



ARP GEOTECHNICAL LTD
CHARTERED CONSULTING ENGINEERS

STAGE 1 DESK STUDY REPORT

AT

LAND OFF WOODHEAD ROAD
BROCKHOLES

ON BEHALF OF

MILLER HOMES (YORKSHIRE) LTD

MAY 2016

Report No: MLR/07r2	Name	Date
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1.0 EXECUTIVE SUMMARY

The pertinent conclusions of the updated report are tabulated below.

Proposed Development	Residential dwellings with private gardens.
Site Description (no walkover undertaken)	Five undeveloped rough grass fields. Track crosses the site from east to west. Generally slopes to the northeast. River Holme runs northwards, within east of site.
Site History	No evidence of any on-site development (except for existing house in SW corner) or adverse use.
Geology Maps	Rough Rock (sandstone) of Upper Carboniferous Period. No drift cover on most of the site, but a strip of around 50m width alongside the River Holme, is shown to be overlain by Alluvium (river deposits). There are no faults shown to affect the site.
Coal Mining	Site can be considered stable.
Hydrogeology	Site underlain by Secondary A Aquifer. No sensitive abstractions within 1km.
Hydrology	Nearest watercourse is River Holme on east of site. No sensitive abstractions within 1km.
Radon	No protection measures required
Landfill Gas	No landfills within 250m. There should be no requirement for gas protection.
Ground Conditions	Possible (unlikely) made ground, over probable granular subsoils, over sandstone. Alluvium on the eastern margins.
Contamination	Potentially (unlikely), from possible made ground and possible sewage sludge spreading. Site investigation required.
Foundations	Traditional strip/trench fill foundations on most of site. Pile or raft foundations may be required on the alluvium in the east.
Excavations	Possible instability of excavation sides in the alluvium on the east of the site, and in any made ground. Risk of shallow groundwater increases towards the River.

2.0 TERMS OF REFERENCE

- 2.1 Miller Homes (Yorkshire) Ltd is considering developing land off Woodhead Road, Brockholes, with residential properties. It was considered appropriate to implement a desk study to provide information to aid the planning process, viability assessment, and design of any subsequent development.
- 2.2 ARP Geotechnical Ltd was appointed by Miller Homes (Yorkshire) Ltd to implement the report, which involved a desk study assessment of the geological and coal mining aspects, site history, potential contamination sources and receptors, and other environmental aspects including radon gas and indicative flood risk. An Envirocheck Report from Landmark Information Group, and a Coal Mining Report from the Coal Authority, were obtained to facilitate the study.
- 2.3 This report is intended to cover a wide scope of geotechnical issues, along with a Stage 1 risk appraisal of potential contaminant source - pathway - receptor linkages.
- 2.4 The report does not include any intrusive assessment, but does include a site walkover survey.
- 2.5 The initial study was carried out in September 2013. Miller Homes subsequently expanded the project area to include an additional area of land southwest of Hope Bank. This updated report ensures the findings apply to the whole of the new project site.
- 2.6 The report has been prepared for the sole use and reliance of the Appointee. The report shall not be relied upon or transferred to any other parties without the written agreement of ARP Geotechnical Ltd. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party.

3.0 SITE DESCRIPTION

Site Location

- 3.1 The site, which is centred on Ordnance Survey Grid Reference 414750, 411150, is located off Woodhead Road, in Brockholes, near Huddersfield, and is an irregularly shaped piece of land extending to an area of approximately 8.61 Ha.
- 3.2 A site location plan and site plan are presented in Appendix A.

On - Site Features

- 3.3 The site comprises 5No. undeveloped rough grass fields. The lack of fencing and open nature would suggest that the land is used for the growing of hay as opposed to the grazing of animals. The site slopes generally to the northeast. A track crosses the site from east to west (Robinson Lane). Mature trees are present along the track, and generally along boundaries, with a few also scattered within the north of the site. The River Holme runs northwards, within part of the eastern boundary, and is considerably lower than the site itself. Due to the level difference between the site and the river bed, it is anticipated that the river does not flood the site.

Site Boundaries and Surrounding Land Use

- 3.4 The boundaries of the site are mainly formed by dry stone walling and several fences. The site is bounded to the west by Woodhead Road, and the site is around 4m lower than the road at this location, with the difference accommodated by a combination of a batter slope and retaining wall. The site is bounded to the south by the gardens of residential properties of Haggroyd Lane (except the westernmost property, which is included within the site). In the southeastern corner, the site is approximately 1m to 2m higher than the adjoining land. The southern end of the eastern boundary adjoins Smithy Place Lane, and further north, deviates westwards around several residential properties, before continuing eastwards to cross the River Holme and adjoining a building stone suppliers,

and the gardens of residential properties. The northern boundary adjoins a metal works, and deviates south around a field and a metal cutting works.

Site History

3.5 Ordnance Survey archive maps were obtained for the site. Copies of the maps obtained are included in Appendix B, and a summary of the findings is given below.

Map Date	On-Site	Off-Site
1892	Well close to Woodhead Road in NW of site, next to a footpath crossing this area. Mill race crosses NE corner, past a weir on the river. The track running through the middle of the site is named Moisy Lane.	Woodhead Road is present to west. Existing houses off Moisy Lane in east are present. Smithy Place Lane is present to SE. Rest is fields and occasional farms/houses. Hope Bank noted at NW corner of site. Small quarry approximately 100m to west.
1906	Footpath in NW no longer shown. Well still shown.	Hope Bank Pleasure Resort now shown adjacent to north.
1966	House (“Longmead”) now present in SW corner. Well in NW no longer shown. Middle site track now called Robinson Lane.	Pleasure resort now replaced by the existing metal works. Another works and kennels shown close to NW corner of site. Houses to south, and also east across the river, are now shown, as is the present day stone suppliers to east, named "Burdwell Works".
1994	No significant change.	Works to northwest have been extended. Cottages have replaced the kennels.
Later maps	No significant change.	No significant change.

3.6 In summary, there is no evidence of any prior development on the site, or adverse activity. Works buildings are present adjacent to the north and east, although it is considered unlikely these would have contaminated the site, given the topography. A small quarry was once present approximately 100m to the west of the site, but this appears now to be overgrown rather than filled, is well above the level of the site, and is, therefore, discounted as a significant source of landfill gas. Farmers have been known to import fill material onto farmland to improve the drainage or topography, and agricultural land can also be contaminated by heavy metals from sewage sludge application, if this has occurred in the past. There is, therefore, still a possibility that contamination could be present, although the likelihood is low.

4.0 ENVIRONMENTAL SETTING

Geology

- 4.1 Extracts from the British Geological Survey 1:50,000 Series Geology Maps are included within the Envirocheck Geology Report in Appendix C. The maps show the site to be underlain by the Rough Rock (sandstone) of the Upper Carboniferous Period. No drift cover is present on most of the site, but a strip of around 50m width alongside the River Holme, is shown to be overlain by Alluvium (river deposits). There are no faults shown to affect the site.

Coal Mining

- 4.2 A coal mining report was obtained from The Coal Authority. A copy of the report is included in Appendix D, and a summary is given below.
- 4.3 The site is not within the zone of likely physical influence on the surface from past underground workings.
- 4.4 The site is unaffected by any present or future proposed underground mining. The Authority refers to reserves of coal in the locality, which could be worked at some time in the future. However, any future workings are considered unlikely.
- 4.5 There are no known mine entries within 20m of the site.
- 4.6 The site has not been subjected to past opencast coal mining and there are no current or future planned extractions by opencast techniques within the general area.
- 4.7 In view of the above, the site is considered stable with regard to coal mining.

Coal Recovery

- 4.8 There will be no arisings of coal during proposed development works, and it will not be possible to win any coal from the site by excavation before development.

Hydrogeology

- 4.9 The Landmark Envirocheck Report, included in Appendix E, indicates the Bedrock Aquifer Designation to be "Secondary A". The alluvium on the eastern margin of the site is also designated as Secondary A. These Aquifers comprise "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".
- 4.10 The soils overlying the site are classed as High Leaching Potential, due to the urban nature of the area on the northeastern third of the site, and as Class H3 on the rest, which comprise "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".
- 4.11 There are no groundwater abstractions for sensitive use within 1km of the site, and the site is not within a groundwater Source Protection Zone.

Hydrology

- 4.12 The general area slopes to the northeast. The nearest downslope surface water is the River Holme, which flows northwards, just inside the eastern boundary. The river level is well below that of the site.
- 4.13 Any surface water run-off from the site is likely to quickly reach the river.
- 4.14 A very narrow strip alongside the River Holme, within the eastern boundary of the site, is shown to be at risk from river flooding, although wider areas are shown to be at risk

further north, downstream of the site. A specialist flood risk report has been prepared separately by ARP Associates.

4.15 There are no surface water abstractions for sensitive uses within 1km of the site.

Other Environmental Data

4.16 The Landmark Envirocheck Report, included in Appendix E, contains information on numerous environmental aspects. A summary of the pertinent findings, not already covered, with additional comments, is given below.

4.16.1 There are no six. Pollution Control Authorisations within 250m of the site. Two relate to the use of cement at the stone products suppliers adjacent to the east, one to respraying of vehicles at Midlothian garage, on New Mill Road to the east (but now revoked), two relate to metal processes at the works to the north (but both now revoked), and one is for sewage sludge treatment 194m to the north. None are likely to have had any significant impact on the site.

4.16.2 There are no discharge consents relating to, or adjacent to, the site.

4.16.3 There are no closed or currently licenced landfills within 250m of the site.

4.16.4 The site is not within a radon affected area, and no radon protective measures are necessary on the site.

4.16.5 There are no contemporary trade directory entries relating to any activities which could have significant impact on the site.

4.16.6 There are no fuel station entries within 250m of the site.

5.0 PRELIMINARY RISK ASSESSMENT AND CONCEPTUAL MODEL

5.1 Part II A of the Environmental Protection Act (EPA) 1990 became effective from 1st April 2000. The Regime was introduced by the Contaminated Land (England) Regulations 2000 (SI 2000, No. 227) along with the associated DEFRA Circular February 2000.

5.2 Section 78A (2) of the Act defines "Contaminated land is any land in such a condition, by reason of substances in, on or under that land that -

(a) significant harm is being caused or there is a significant possibility of such harm being caused; or

(b) pollution of controlled waters is being caused, or there is a significant possibility of such pollution being caused;

From S78A (4) "Harm" : means harm to the health of living organisms or other interference with the ecological systems of which they form part and, in the case of man, includes harm to his property.

Controlled waters are defined as "..the waters in any relevant lake or pond, or of so much of any relevant river or watercourse as is above the freshwater limit, and ground waters, that is to say, any waters contained in underground strata". From the 1st October 2004, the definition of groundwater in relation to Part IIA was amended, by the Second Water Act Commencement Order SI 2004 No 2528. This makes clear that "ground waters" does not include waters above the saturation zone, i.e. does not include any soil water and pore water present in the unsaturated zone.

5.3 The objectives of the regime are to ensure that risks associated with contaminated land are reduced to an acceptable level, having regard to the costs of doing so. The costs should be proportionate, manageable and economically sustainable.

- 5.4 In assessing risk, it is necessary to consider the probability, or frequency, of occurrence of the hazard and the magnitude/seriousness of the consequences. Consequently, for land to be classified as contaminated, it must have, or be very likely to have, a detrimental effect on humans or the environment before it can be classified as contaminated land.
- 5.5 In establishing risk, the concept of the pollutant source/pathway/receptor linkage model, based on current and proposed site use, is to be considered. Therefore for a site to be deemed contaminated under the Regime, all three linkages must be in place i.e. the site must not only contain harmful substances, but the substances must have a pathway by which to leak out and cause significant harm to a receptor.
- 5.6 In September 2004, the Environment Agency published the Contaminated Land Report (CLR) 11, "Model Procedures for the Management of Land Contamination". The document is intended to provide the technical framework for structured decision making about land contamination, and is intended to assist all those involved in "managing" the land, in particular landowners, developers, financial service providers, planners and regulators. As the document currently provides the framework for best practice, the general principles are, therefore, followed in conducting the assessment below.

Conceptual Site Model

- 5.7 It is known that the site is proposed for residential use, with private gardens. The site is shown to be underlain by Rough Rock (sandstone), overlain by alluvium on a strip of around 50m width alongside the River Holme, in the east of the site. The solid strata and alluvium are both designated as Secondary A aquifers, and the soils are likely to be of high leaching potential. The nearest surface water is the River Holme, which flows north just inside the eastern boundary. There are no groundwater or surface water abstractions for sensitive uses within 1km of the site.
- 5.8 The archive maps show no evidence of any prior development on the site, or adverse activity. Works buildings are present adjacent to the north and east, although it is considered unlikely these would have contaminated the site, given the topography. There are no landfills within 250m of the site. A well is indicated to be present on the

northwest of the site. Farmers have been known to import fill material onto farmland to improve the drainage or topography, and agricultural land can also be contaminated by heavy metals from sewage sludge application, if this has occurred in the past. There is, therefore, still a possibility that contamination could be present, although the likelihood is low.

5.9 The conceptual model needs to consider sources of contamination, pathways along which contaminants could migrate and the receptors, which may become exposed. Guidance published by the Environment Agency has been consulted with regard to pathways and receptors. The potential sources, pathways, and receptors, applicable to the proposed development are identified on the table below. Any pathways in italics are deemed not to be viable (and the reason given in brackets).

Potential Source - Pathway - Receptor Matrix

Contamination Sources	Pathways	Receptors
Possible made ground – metals, inorganics, TPH, PAH, phenol, asbestos Possible sewage sludge application – heavy metals	<ul style="list-style-type: none"> • Ingestion and dermal contact with soil and dust • Fruit and vegetable intake, with soil • Vapour inhalation outdoor • Vapour inhalation indoor 	Humans:- <ul style="list-style-type: none"> • Future occupants • Construction workers • Maintenance workers • Adjacent residents and general public
	<ul style="list-style-type: none"> • Migration in surface water • Migration in groundwater • Migration via well in NW 	Controlled waters:- <ul style="list-style-type: none"> • Groundwater (Secondary A Aquifer, no sensitive abstractions within 1km) • Surface water (nearest downslope is on the east of the site, but there are no sensitive abstractions within 1km)
	<ul style="list-style-type: none"> • Root uptake 	Vegetation:- <ul style="list-style-type: none"> • Landscape areas • Private gardens
	<ul style="list-style-type: none"> • Direct contact 	Construction materials:- <ul style="list-style-type: none"> • Bricks and blocks • Concrete and buried mortar • Structural steelwork • Foundations • Buried services, including water supply

5.10 The above matrix indicates there, if the two potential sources of contamination are present, there are several potential source - pathway - receptor linkages applicable to the proposed development.

Further Investigation

5.11 The existence of the possible contamination sources is not yet known, and it is recommended that a ground investigation on a grid system is implemented, together with sampling and testing of any made ground, and topsoil, for the potential contaminants of concern to assess this possibility. The investigation should be implemented generally in accordance with BS 10175 "Investigation of potentially contaminated sites", although given the greenfield nature of the site, samples on a 50m grid rather than 25m should be satisfactory, subject to regulator agreement. This will enable refinement of the conceptual model and a full assessment of any risks to be made.

5.12 Samples should be issued for testing to a UKAS accredited laboratory for a broad suite of determinands including metals, inorganics, asbestos, phenols, speciated PAH, and TPH. Speciated assessment of TPH will be required for any elevated levels.

5.13 Leachability testing should be undertaken where contamination levels are above the designated screening values.

6.0 COMMENT AND CONCLUSION

Site Description

- 6.1 The site comprises five undeveloped rough grass fields. The site slopes generally to the northeast. A track crosses the site from east to west (Robinson Lane). Mature trees are present along the track, and generally along boundaries, with a few also scattered within the north of the site. The River Holme runs northwards, within part of the eastern boundary, and is considerably lower than the site itself.
- 6.2 The site is bounded to the west by Woodhead Road, and the site is around 4m lower than the road at this location. The site is bounded to the south by the gardens of residential properties of Haggroyd Lane (except the westernmost property, which is included within the site). The southern end of the eastern boundary adjoins Smithy Place Lane, and further north, deviates westwards around several residential properties, before continuing eastwards to cross the River Holme and adjoining a building stone suppliers, and the gardens of residential properties. The northern boundary adjoins a metal works, and deviates south around a field and a metal cutting works.

Site History

- 6.3 Ordnance Survey archive maps show no evidence of any prior development on the site, or adverse activity. Works buildings were/are present adjacent to the north and east, although it is considered unlikely these would have contaminated the site, given the topography.

Geology

- 6.4 The geological maps show the site to be underlain by the Rough Rock (sandstone) of the Upper Carboniferous Period. No drift cover is present on most of the site, but a strip of around 50m width alongside the River Holme, is shown to be overlain by Alluvium (river deposits). There are no faults shown to affect the site.

Coal Mining and Coal Recovery

- 6.5 The Coal Mining Report indicates the site is stable with regard to coal mining.
- 6.6 There are no workable coal seams within 30m of the surface of the site. Therefore, there will be no arisings of coal during proposed development works, and it will not be possible to win any coal from the site by excavations before development.

Environmental Data

- 6.7 The strata beneath the site are classed as a Secondary A Aquifer. There are no sensitive groundwater abstractions within 1km of the site.
- 6.8 The nearest downslope surface water is the River Holme, which flows northwards, just inside the eastern boundary. However, there are no sensitive abstractions within 1km of the site.
- 6.9 No radon protective measures are required for properties constructed on the site.
- 6.10 There are no landfills within 250m of the site. Therefore, there should be no requirement for gas protection within the proposed properties.
- 6.11 A very narrow strip alongside the River Holme, within the eastern boundary of the site, is shown to be at risk from river flooding, although wider areas are shown to be at risk further north, downstream of the site. A specialist flood risk report has been prepared separately by ARP Associates.

Likely Ground Conditions

- 6.12 The subsoils on the majority of the site are likely to comprise relatively dense granular material derived from in situ weathering of the underlying sandstone. On the eastern margins of the site, these soils are likely to be overlain by softer alluvial material, which could comprise a mixture of sand, silt, clay, and possibly peat. Groundwater is likely to be shallow towards the river.

Contamination Assessment

- 6.13 The desk study has identified the following potential contamination sources:

6.13.1 Possible made ground - metals, inorganics, TPH, PAH, phenol, asbestos.

6.13.2 Possible sewage sludge application - heavy metals

The possibility of the presence of both sources is considered slight, but cannot be discounted. If the sources are present, and the site is redeveloped with the proposed residential dwellings, there is a possibility of source - pathway - receptor linkages.

- 6.14 The existence of the possible contamination sources is not yet known, and it is recommended that a ground investigation on a grid system is implemented, together with sampling and testing of any made ground, and topsoil, for the potential contaminants of concern to assess this possibility. The investigation should be implemented generally in accordance with BS 10175 "Investigation of potentially contaminated sites", although given the greenfield nature of the site, samples on a 50m grid rather than 25m should be satisfactory, subject to regulator agreement.

Foundations

- 6.15 It is anticipated that traditional strip or trench fill foundations will be acceptable for most of the site, subject to the thickness of existing fill material and proposed loading. This will need to be confirmed by an intrusive investigation. However, the alluvium shown to be present within around 50m of the River Holme, may not be suitable to support such foundations, and alternative solutions such as rafts or piles may be required.
- 6.16 The foundations will need to be taken below any existing made ground, to bear onto the natural strata.

Excavations

- 6.17 It is likely that excavations into the majority of natural strata will remain stable in the short term, requiring minimum statutory support. However, instability may be anticipated within any made ground present on the site, and within any alluvium, shown to be present within 50m of the River Holme.
- 6.18 The groundwater regime can only be confirmed by an intrusive investigation. However, the likelihood of shallow groundwater will probably increase towards the River Holme in the east.
- 6.19 Excavations into the majority of natural subsoils will probably be readily achieved using conventional hydraulic plant. However, it is possible that shallow rock could be present in some areas of the site, for which a breaker may be required to penetrate.

Road Pavement Construction

- 6.20 For any areas of road pavement, including car parking areas, the design California Bearing Ratio will depend upon the exact nature of the formation. On natural subsoils, it is anticipated a design CBR of at least 2% will be applicable. If any significant made ground is present, it may be possible to remove a nominal thickness of material to an agreed level, proof roll the formation, and replace to a controlled specification.

Soakaways

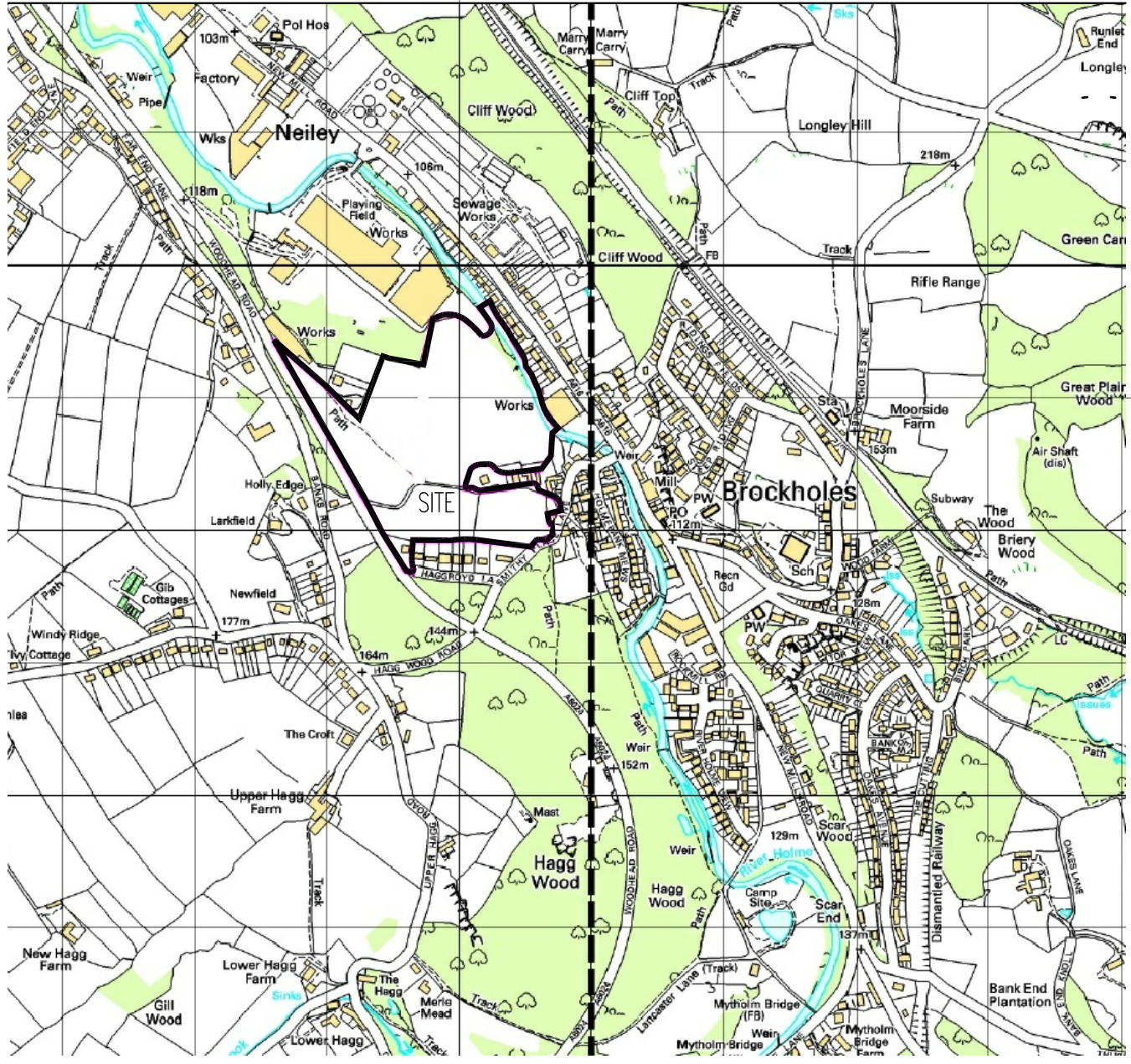
- 6.21 It is possible that the use of soakaway drainage is feasible, but this will be subject to confirmation by percolation testing, and assessment of any topographical effects, such as potential re-emergence further downslope.

APPENDIX A

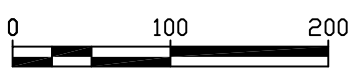
SITE LOCATION PLAN



414800



411200



Rev	By	Date	Amendment	Chk
/	FTH	04.05.16	Issued for approval	JR

Title
SITE LOCATION PLAN

Project/Client
**LAND OFF WOODHEAD ROAD, BROCKHOLES.
MILLER HOMES LTD.**

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Scale	NTS @ A4	Drawn	FTH
Date	MAY 16	Chk.	JR/PW
Drg. No.	MLR/07/SI.02	Rev	/

A P P E N D I X B

ORDNANCE SURVEY ARCHIVE MAPS

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)
County Burgh Boundary (Scotland)
Co. Boro. Bdy.
Co. Burgh Bdy.
BP BS 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 **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
NTL Normal Tidal Limit **Wd Pp** Wind Pump

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

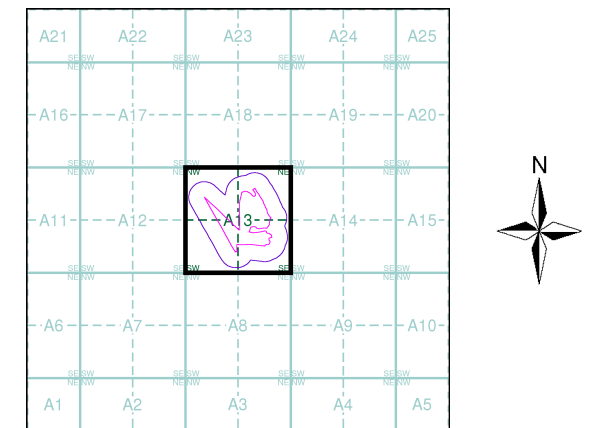
Cliff **Slopes** **Top**
Rock **Rock (scattered)**
Boulders **Boulders (scattered)**
Positioned Boulder **Scree**
Non-Coniferous Tree (surveyed) **Coniferous Tree (surveyed)**
Non-Coniferous Trees (not surveyed) **Coniferous Trees (not surveyed)**
Orchard Tree **Scrub** **Bracken**
Coppice, Osier **Reeds** **Marsh, Saltings**
Rough Grassland **Heath** **Culvert**
Direction of water flow **Triangulation Station** **Antiquity (site of)**
Electricity Transmission Line **Electricity Pylon**
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
Cemy 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	1892	2
Yorkshire	1:2,500	1906	3
Yorkshire	1:2,500	1918	4
Ordnance Survey Plan	1:2,500	1966 - 1967	5
Additional SIMs	1:2,500	1966 - 1984	6
Additional SIMs	1:2,500	1985 - 1987	7
Additional SIMs	1:2,500	1990 - 1992	8
Large-Scale National Grid Data	1:2,500	1992 - 1993	9
Large-Scale National Grid Data	1:2,500	1993 - 1994	10
Large-Scale National Grid Data	1:2,500	1994	11

Historical Map - Segment A13

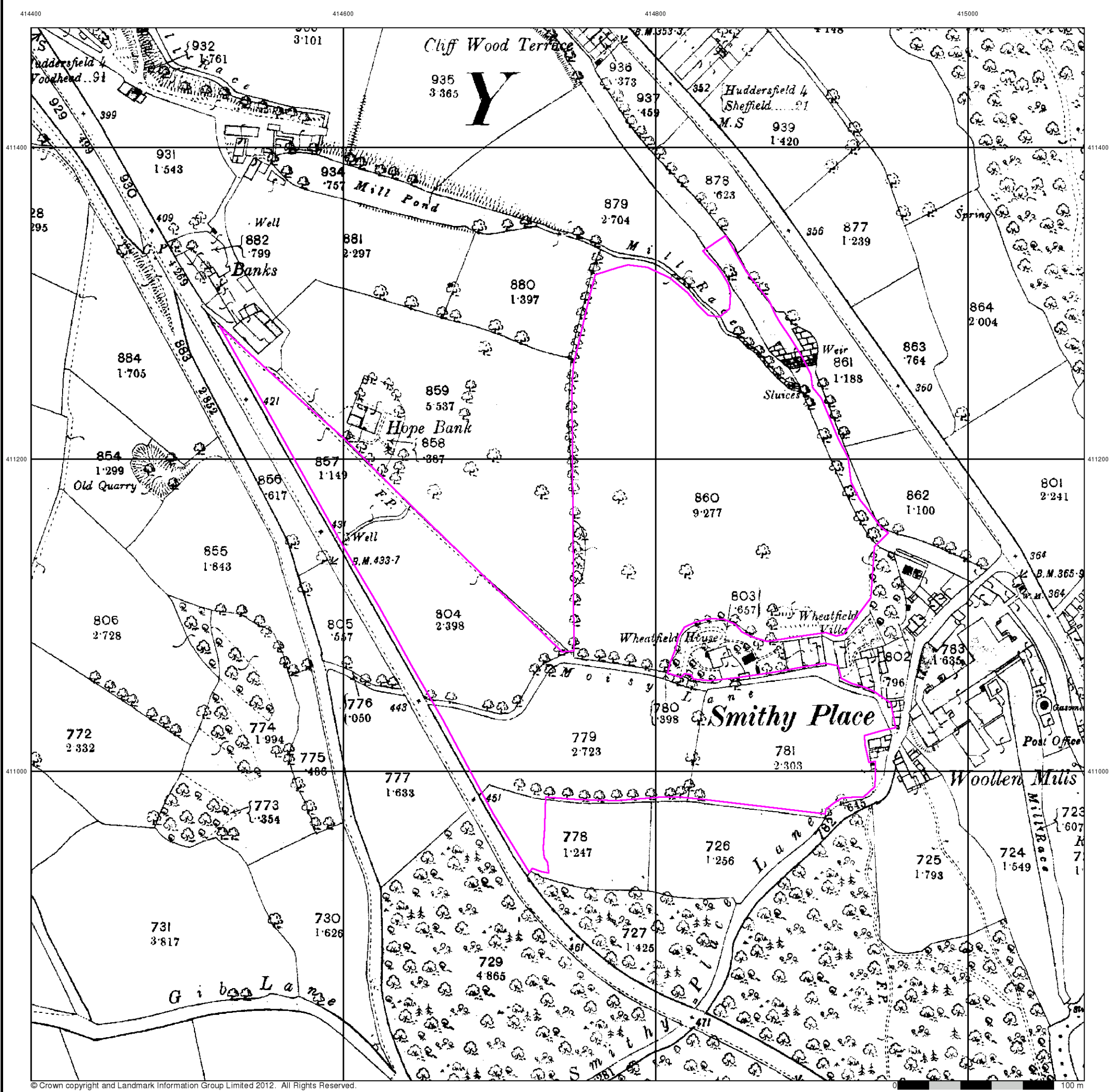


Order Details

Order Number: 47933383_1_1
 Customer Ref: MLR/07
 National Grid Reference: 414750, 411150
 Slice: A
 Site Area (Ha): 7.51
 Search Buffer (m): 100

Site Details

Land off Woodhead Rd, Brockholes, HOLMFIRTH, HD9 6PR

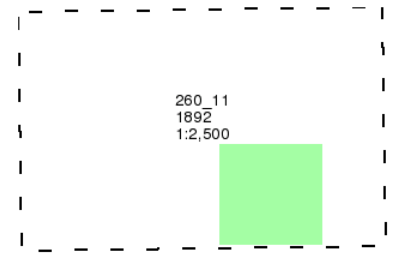


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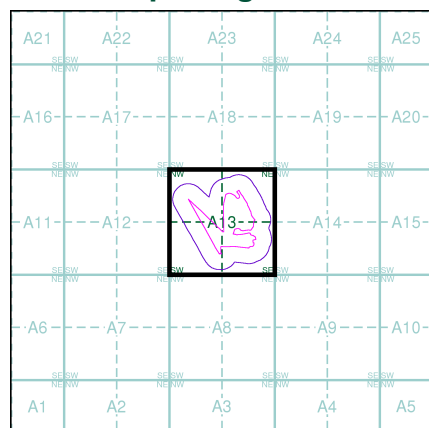
Yorkshire
Published 1892
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

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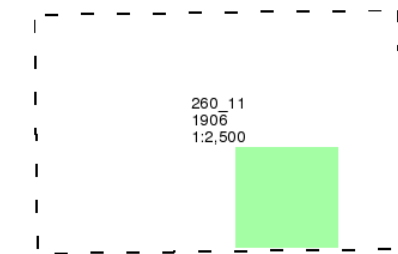
Yorkshire

Published 1906

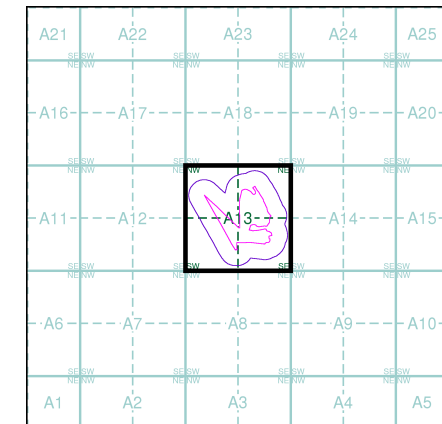
Source map scale - 1:2,500

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

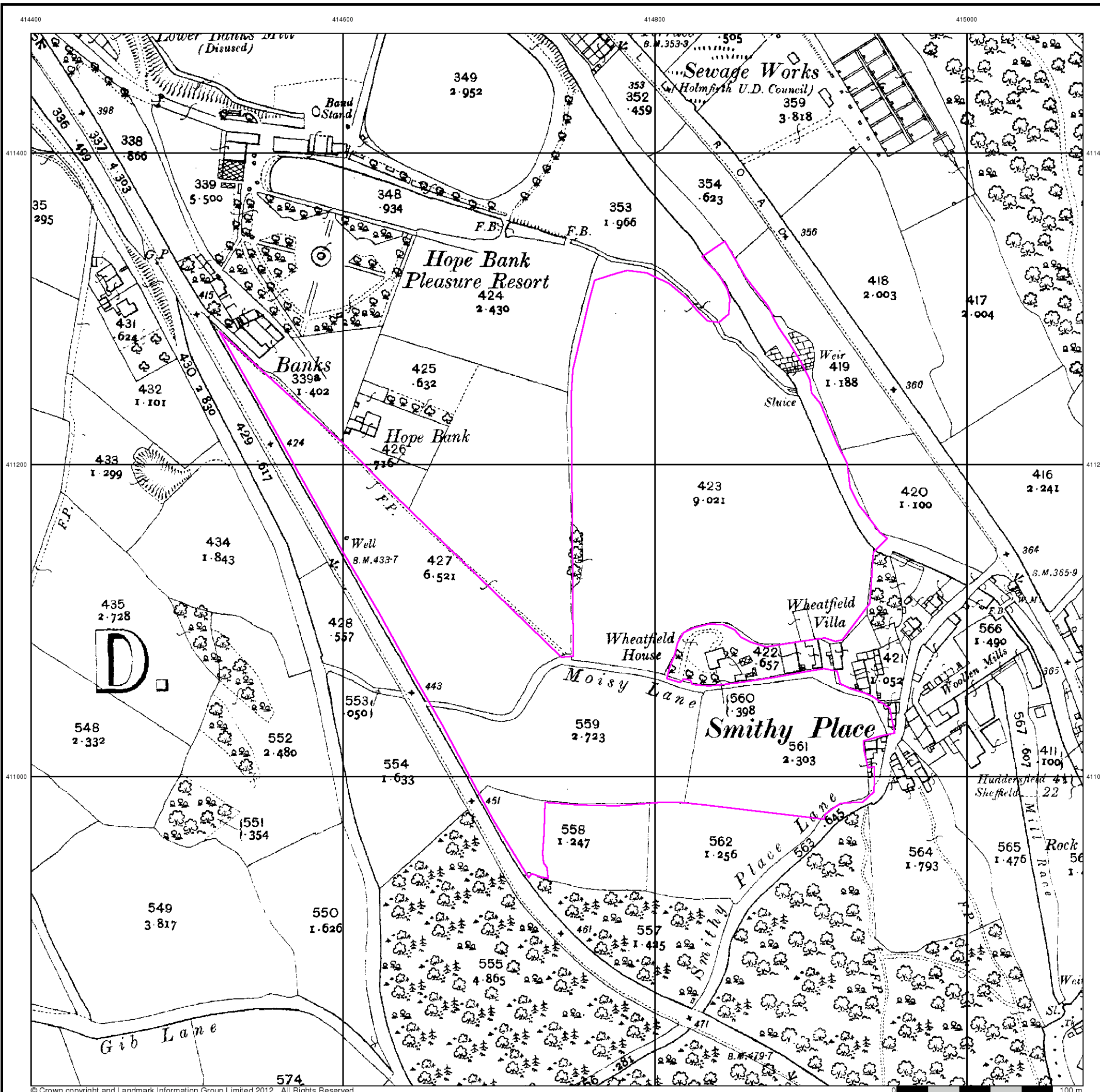


Order Details

Order Number: 47933383_1_1
 Customer Ref: MLR/07
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 Slice: A
 Site Area (Ha): 7.51
 Search Buffer (m): 100

Site Details

Land off Woodhead Rd, Brockholes, HOLMFIRTH, HD9 6PR





Ordnance Survey Plan

Published 1966 - 1967

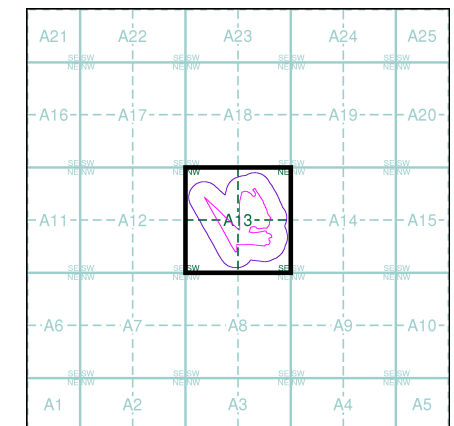
Source map scale - 1:2,500

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)

SE 1411 1966 12,500	SE 1511 1966 12,500
SE 1410 1967 12,500	SE 1510 1967 12,500

Historical Map - Segment A13

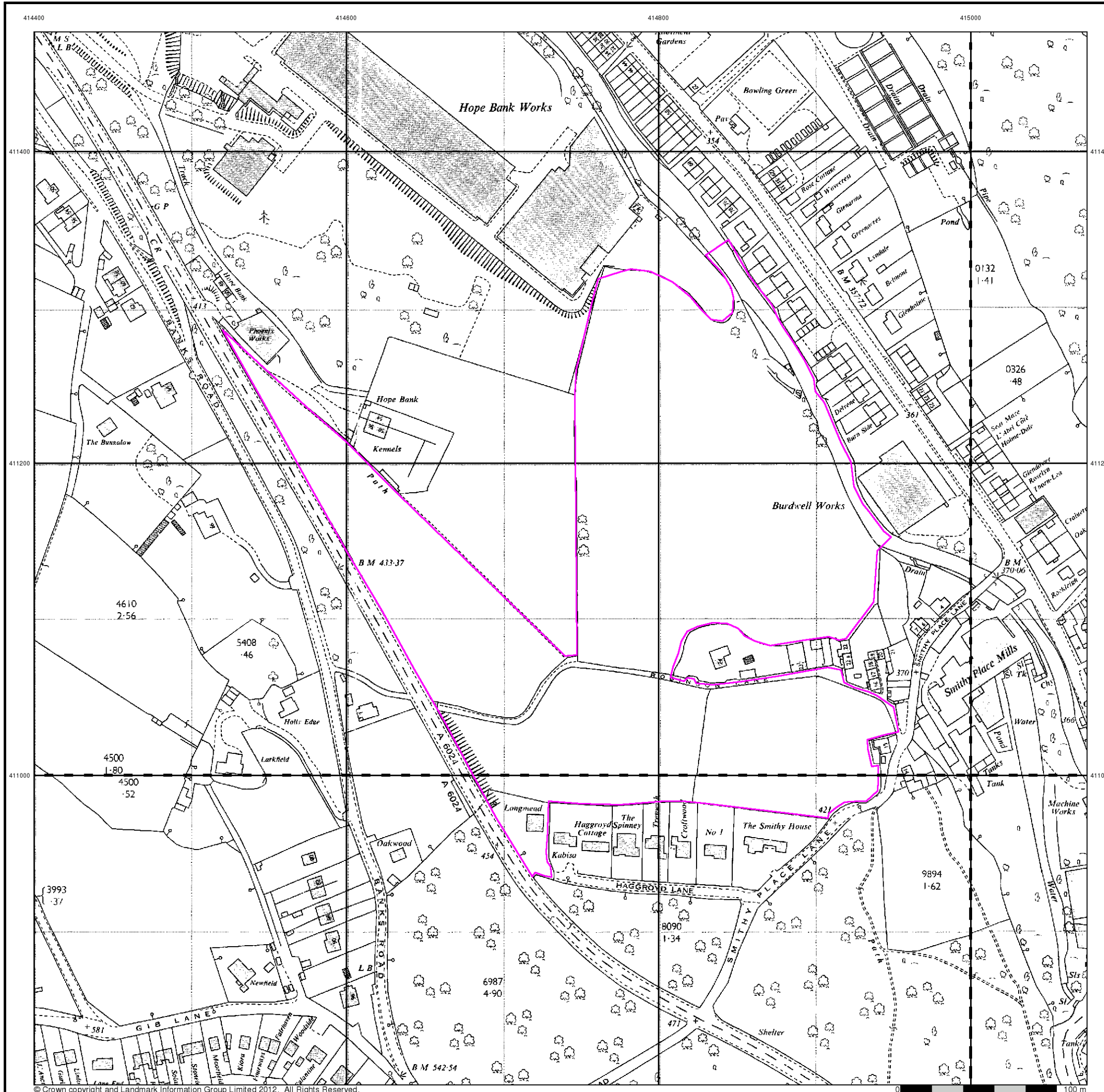


Order Details

Order Number: 47933383_1_1
 Customer Ref: MLR/07
 National Grid Reference: 414750, 411150
 Slice: A
 Site Area (Ha): 7.51
 Search Buffer (m): 100

Site Details

Land off Woodhead Rd, Brockholes, HOLMFIRTH, HD9 6PR





Additional SIMs

Published 1966 - 1984

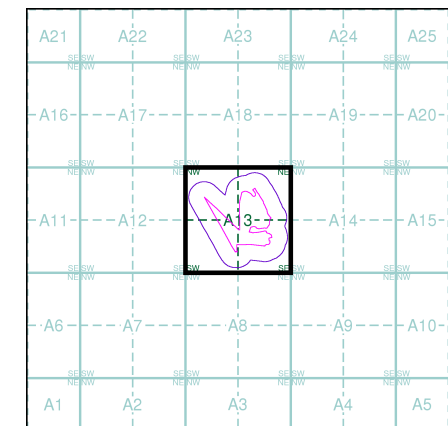
Source map scale - 1:2,500

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)

SE 1411 1966 1:2,500	SE 1511 1966 1:2,500
SE 1510 1984 1:2,500	

Historical Map - Segment A13

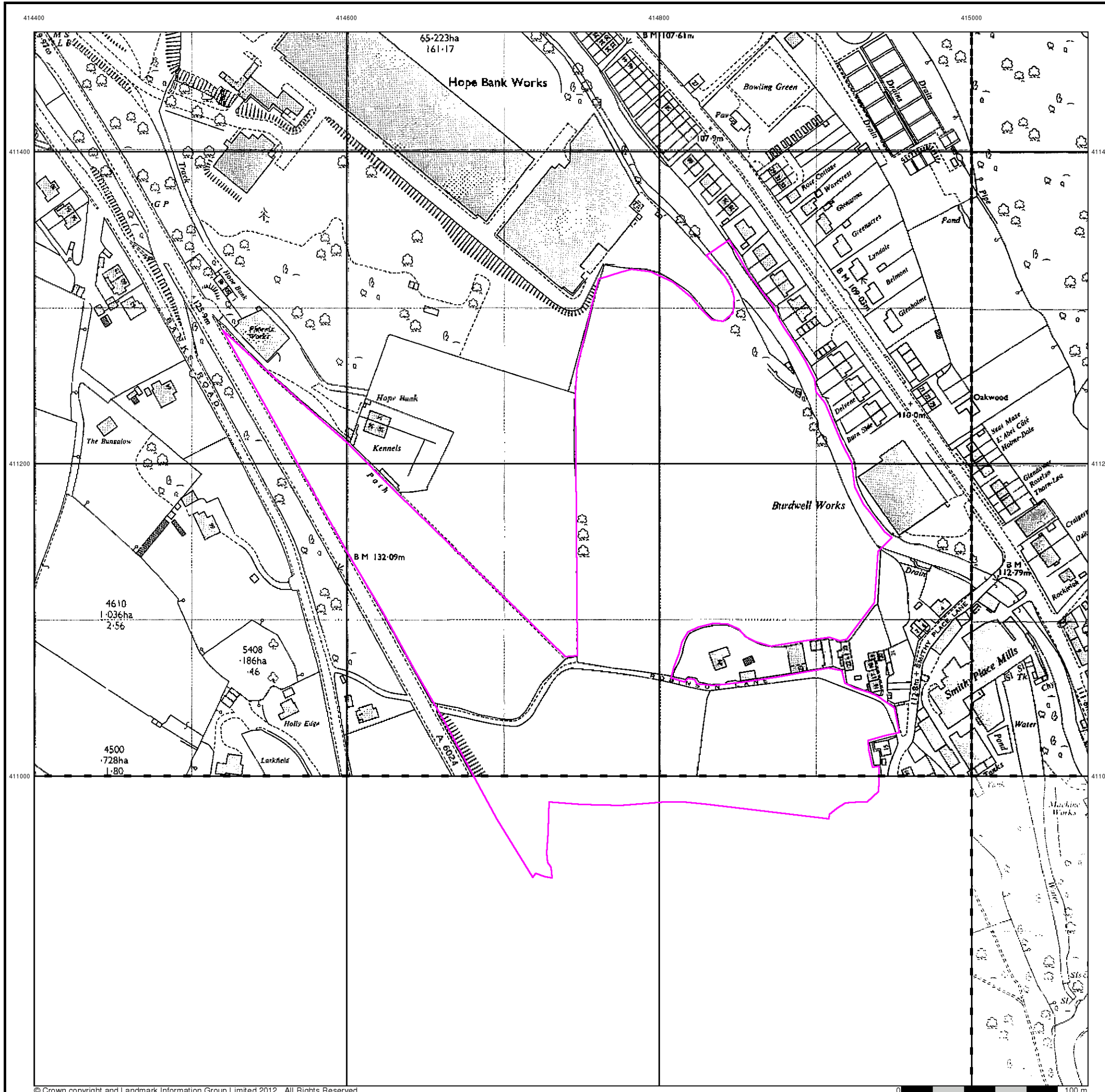


Order Details

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 Customer Ref: MLR/07
 National Grid Reference: 414750, 411150
 Slice: A
 Site Area (Ha): 7.51
 Search Buffer (m): 100

Site Details

Land off Woodhead Rd, Brockholes, HOLMFIRTH, HD9 6PR





Additional SIMs

Published 1985 - 1987

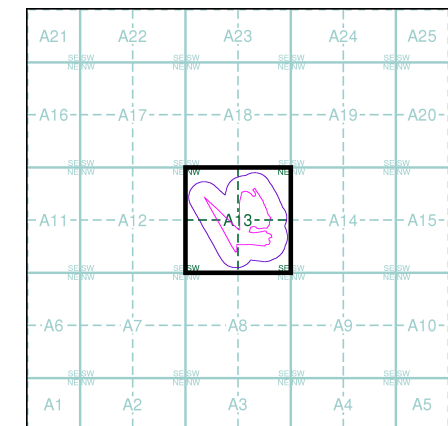
Source map scale - 1:2,500

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)

SE 1411 1987 12,500	SE 1511 1985 12,500
	SE 1510 1987 12,500

Historical Map - Segment A13

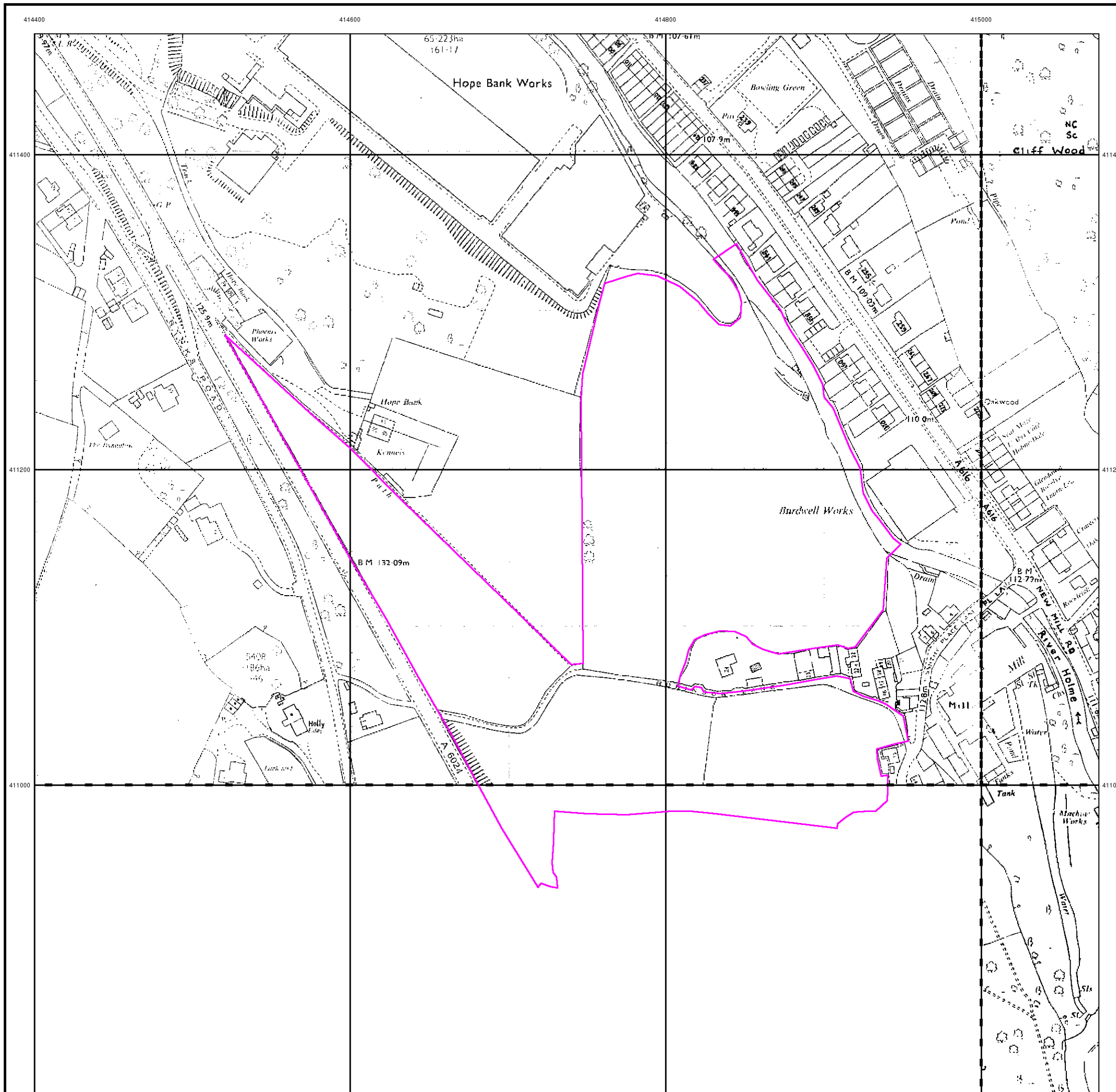


Order Details

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 Search Buffer (m): 100

Site Details

Land off Woodhead Rd, Brockholes, HOLMFIRTH, HD9 6PR





Additional SIMs

Published 1990 - 1992

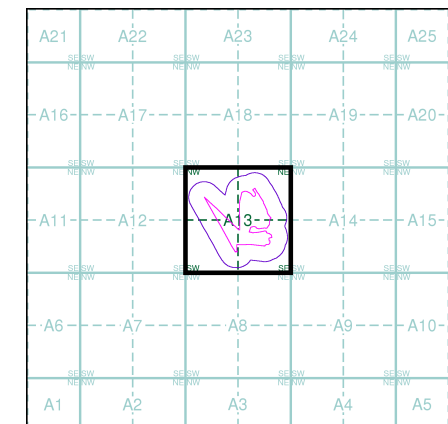
Source map scale - 1:2,500

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)

SE 1411 1992 12,500	SE 1511 1990 12,500
	SE 1510 1990 12,500

Historical Map - Segment A13

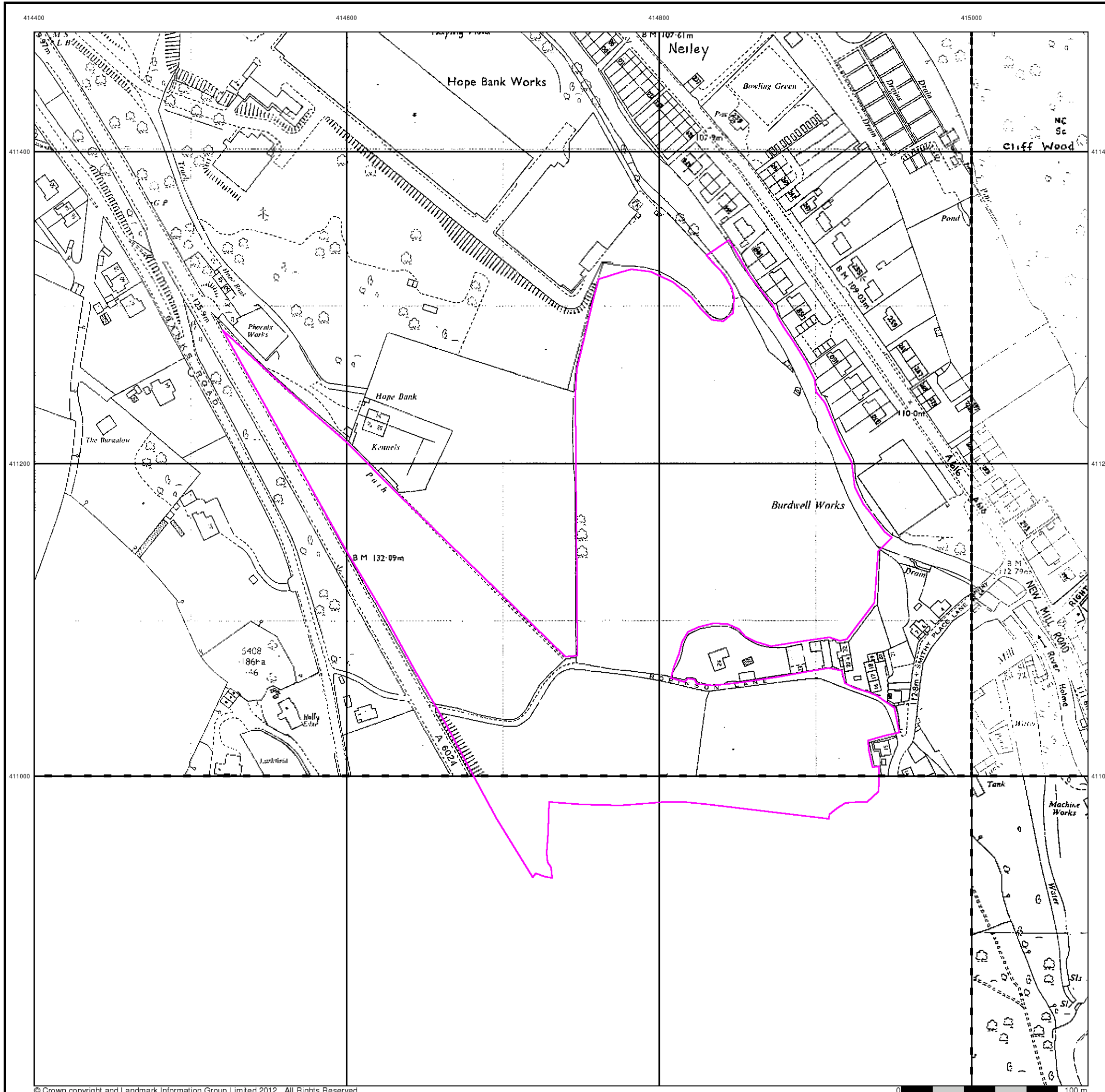


Order Details

Order Number: 47933383_1_1
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Site Details

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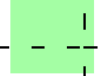
Large-Scale National Grid Data

Published 1992 - 1993

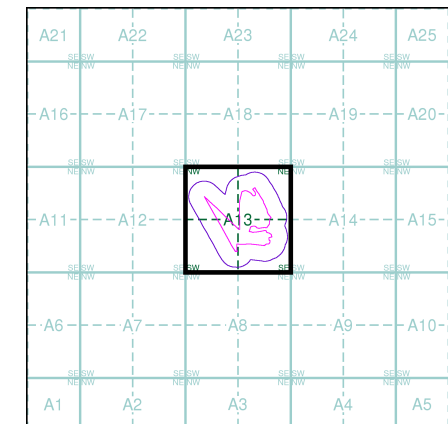
Source map scale - 1:2,500

'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)

SE 1411 1993 1:2,500	SE 1511 1992 1:2,500
	
SE 1510 1992 1:2,500	

Historical Map - Segment A13

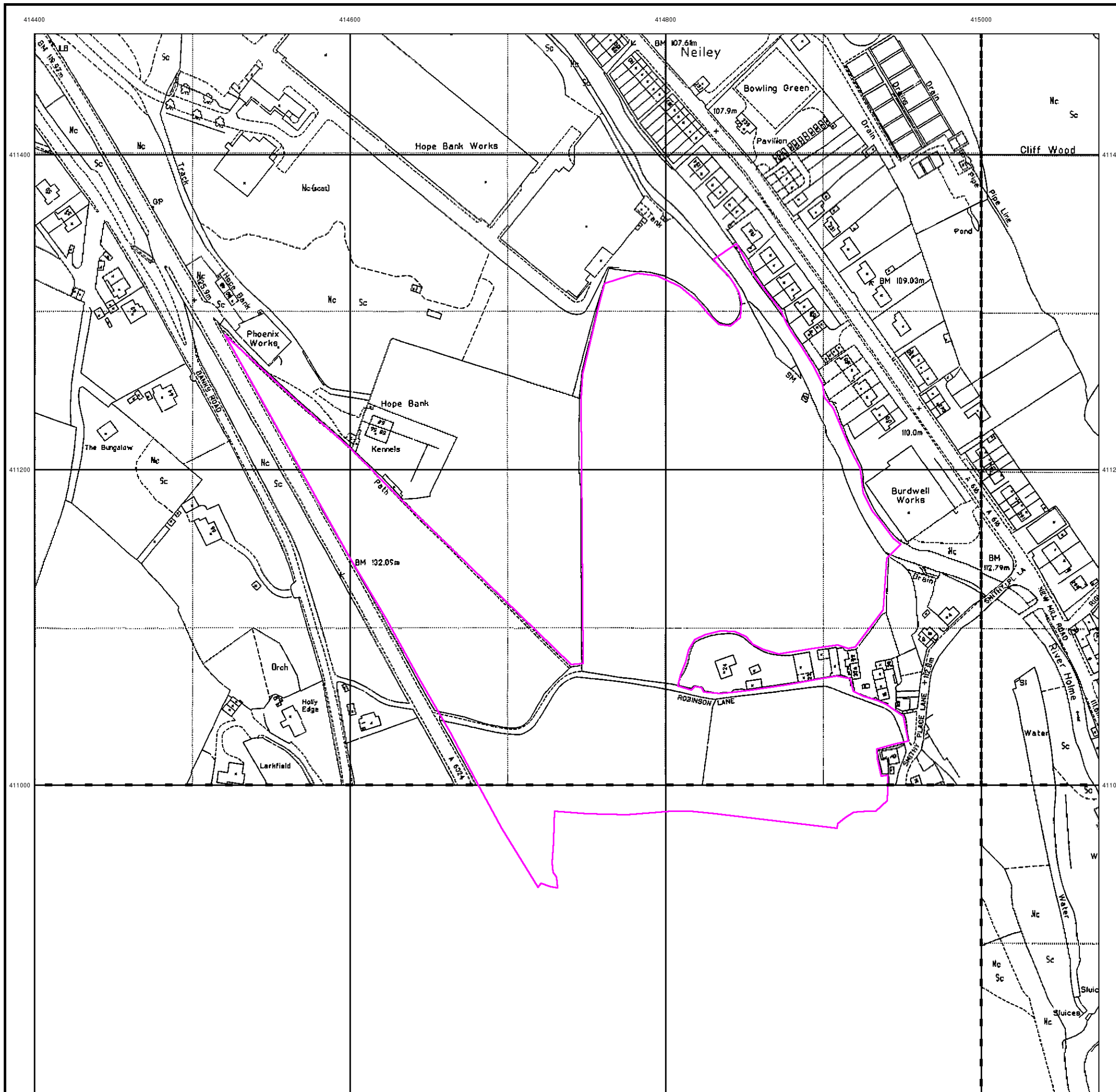


Order Details

Order Number: 47933383_1_1
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 Site Area (Ha): 7.51
 Search Buffer (m): 100

Site Details

Land off Woodhead Rd, Brockholes, HOLMFIRTH, HD9 6PR





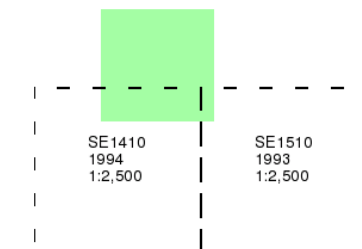
Large-Scale National Grid Data

Published 1993 - 1994

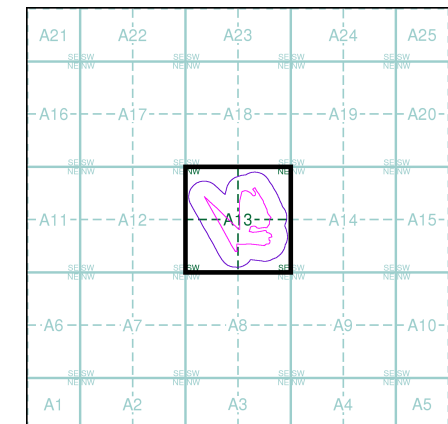
Source map scale - 1:2,500

'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



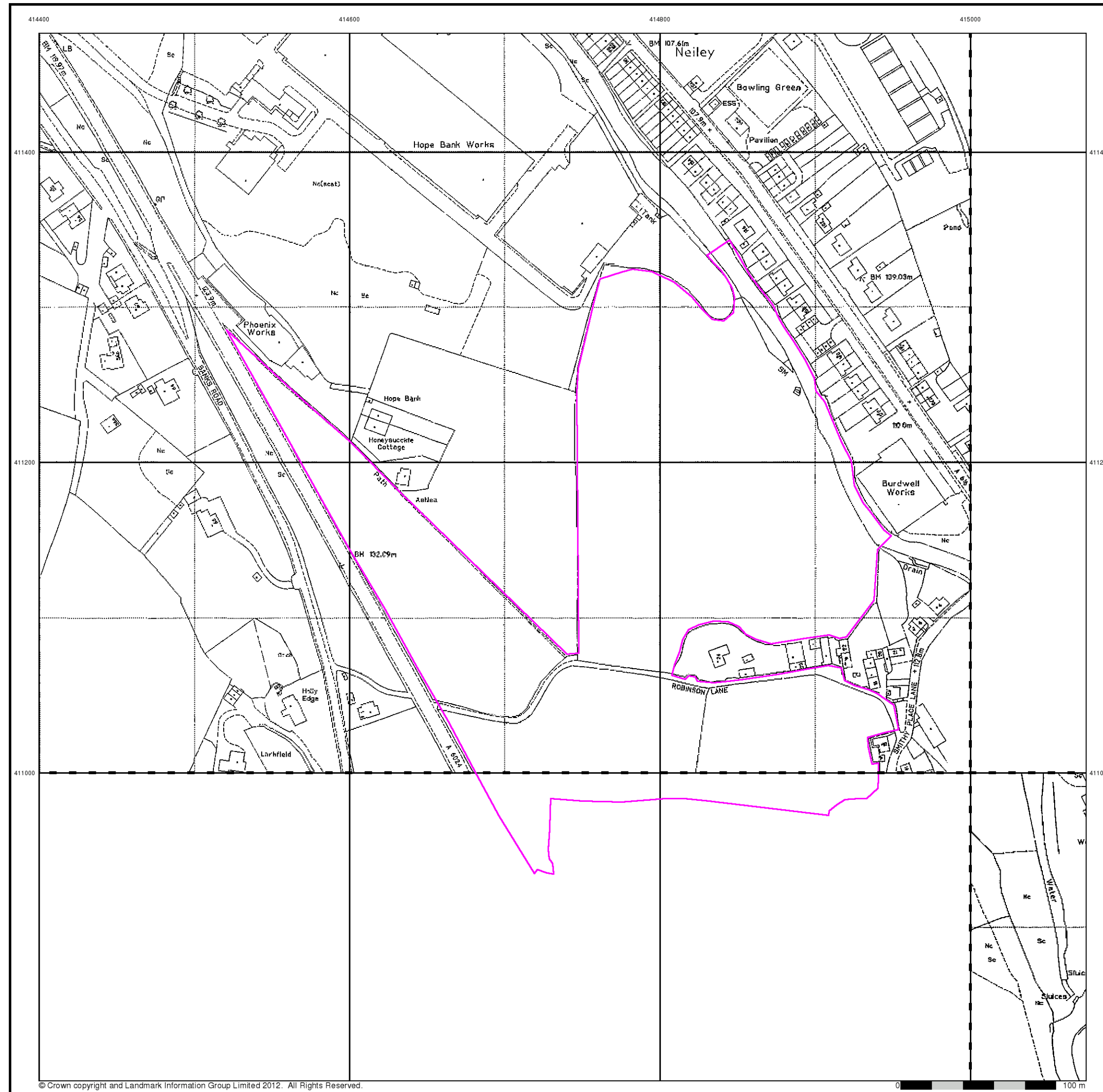
Order Details

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 Customer Ref: MLR/07
 National Grid Reference: 414750, 411150
 Slice: A
 Site Area (Ha): 7.51
 Search Buffer (m): 100

Site Details

Land off Woodhead Rd, Brockholes, HOLMFIRTH, HD9 6PR





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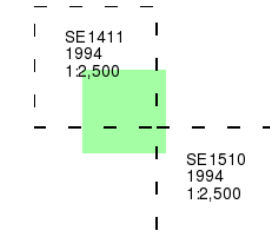
Large-Scale National Grid Data

Published 1994

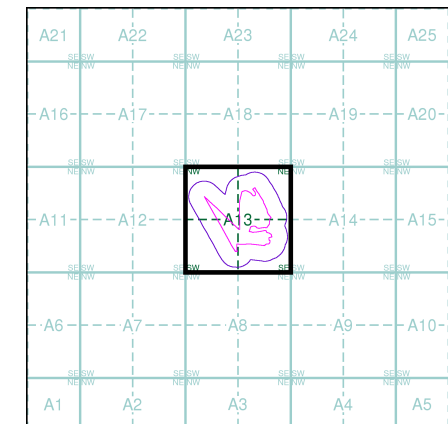
Source map scale - 1:2,500

'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: 47933383_1_1
 Customer Ref: MLR/07
 National Grid Reference: 414750, 411150
 Slice: A
 Site Area (Ha): 7.51
 Search Buffer (m): 100

Site Details

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

414400

414600

414800

415000

411000

411200

411400

411200

411000

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
- County Borough Boundary (England)
- 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
Shown only when not coincident with other boundaries
- Civil Parish
Shown alternately when coincidence of boundaries occurs
- BP, BS Boundary Post or Stone
- Ch Church
- CH Club House
- F E Sta Fire Engine Station
- FB Foot Bridge
- Fn 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 Telephone Call Box
- TCP Telephone Call Post
- W Well

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
- Overhead detail
- Multi-track railway
- County boundary (England only)
- District, Unitary, Metropolitan, London Borough boundary
- Underground detail
- Narrow gauge railway
- Single track railway
- Civil, parish or community boundary
- Constituency boundary
- Area of wooded vegetation
- Non-coniferous trees
- Coniferous trees
- Positioned tree
- Coppice or Osiers
- Orchard
- Rough Grassland
- Scrub
- Water feature
- Flow arrows
- MHW(S)** Mean high water (springs)
- MLW(S)** Mean low water (springs)
- Telephone line (where shown)
- Bench mark (where shown)
- Point feature (e.g. Guide Post or Mile Stone)
- Site of (antiquity)
- General Building
- Important Building

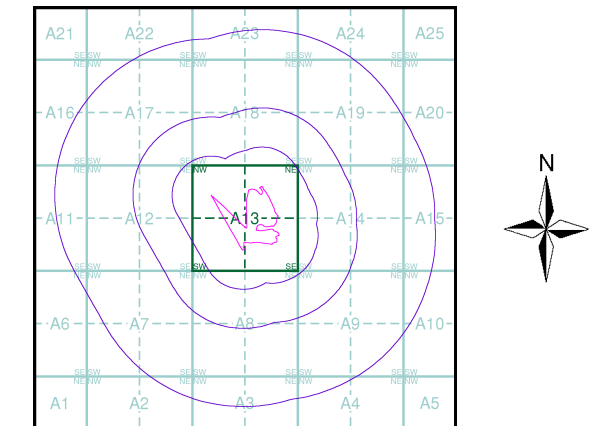


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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Yorkshire	1:10,560	1854	3
Yorkshire	1:10,560	1894	4
Yorkshire	1:10,560	1907 - 1908	5
Yorkshire	1:10,560	1930	6
Yorkshire	1:10,560	1933	7
Yorkshire	1:10,560	1938	8
Yorkshire	1:10,560	1948 - 1949	9
Ordnance Survey Plan	1:10,000	1955 - 1956	10
Ordnance Survey Plan	1:10,000	1966 - 1969	11
Ordnance Survey Plan	1:10,000	1970 - 1979	12
Ordnance Survey Plan	1:10,000	1982 - 1984	13
Huddersfield	1:10,000	1984	14
Ordnance Survey Plan	1:10,000	1992	15
10K Raster Mapping	1:10,000	2006	16
10K Raster Mapping	1:10,000	2013	17

Historical Map - Slice A



Order Details

Order Number: 47933383_1_1
Customer Ref: MLR/07
National Grid Reference: 414750, 411150
Slice: A
Site Area (Ha): 7.51
Search Buffer (m): 1000

Site Details

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Russian Military Mapping Legends

1:5,000 and 1:10,000 mapping

a. Not drawn to scale b. Drawn to scale

	Government and Administrative Buildings		Military and Industrial Buildings
	Military and Communication Areas		Subway Entrance
	Fireproof Building		Prominent Fireproof Building
	Non-fireproof Building		Non-fireproof Building (non-dwelling)
	Factory, mill, and flour mill, with chimneys		Factory, mill, and flour mill, without chimneys
	Power Station, drawn to scale		Hydroelectric Power Station
	Radio Station, drawn to scale		Telephone Station, drawn to scale
	Abandoned Open-pit Mine or Quarry		Open-pit Salt Mine
	Pit		Oil Deposit or Well
	Oil Seepage		Natural Gas Tank
	Tailings Pile		Fuel Storage Tanks
	Bench Mark		Drill Hole
	Burial Mound		Triangulation Point on Burial Mound
	Single-track Railroad		Double-track Railroad
	Small Bridge		Tunnel
	Pipe (Culvert)		Railroad and Station Building
	Coniferous Forest		Deciduous Forest
	Mixed Forest		Lawns
	Citrus Orchard		Wet Ground
	Scattered Vegetation		

243,8 Values for prominent elevations
186.0 Numbers for spot elevations, depth soundings, contour lines, etc.
0,2 Velocity of the current, width of river bed, depth of river
180/12 Fractional terms: length and capacity of bridges; depth of fords and condition of the river bottom; height of forest and the diameter of trees

Russian Alphabet (For reference and phonetic interpretation of map text)

А а (A)	З з (Z)	П п (P)	Ч ч (CH)
Б б (B)	И и (I)	Р р (R)	Ш ш (SH)
В в (V)	Й й (Y)	С с (S)	Щ щ (SHCH)
Г г (G)	К к (K)	Т т (T)	Ъ (-)
Д д (D)	Л л (L)	У у (U)	Ы (Y)
Е е (E)	М м (M)	Ф ф (F)	Ь (')
Ё ё (YO)	Н н (N)	Х х (KH)	Э э (E)
Ж ж (ZH)	О о (O)	Ц ц (TS)	Ю ю (YU or IU)
			Я я (YA or IA)

1:25,000 mapping

a. Not drawn to scale b. Drawn to scale

	Government and Administrative Buildings		Military and Industrial Buildings
	Military and Communication Areas		Subway Entrance
	Partly Demolished Buildings		Demolished Buildings
	Built-Up Area with Fireproof Buildings Predominant		Built-Up Area with Non-Fireproof Buildings Predominant
	Individual Fireproof Building		Prominent Industrial Building
	Individual Dwelling, Fireproof		Ruins of an Individual Dwelling
	Factory or Mill Chimney		Factory or Mill with Chimney
	Factory or Mill without Chimney		Salt Mine
	Tailings Pile		Mine or Open Pit Mine
	Operating Shaft or Mine		Non-Operating Shaft or Mine
	Pit		Stone Quarry
	Gas Pump or Service Station		Fuel Storage or Natural Gas Tank
	Oil or Natural Gas Derrick		Small Hydroelectric Power Station
	Power Station		Transformer Station
	Cemetery		Burial Mound (height in metres)
	Triangulation Point on Burial Mound		Triangulation Point
	Bench Mark		Telegraph Office
	Telephone Station		Radio Station
	Radio Tower		Airfield or Seaplane Base
	Landing Strip		Cut
	Fill		Km Post
	Plantings		Width of Road
	Steep Grade		Highway under Construction
	Improved Dirt Road (former truck road)		Small Bridge
	Pipe (Culvert)		Tunnel
	Dismantled Railroad		Double-track Railroad with First Class Station
	Railroad Under Construction		Shore Embankment
	River or Ditch with Embankment		Water Gauge
	Direction and velocity of current		Water Level Mark
	Well		Spring
	Water Reservoir or Rain Water Pit		Isobath with value
	Heavy (Index) Contour Line		Half Contour Line
	Contour Line and Value		Spot Elevation Value
	Coniferous		Deciduous
	Mixed		Scrub

Key to Numbers on Mapping

SE11SW_Huddersfield

No.	Description
26	Police Station/Headquarters
34	Industrial Building (Use Unknown)
46	Sewage Works

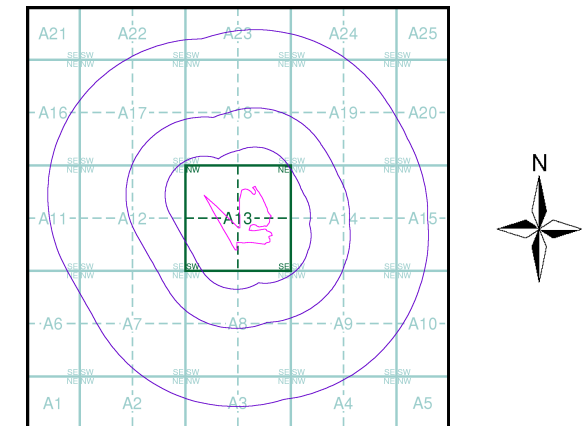


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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Yorkshire	1:10,560	1854	3
Yorkshire	1:10,560	1894	4
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Yorkshire	1:10,560	1938	8
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Ordnance Survey Plan	1:10,000	1966 - 1969	11
Ordnance Survey Plan	1:10,000	1970 - 1979	12
Ordnance Survey Plan	1:10,000	1982 - 1984	13
Huddersfield	1:10,000	1984	14
Ordnance Survey Plan	1:10,000	1992	15
10K Raster Mapping	1:10,000	2006	16
10K Raster Mapping	1:10,000	2013	17

Russian Map - Slice A



Order Details

Order Number: 47933383_1_1
 Customer Ref: MLR/07
 National Grid Reference: 414750, 411150
 Slice: A
 Site Area (Ha): 7.51
 Search Buffer (m): 1000

Site Details

Land off Woodhead Rd, Brockholes, HOLMFIRTH, HD9 6PR



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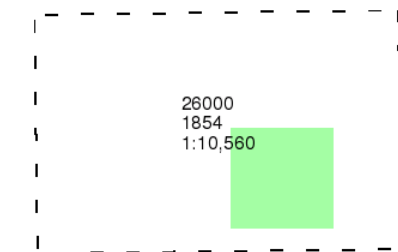
Yorkshire

Published 1854

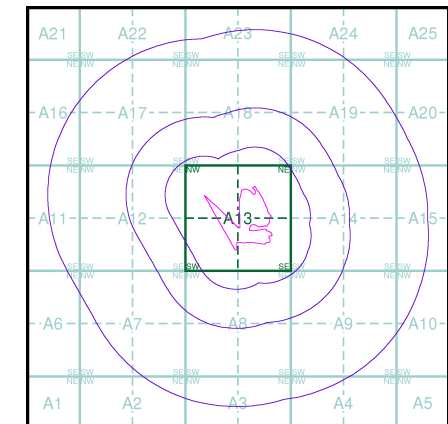
Source map scale - 1:10,560

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

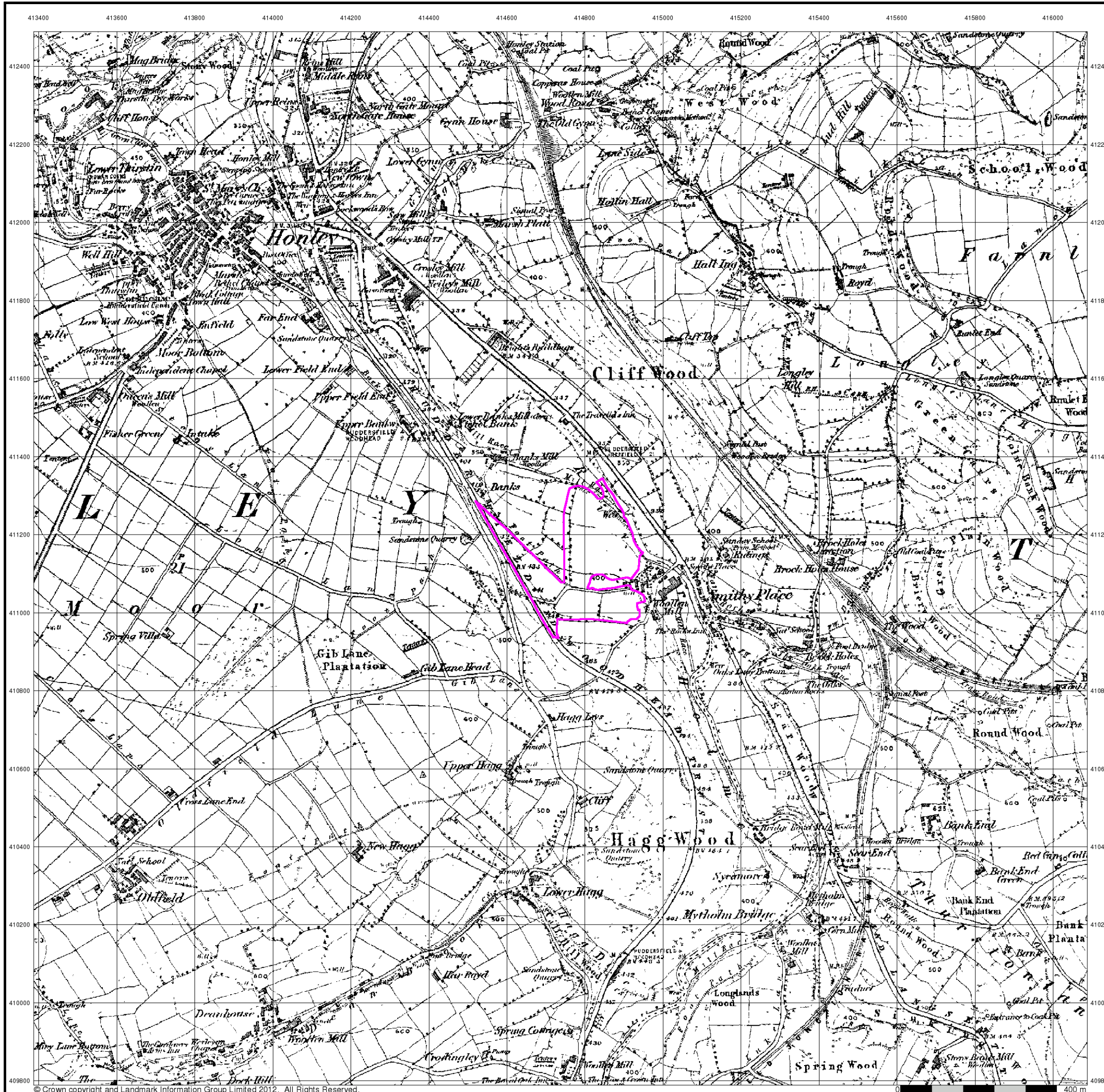


Order Details

Order Number: 47933383_1_1
 Customer Ref: MLR/07
 National Grid Reference: 414750, 411150
 Slice: A
 Site Area (Ha): 7.51
 Search Buffer (m): 1000

Site Details

Land off Woodhead Rd, Brockholes, HOLMFIRTH, HD9 6PR





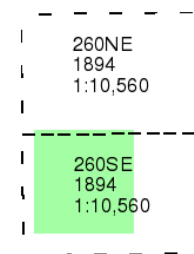
Yorkshire

Published 1894

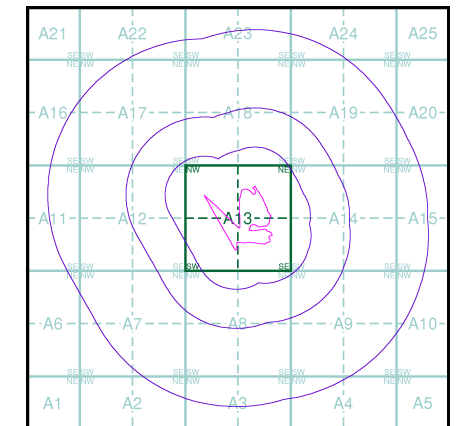
Source map scale - 1:10,560

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.

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Historical Map - Slice A



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