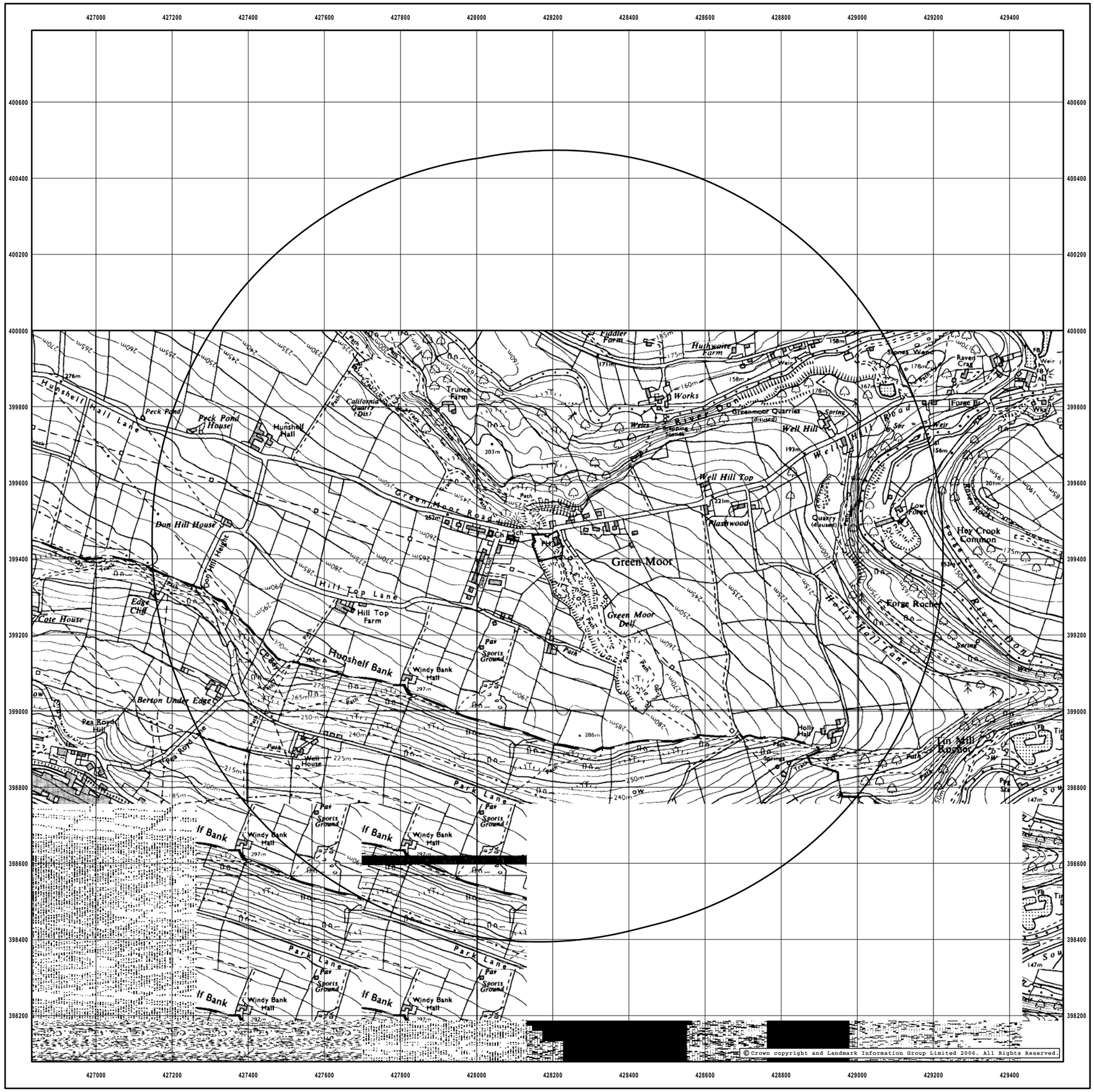
ORDNANCE SURVEY PLAN
Published 1965 to 1966
Source map scale - 1:10,560

1965
1966

Date(s) of Publication

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St Andrews House 23 Kingfield Road
Sheffield
S11 9AS

SITE DETAILS — **Grid Reference 428190 399430**

The Rock,
Green Moor

Sheffield
South Yorkshire S35 7DQ

Historical Map Legend

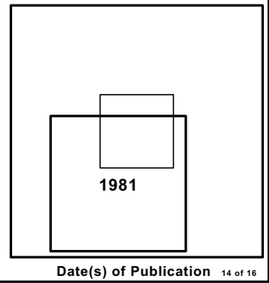
- Chalk Pit, Clay Pit, or Quarry
- Non-coniferous Trees
- Bracken
- Gravel Pit
- Coniferous Trees
- Heath
- Sand Pit
- Scrub
- Rough Grassland
- Lake, Loch or Pond
- Disused Pit or Quarry
- Pylon
- Reeds
- Electricity Transmission Line
- Refuse or Slag Heap
- Pole
- Saltings
- Direction of Flow of Water
- Marsh
- Shingle
- Sand
- Cutting
- Embankment
- Standard Gauge Railway or Tramway
- Reeds
- Electricity Transmission Line
- Saltings
- Marsh

Ordnance Survey Plan 1

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 on the right 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.

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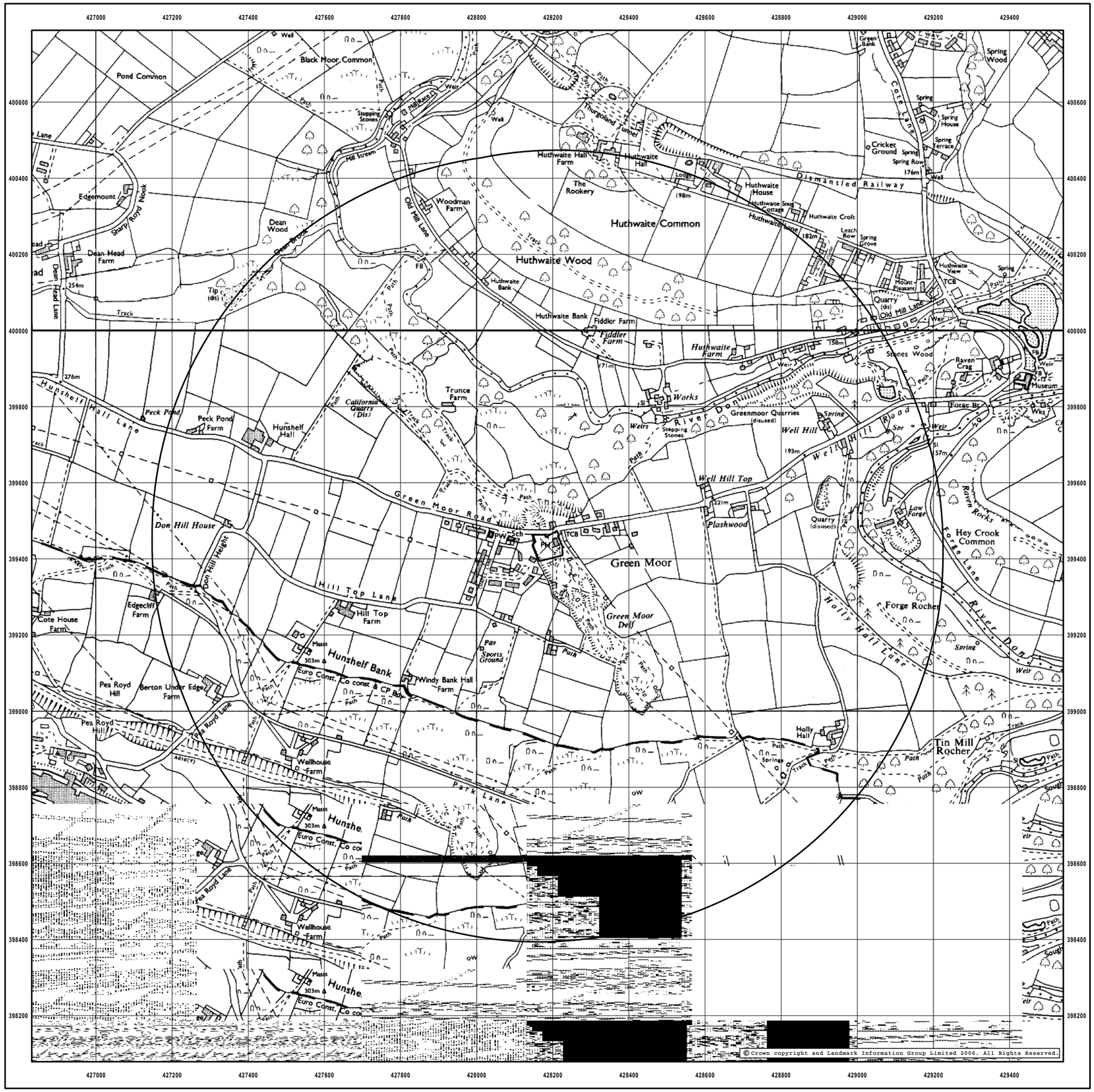
ORDNANCE SURVEY PLAN
Published 1981
Source map scale - 1:10,000



Date(s) of Publication 14 of 16

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Customer Ref: Mr J Wood,JMW/RL/
Eastwood & Partners
St Andrews House 23 Kingfield Road
Sheffield
S11 9AS

SITE DETAILS **Grid Reference 428190 399430**

The Rock,
Green Moor

Sheffield
South Yorkshire S35 7DQ

Historical Map Legend

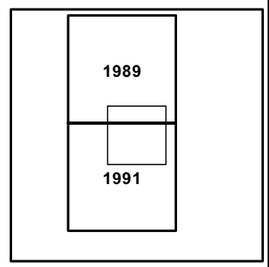
- Chalk Pit, Clay Pit, or Quarry
- Non-coniferous Trees
- Bracken
- Gravel Pit
- Coniferous Trees
- Heath
- Sand Pit
- Scrub
- Rough Grassland
- Lake, Loch or Pond
- Disused Pit or Quarry
- Pylon
- Reeds
- Electricity Transmission Line
- Refuse or Slag Heap
- Pole
- Saltings
- Direction of Flow of Water
- Marsh
- Shingle
- Sand
- Cutting
- Embankment
- Standard Gauge
- Reeds
- Electricity Transmission Line
- Saltings
- Marsh

Ordnance Survey Plan 2

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ORDNANCE SURVEY PLAN
Published 1989 to 1991
Source map scale - 1:10,000

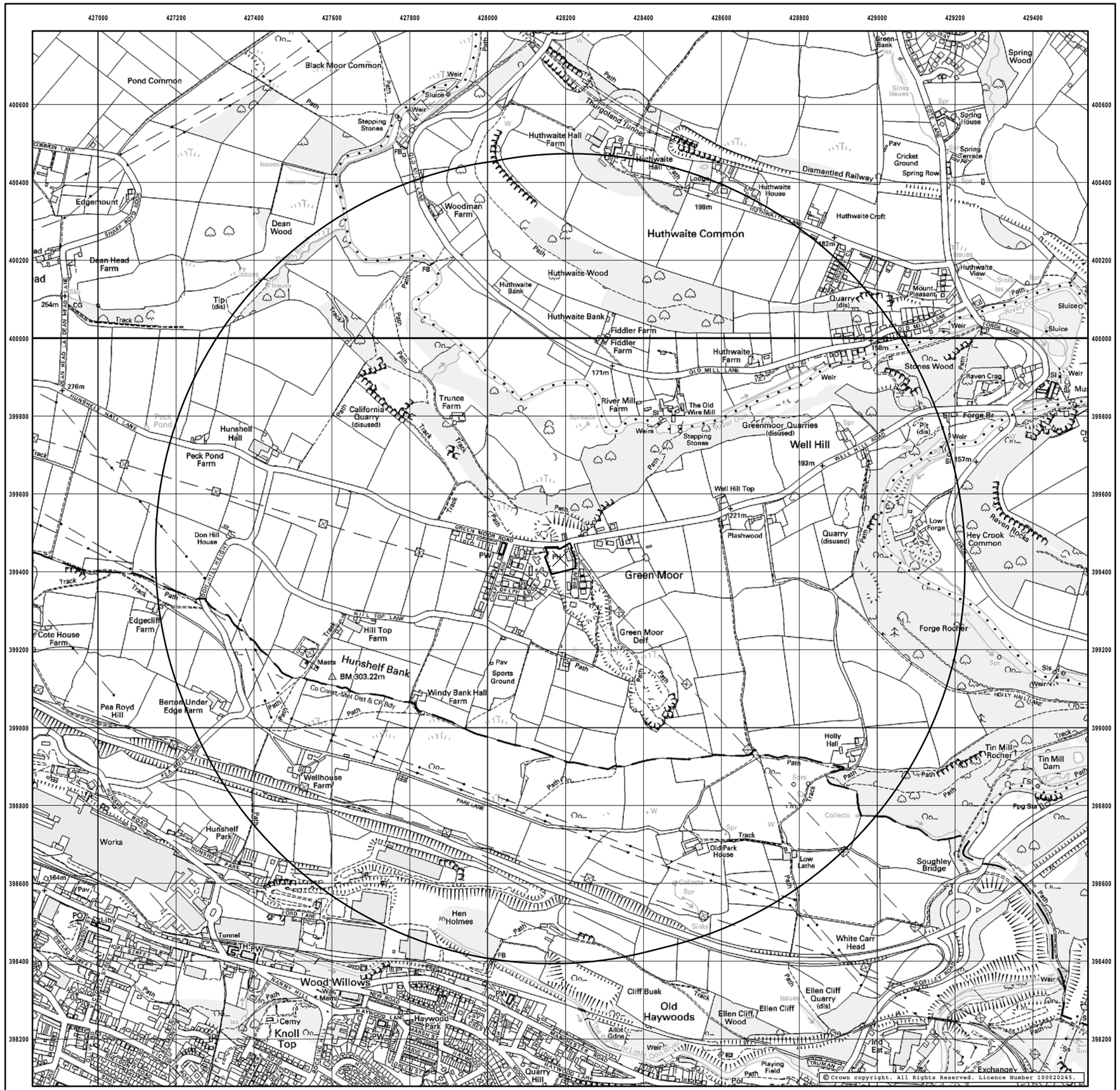


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Sheffield
S11 9AS

SITE DETAILS — **Grid Reference 428190 399430**

The Rock,
Green Moor

Sheffield
South Yorkshire S35 7DQ

Historical Map Legend

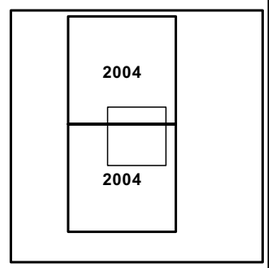
Non-coniferous Trees	Pylon
Coniferous Trees	Telephone Line (where shown)
Orchard	Electricity Transmission Line (with poles)
Rough Grassland	Gravel Pit
Heath	Shingle
Scrub	Refuse Tip or Slag Heap
Marsh, Salt Marsh or Reeds	Sand
County Boundary (England only)	Sand Pit
Civil Parish or Community Boundary	Slopes
Constituency Boundary	District, Unitary, Metropolitan, London Borough Boundary

10K Raster Mapping — **1**

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.

ORDNANCE SURVEY PLAN
Published 2004
Source map scale - 1:10,000

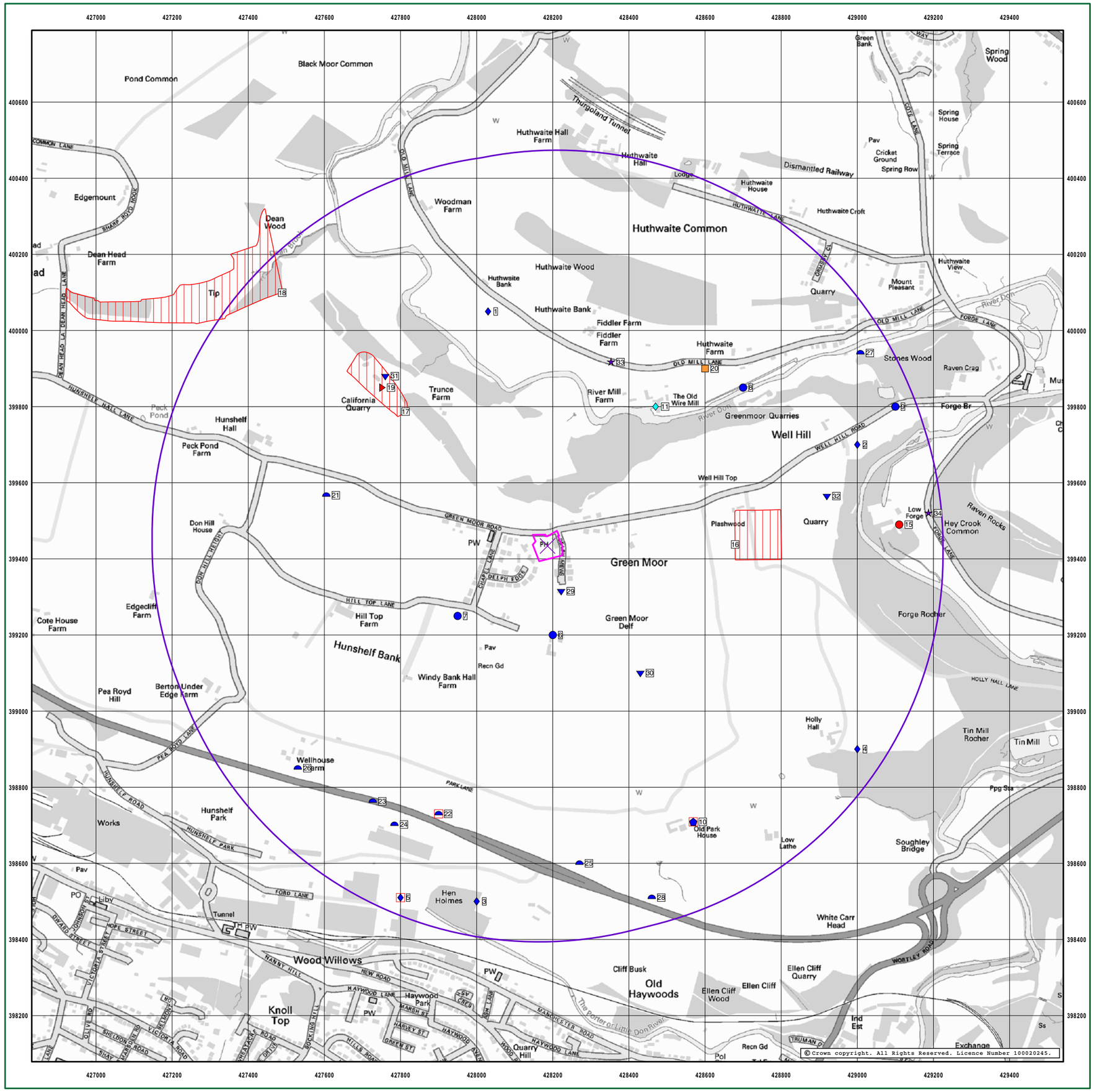


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Sheffield
S11 9AS

SITE DETAILS **Grid Reference 428190 399430**

The Rock,
Green Moor

Sheffield
South Yorkshire S35 7DQ

KEY TO THE LEGEND DATABASE

General

- Specified Site
- Bearing Reference Point
- Buffer (1000m)
- 8 Reference Number
- Several of Type at Location

Waste

- Point Location of BGS Recorded Landfill Site
- BGS Recorded Landfill Site
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facilities (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Point Location of Local Authority Recorded Landfill Site
- Local Authority Recorded Landfill Site
- Registered Landfill Site (Polygon)

Agency and Hydrological

- Local Authority Pollution Provention and Control
- Local Authority Pollution Provention and Control Enforcement
- Point Location of Contaminated Land Register Entry or Notice
- 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
- Pollution Incident to Controlled Waters
- Substantiated Pollution Incident Register
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Quality Sampling Point
- Water Abstraction
- Water Industry Act Referral

- Point Location of Registered Landfill Site
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Point Location of Registered Waste Transfer Site
- Registered Waste Transfer Site
- Point Location of Registered Waste Treatment or Disposal Site
- Registered Waste Treatment or Disposal Site

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

Geological

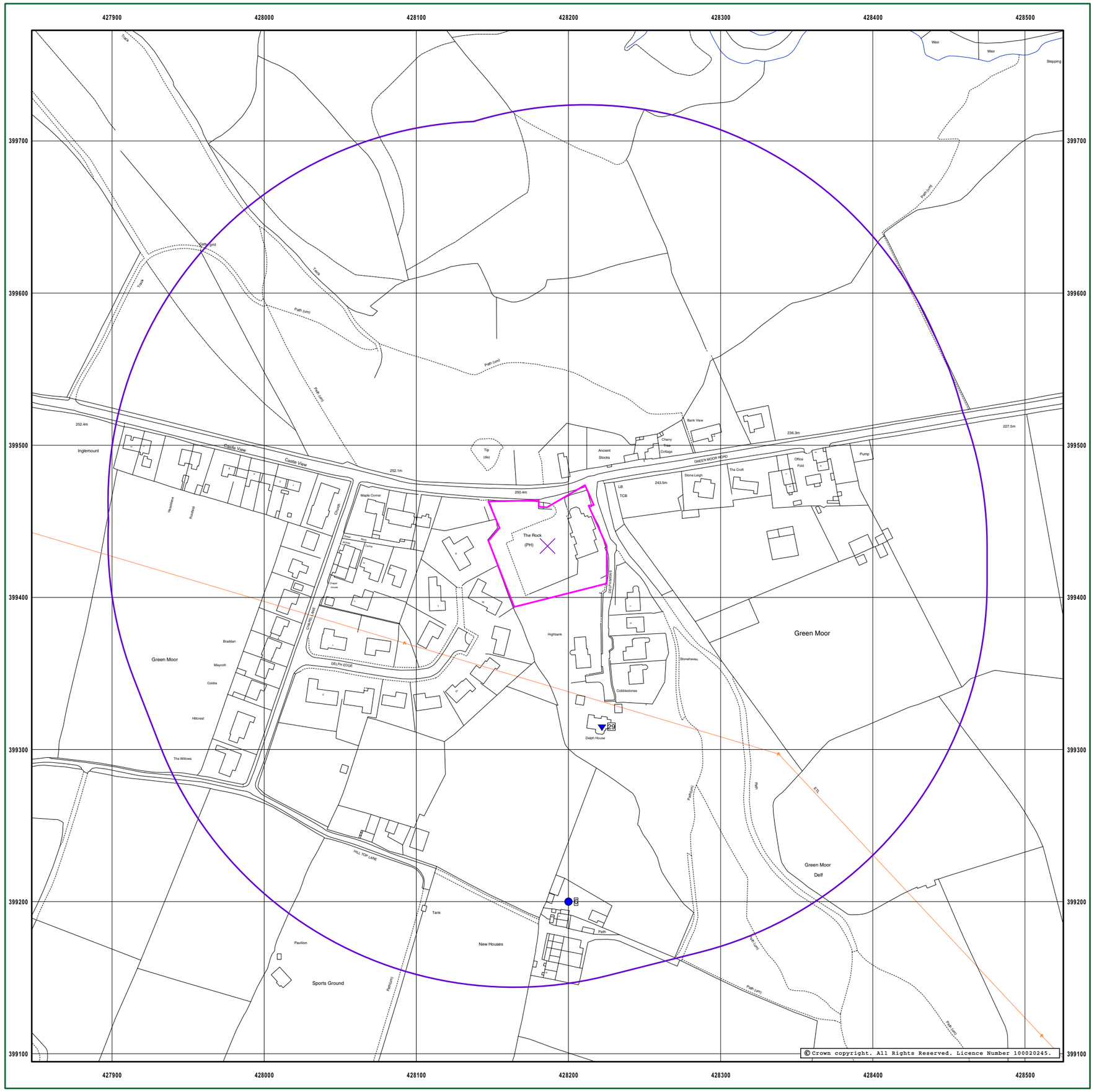
- BGS Borehole
- BGS Recorded Mineral Site

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry

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(26-Jul-2006 16:31)

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Sheffield
S11 9AS

SITE DETAILS **Grid Reference 428190 399430**

The Rock,
Green Moor

Sheffield
South Yorkshire S35 7DQ

KEY TO THE LEGEND DATABASE

General

- Specified Site
- Bearing Reference Point
- Buffer (250m)
- Reference Number
- Several of Type at Location
- Pylon
- Overhead Transmission Line

Agency and Hydrological

- Local Authority Pollution Provention and Control
- Local Authority Pollution Provention and Control Enforcement
- Point Location of Contaminated Land Register Entry or Notice
- 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
- Pollution Incident to Controlled Waters
- Substantiated Pollution Incident Register
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Water Abstraction
- Water Industry Act Referral

Waste

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- Registered Landfill Site (Point Buffered to 250m)
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