LK CONSULT LIMITED

PART OF THE LK GROUP

LAND AT WORSBOROUGH VIEW PILLEY

PRELIMINARY RISK ASSESSMENT & COAL MINING RISK ASSESSMENT



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1 INTRODUCTION

1.1 Introduction

LK Consult Ltd (LKC) has been commissioned by Lancaster Maloney Ltd (e-mail dated 31st July 2012) to carry out a Preliminary Risk Assessment (PRA) and Coal Mining Risk Assessment (CMRA) for land at Worsborough View, Pilley. The report was undertaken in support of a future planning to redevelop the site for 11 semi-detached and terrace residential properties.

According to guidance set out in CLR11[1] and the National Planning Policy Framework (NPPF)[2] a PRA with a site reconnaissance is required as a minimum to ascertain if there is a potential contamination risk.

In accordance with current guidance the PRA report will include a site reconnaissance, site history, geology, hydrogeology, hydrology, and a landfill search (within 250m of the site boundary). Information gathered from the desk study and site reconnaissance will be used to develop a contamination conceptual model for the site, which will support the identification and assessment of any pollutant linkages. Based on the findings of the PRA an appropriate site investigation can be derived, if required once planning approval has been granted.

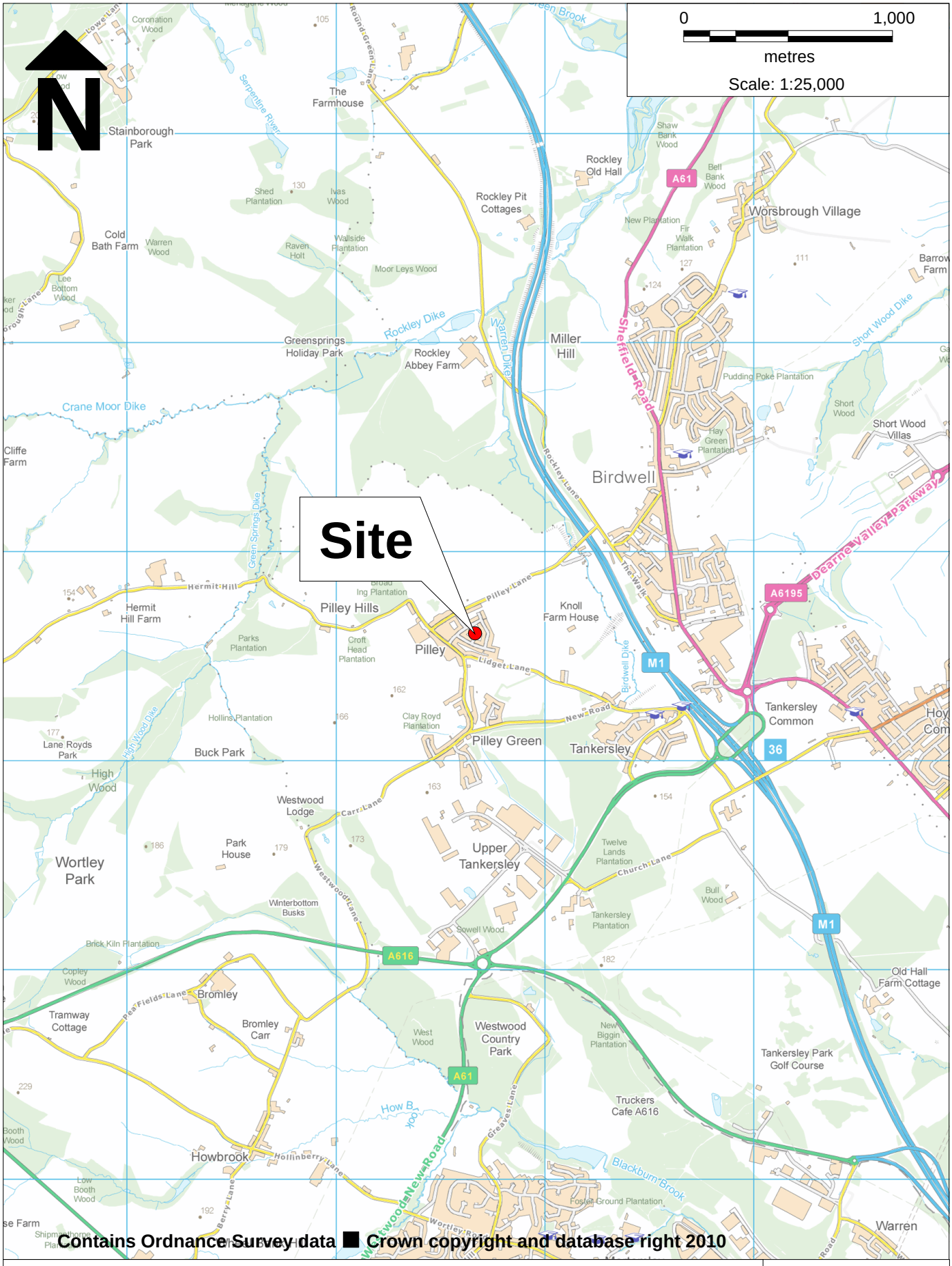
In accordance with Coal Authority guidelines a desk based coal mining risk assessment was also undertaken and this is outlined in Section 4.

1.2 Background

The site is located south of Worsborough View in the area of Pilley and is centred at National Grid Reference 433670E 400620N (Figure 1-1). The site is bounded by Worsborough View to the north, and residential properties to the east, south and west. The site has most recently been used as a public open space.

The site is approximately 0.3ha in size (see Figure 1-2). The site is generally level with an approximate elevation of 166.5m AOD. The site proposed layout is indicated in Figure 1-3 and comprises 11 semi-detached and terrace residential properties.

[1] EA (2004). "Model Procedures for the Management of Land Contamination." R&D Publication CLR 11
[2] DCL (2012). "National Planning Policy Framework." Department of Communities and Local Government. March 2012.

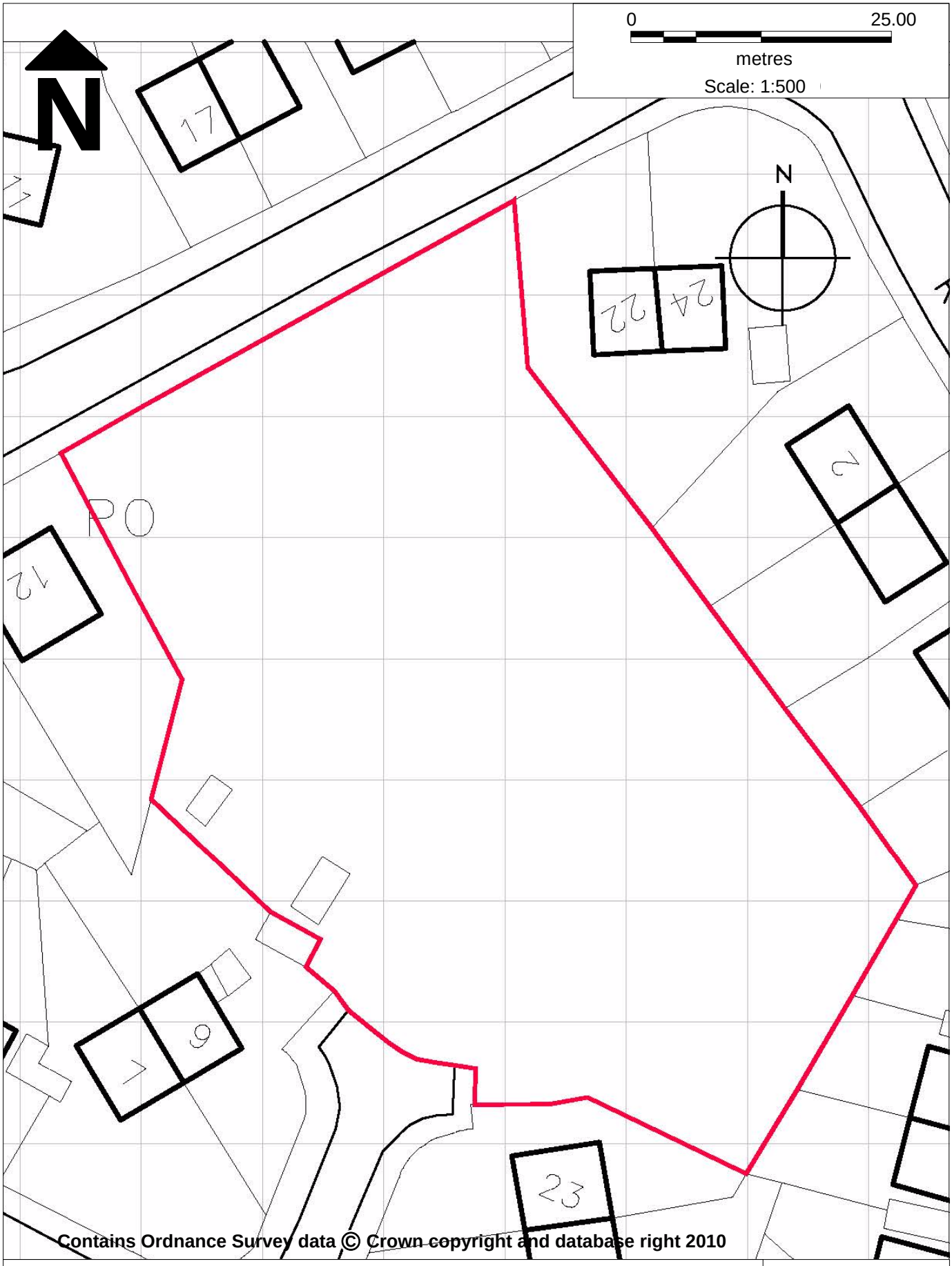


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Figure 1-1: Location Plan, Land at Worsborough View, Pilley.

Drawn: August 2012 Scale: See Scale Bar (approx 1:25,000 @ A4)

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Figure 1-2: Site Boundary, Worsborough View, Pilley

Drawn: September 2012 Scale: See Scale Bar (approx 1:500 @ A4)

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Figure 1-2: Sketch Proposed Layout Plan, Worsborough View, Pilley

Drawn: September 2012 Scale: See Scale Bar (approx 1:500 @ A4)

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2 SITE HISTORY

In compiling the site history, LKC consulted mapping and other environmental data provided by the Landmark Information Group Ltd. Copies of relevant historical plans are provided in Appendix A and are summarised below. Notable features within 100m of the site boundary have been presented (distances will be approximate). The exception to this will be features that could be infilled historically. The buffer will be 250m for these features.

Site Features	**Location**	**Map Dates Present**	**Comments**
Fields	Whole site	1855- 1948	
Residential Properties	Whole site	1956- 1993	
Domestic garages	East of site	1963- 2006	-Noted during site walkover; however, not seen on any historical mapping.
Surrounding Area Features	**Distance/ Location**	**Map Dates Present**	**Comments**
Residential	20m N and E	1956	-Residential properties to south and west from 1963, in addition to those to the north and east.

3 ENVIRONMENTAL SETTING

3.1 Introduction

In compiling this Section, LKC consulted environmental information provided by the British Geological Survey (BGS), Envirocheck Report (Appendix B), the Coal Authority (Appendix C), and historical BGS logs (Appendix D).

Summary of Environmental Settings			
Geology	Superficial		-Absent.
	Bedrock		-High Moor Rock, Sandstone. -Haigh Moor Coal seam indicated to subcrop 35m SW.
	Faulting		-Birdwell Fault 90m SE, striking NE- SW, downthrown to the NW. -60m SW, striking NW- SE, downthrown to the NE.
	BGS logs		-SE30SW102, 438m NE. -SE30SW103, 504m NE – Clay from 0.6m. -SE30SW24, 552m SW – Clay to 2.8m over coal measures strata. Joan Coal seam at 47m -SE30SW104, 602m NE – Clay from 0.25m. See Appendix D.
Hydrogeology	Aquifer Designation	Superficial	-Absent.
		Bedrock	-Secondary A.
	Groundwater abstractions		-None within 1km.
Hydrology	Nearest surface water		-Un-named stream 419m south.
	Flooding		-No risk.
	Surface water abstractions		-Nearest 1,354m N, J B Hodgson, Rockley Abbot Farm, for general agriculture, spray, irrigation direct.
	Discharge consent		-Nearest 601m NE, Yorkshire Water Services Ltd., Cock Inn Sewage Pumping Station, discharge freshwater stream/ river.
	Pollution Incidents		-Nearest 631m NE, Environment Agency, North East Region, 23/07/98 Minor Incident- Category 3, unknown sewage into Dearne Tributaries, freshwater.
Mining	Coal Mining Referral Area		-Standing Advice.
	Coal Report		-The property is in the likely zone of influence from 7 worked coal seams, from 40- 290m deep, which were last worked in 1944. Any ground movements from these workings should have stopped by now. -No known shafts present within 20m of the site.
	Ground Stability		-Potential for collapsible ground on site, very low. -Potential for landslide on site, very low.
	Mineral Abstraction		-3 within 500m of the site. -Nearest 423m NW, Pilley Ironstone Pits, underground, operation ceased.

Summary of Environmental Settings		
Landfill sites (within 250m)	Known/Registered	-2 historical landfill sites within 1km. -Nearest 818m east, B D R Disposal Limited, Birdwell Common Quarry, specific waste unknown. -2 Local Authority recorded landfill sites with 1km. -Nearest 844m east, location not supplied, type of waste not supplied.
	Potential	-None within 500m.
Radon		-Probability of 1- 3% of homes above Action Level. -No further action required.
Designated Sites		-Adopted Green Belt 58m E.
Contemporary Trade Directory		-2 within 250m. -Nearest 175m W, Cool Comfort Yorkshire, air conditioning equipment and systems, currently inactive.

4 COAL MINING RISK ASSESSMENT

4.1 Introduction

A Coal Mining Risk Assessment based upon guidance provided by the Coal Authority including a report template[3] and guidance on content[4] was undertaken given the study site lies adjacent to a Development High Risk Area.

The scope of this Coal Mining Risk Assessment (as per Coal Authority guidance) is to:

- Present a desk-based review of all available information on the coal mining issues which are relevant to the application site;
- Use the above information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact of issues;
- Set out appropriate mitigation measures to address the coal mining legacy issues affecting the site, including any necessary remedial works and/or demonstrate how coal mining issues have influenced the proposed development.

The aim of this assessment is to:

- Demonstrate to the Local Planning Authority that the application site is, or can be made, safe and stable to meet the requirements of national planning policy with regard to development on unstable land.

4.2 Sources of Information

LKC have obtained and reviewed information from the following sources:

- Coal Mining Report;
- Review of Published Geological Mapping (BGS Sheet 76 Solid 1:50,000 and 1:50,000 Digital Mapping supplied by the BGS);
- Extent of Coal Mining Development Referral Area from WMS mapping[5];
- Review of Ordnance Survey mapping at scales from 1:2,500 to 1:10,560 from 1849 to present day;
- A review of planning application developments in the area from the Local Authority website; and,
- Information on historical boreholes in the site vicinity[6].

Copies of the above information including an indication of the key coal seam and an extract of the Development High Risk Area are provided in Appendices C and D.

[3] http://coal.gov.uk/media/725/3A/Coal_Mining_Risk_Assessment_-_Template.doc
[4] http://coal.gov.uk/media/587/8A/Coal_Mining_Risk_Assessment_-_Guidance_on_Content.pdf
[5] http://mapapps2.bgs.ac.uk/ArcGIS/services/CoalAuthority/coalauthority_coalfield_consultation/MapServer/WMSServer?
[6] http://www.bgs.ac.uk/data/boreholescans/home.html.

4.3 Review of Information

The Coal Mining Report indicates:

"The property is within the likely zone of influence from workings of 7 seams of coal at 40m to 290m depth, and last worked in 1944. Any ground movements from these coal workings should have stopped by now. There are no known coal mine entries within, or within 20 meters, the boundary of the property."

A review of historical mapping indicates Old Ironstone Pits present approximately 400m to the west of the site on mapping dated between 1907 and 1956.

Knoll Drift is indicted approximately 230m south east of the site on mapping dating from 1905 and Wharncliffe Colliery is indicated approximately 400m south on mapping dated between 1893 and 1965.

The Coal Authority data indicates adits are located approximately 160m west and 250m south east of the study site.

Historical boreholes around the site indicate that rockhead may be shallow.

The Development High Risk Areas as published by the Coal Authority have been overlain onto Ordnance Survey mapping and the site boundary plan as extrapolated from the proposed development layout plan.

The south western extent of the study site boundary is located approximately 5m north east (or outside) of the Development High Risk Area.

The Development High Risk area is indicated to comprise an area of Coal Outcrop.

4.4 Identification and Assessment of Site Specific Coal Mining Risks

Table 4-1 below summarises the potential risks associated with coal mining legacy for the proposed development site, identified from the review of information section.

Coal Mining Issue	Yes	No	Risk Assessment
Underground coal mining (recorded at shallow depths)		**X**	Not applicable
Underground coal mining (probable at shallow depths)		**X**	Not applicable
Underground coal mining (possible at shallow depths)		**X**	Not applicable
Mine entries (shafts and adits)		**X**	Not applicable
Coal mining geology (fissures)		**X**	Not applicable
Record of past mine gas emissions		**X**	Not applicable
Recorded coal mining surface hazard		**X**	Not applicable
Surface mining (opencast workings)		**X**	Not applicable

Table 4-1: Potential Coal Mining Risks, Land at Land off Worsborough Avenue, Pilley.

Based upon the available information LKC consider that the site is not located within the Development High Risk Area. The Coal Authority suspect workings at 40mbgl below the site however they do consider that any movement from these workings should have stopped by now.

4.5 Possible Further Assessment and Potential Mitigation

The data indicates the study site is located outside a Development High Risk Area therefore at this stage the Coal Authority will have no objections to the proposed development.

However the Coal Authority note that a possible coal outcrop is present to the south west of the site, therefore it would be prudent during development works to maintain a watching brief for any evidence of previously unrecorded mine entries such as brick structures or patches of deeper made ground.

Should evidence of the above be identified then considering guidance given in CIRIA SP32[7] mitigation options may include *inter alia'*:

- Relocation of the building to any 'safe areas' of the site;
- Stabilisation of any workings beneath the proposed buildings;
- Use of a re-inforced raft foundation sat on a granular blanket;
- Use of piled foundations taken to below the level of workings; or,
- Use of a flexible foundation.
- Use of a geo-grid beneath car parking.

[7] CIRIA (1984). "Construction over abandoned Mine Workings". SP32

5 SITE RECONNAISSANCE

A site reconnaissance of the study site area was carried out by LKC on the 31st August 2012. Photographs are provided in Appendix E.

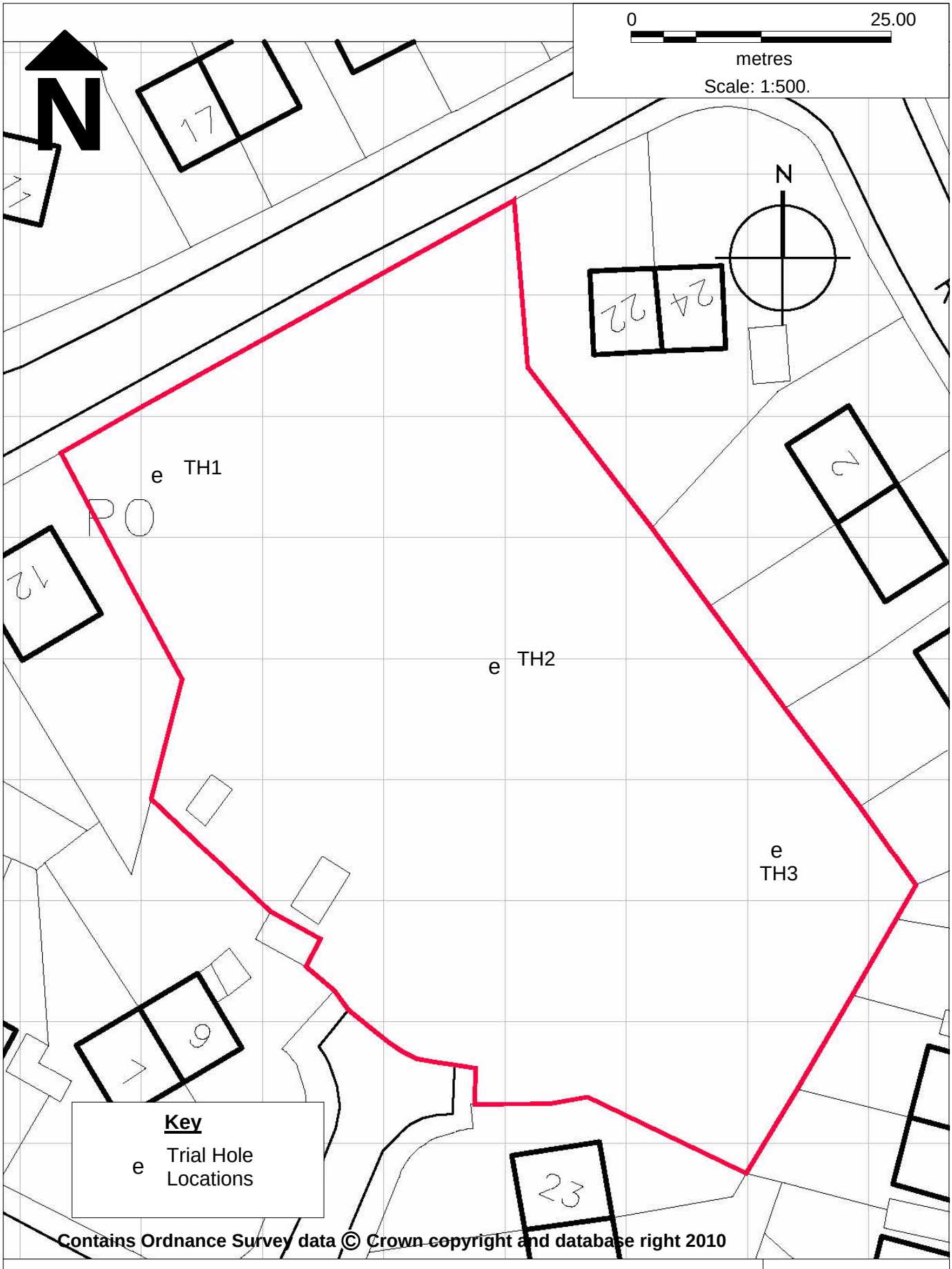
The site was accessed off The Avenue (Appendix E, Photograph 1). The area of the proposed development is currently an area of green space open to the public, with five domestic garages (Appendix E, Photograph 2). The site is bounded to the north by Worsborough View; and to the south, east and west by residential properties.

The ground across the study site was mainly grass, with a hardstood concrete area to the west of the site by the garages (Appendix E, Photograph 3 and 4). Four manhole covers (Appendix E, Photograph 5 to 8) and two drains (Appendix E, Photograph 9 and 10) were observed on the site. There is a telegraph pole to the north east of the site, with an overhead cable crossing the north of the site (Appendix E, Photograph 11). There is also a lamp post to the south west of the site, near the garages, and the site access from The Avenue (Appendix E, Photograph 12).

The site was observed to be relatively flat, with a slight fall to the north and the west of the site.

LKC undertook the excavation of 3 no. hand dug trial holes across the site to ascertain shallow ground conditions (see Figure 4-1). The trial holes generally encountered brown sandy topsoil with brick and concrete fragments. Trial Hole Logs are provided in Appendix F.

One of the 5 garages on site was observed to have a corrugated roof, which may contain asbestos (Appendix E, Photograph 13 and 14).



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Figure 4-1:Trial Hole Locations, Worsborough View, Pilley

Drawn: September 2012 Scale: See Scale Bar (approx 1:500 @ A4)

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6 PRELIMINARY CONCEPTUAL MODEL

6.1 Introduction

The aim of the conceptual model is to provide a preliminary assessment of the likelihood of a pollutant linkage for each potential combination of contaminant, pathway and receptor. A conceptual model can be used to make an informed decision on the contamination risks associated with the site and whether further site investigation work is required.

The Sections below are therefore divided into potential contaminant, potential pathway and potential receptor as described in CLR11[8]. The final Section provides an assessment of the potential pollutant linkages that may still be present on the site if redevelopment were to occur.

6.2 Potential Contaminants

The primary current and historical onsite features that may be of concern are the residential properties and domestic garages.

Made ground on-site may comprise ash and clinker waste from hearths and boilers, which was historically often used as level raising material, particularly under the footprint of the former buildings. Contaminants may include heavy metals (such as arsenic and lead) and Polycyclic Aromatic Hydrocarbons ((PAHs), such as benzo(a)pyrene (B(a)P))[9]. Depending upon the sulphate content of the combusted coal, soluble sulphate may also be generated.

In addition, asbestos containing materials (ACMs) may be present associated with the former building structures onsite. Although unlikely, there may be a low risk from localised hydrocarbon spillages in the domestic garages that cannot be discounted at this time.

The immediate surrounding areas have been mainly developed for residential usage. LKC do not consider this land use to be a significant risk to the site.

The Local Authority and Envirocheck Report has not identified any known or licensed landfill sites within 250m of the study site. A review of the historical OS mapping by LKC has not identified any potentially infilled areas within 250m of the site.

No source of hazardous gas (methane or carbon dioxide) has been identified.

There may be a low risk from ground gas, as there are worked coal seams at approximately 40mbgl beneath the study site.

The study site lies within a Radon affected area, however the Envirocheck report indicates that no protection measures are necessary in the construction of new dwellings. Therefore radon is not considered a viable source term.

[8] Defra (2004). "Model Procedures for the Management of Land Contamination." R&D Publication CLR 11
[9] Defra (2002). "Potential Contaminants for the Assessment of Land." R&D Publication CLR 8

6.3 Potential Pathways

Principal potential pathways associated with human health from soil contamination are ingestion, dermal and inhalation. The current UK technical report document[10] recognises ten such pathways comprising four ingestion, two dermal and four inhalation. These are listed as follows:

- Ingestion of soil
- Ingestion of soil-derived indoor dust
- Ingestion of contaminated vegetables
- Ingestion of soil attached to vegetables
- Dermal contact with soil
- Dermal contact with soil-derived indoor dust
- Inhalation of soil-derived outdoor dust
- Inhalation of soil-derived indoor dust
- Inhalation of vapours outside
- Inhalation of vapours inside

The proposed end-use follows a standard conceptual model of 'residential'. For this land use scenario all ten of the pathways will have to be considered.

Surface water and groundwater are principal mechanisms for the migration of contaminants, with rainwater infiltrating through contaminated material and contamination possibly going into solution. Contaminated water may then find preferential pathways to surface waters and underlying aquifer.

Culverts, ditches, drains, service drains may provide preferential pathways off site. The site reconnaissance indicated two drains were present on the study site.

Bedrock and superficial geology has the potential to impede or provide preferential pathways for contaminants onto or off site.

The study site does not have superficial deposits; therefore, cannot act as a pathway for contaminants onto or off the site.

The site is situated on Sandstone, depending on the pore space and bedding orientation, this may act as a pathway for contaminants onto or off-site.

There are 2 known geological faults within 250m of the study site. These are not considered as viable pathways given their distance from the site.

6.4 Potential Receptors

Potential receptors with respect to human health and hazards present on the site include users of the proposed development, flora and fauna in landscaped areas. Depending on the nature and concentration of the potential contaminants, the underlying Secondary A Aquifer may also be considered as potential receptors along with building materials and services.

The un-named stream 419m south is not considered a viable receptor due to its proximity to the site.

Potential receptors with respect to human health and hazards present on the site include:

- Human Health: Future site residents.
- Controlled Waters: underlying Secondary A aquifer.

[10] EA (2008). "Updated Technical Background to the CLEA Model." Science Report – SC050021/SR3.

- Buildings and Services: Landfill/ground gas and organic/corrosive contaminants that could affect integrity of building materials and service pipes.
- Flora: within future gardens.

It should be noted that there may be risk from short term exposure from contaminated soil to site workers. The Preliminary Contamination Conceptual Model deals with long term exposure to key receptors. Acute risks can be easily mitigated by good environmental management of the site during site works. Standard health and safety precautions (as per HSE guidance[11]) should be adopted by all workers involved with site enabling and construction works. Therefore, this receptor is not considered in the contamination conceptual model.

6.5 Preliminary Contamination Conceptual Model

The preliminary contamination conceptual model for Worsborough View, Pilley, is illustrated in Table 6-1 below and has identified seven generic potential pollutant linkages, six of which are considered possible at this stage.

Each linkage is discussed below along with an assessment of the likelihood of each linkage considering the available data and the nature of the development. This conceptual model is based upon contaminant-pathway-receptor pollutant linkages, on the premise that if there is no pollutant linkage then there will be no risk to the receptor[12].

Pollutant Linkage No.	Contaminant					Pathway	Receptor
	ACM	Gases		Contaminants			
		Hazardous	Ground	Organic	Inorganic		
PL1	?	x	x	?	?	-Dermal contact. -Ingestion of soils and vegetables. -Inhalation of contaminated soil, fibres and dust.	-Future site residents (inc. veg uptake).
PL2	x	x	x	?	x	-Inhalation of vapours. -Vapour migration through permeable strata.	-Future site residents. -Onsite drain.
PL3	x	x	x	x	x	-Inhalation of hazardous gas. -Migration through permeable strata. -Migration through underlying fault.	-Future site residents. -Future site users. -Offsite receptors (if gas is generated on site). -On-site drain.
PL4	x	x	x	?	?	-Groundwater migration through permeable strata. -Perched waters migration on site.	-Secondary A Aquifer. -On-site drain.
PL5	x	x	x	x	?	-Contact with potential hazards.	-Site buildings.
PL6	x	x	x	?	?	-Ingestion of tainted water supply. -Corrosion of metal pipework.	-Future site residents. -Pipework.
PL7	x	x	x	x	?	-Root uptake of phytotoxic contaminants.	-Flora in future landscaping.

Table 6-1 Contamination Conceptual Model for land at Worsborough View, Pilley.
(Key: ? – pollutant linkage possible; x – pollutant linkage unlikely)

6.5.1 Pollutant Linkage 1

Pollutant linkage 1 refers to the potential asbestos and heavy metals coming into direct contact with future site residents and offsite receptors (windblown dust). This is considered possible in areas of proposed landscaping and gardens for future site users.

[11] HSE (1991). "Protection of workers and the general public during development of contaminated land" London HMSO.
[12] EA (2004). "Model Procedures for the Management of Land Contamination." R&D Publication CLR 11.

6.5.2 Pollutant Linkage 2

Potential pollutant linkage 2 refers to possible inhalation of vapours affecting the future site residents. This pollutant linkage is considered possible due to possible localised hydrocarbon spillages in the domestic garages.

6.5.3 Pollutant Linkage 3

Potential pollutant linkage 3 refers to possible ground gas affecting the future site residents, and accumulating in buildings causing an explosion (methane) or asphyxia (carbon dioxide). There are potentially worked coal seams at 40mbgl under the site however the risk to proposed development may be mitigated by the depth of the seam.

Hazardous gas generation may occur from made ground on the site; however, this is strongly dependent upon its quantity and composition. If significant amounts of putrescible or degradable material are found on site hazardous gas generation may be possible, however this is not expected based on historical mapping and the site reconnaissance.

6.5.4 Pollutant Linkage 4

Potential pollutant linkage 4 refers to the possible contaminants and the underlying Secondary A Aquifer and drains. This linkage is considered possible in the area of the domestic garages where potential hydrocarbon spillages may have occurred. If the hardstanding was compromised, mobile contamination may infiltrate the underlying strata.

6.5.5 Pollutant Linkage 5

Potential pollutant linkage 5 refers to the possible deleterious effects that sulphate may have on building materials such as concrete, water pipes and building structures. Potential made ground comprising ash and clinker may generate sulphates. Therefore, this pollutant linkage is considered possible at this stage.

6.5.6 Pollutant Linkage 6

Potential pollutant linkage 6 refers to the possible contaminants permeating potable water pipes and consumption by the future residents of the tainted water supply. Given the likely presence of made ground on site and likely contaminants this linkage is also considered possible at this stage.

6.5.7 Pollutant Linkage 7

Potential pollutant linkage 7 refers to the possible phytotoxic contaminants affecting plant growth. Given the identified presence of made ground onsite and likely heavy metal contaminant, this linkage is also considered possible at this stage.

7 CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

The primary features that may be a source of contamination are the former residential properties and the domestic garages.

Ash and clinker materials may be present and contaminants may include heavy metals (such as arsenic and lead) and Polycyclic Aromatic Hydrocarbons ((PAHs), such as benzo(a)pyrene (B(a)P))[13]. The former building structures may also have contained Asbestos Containing Materials (ACMs). There may be localised hydrocarbon spillages from the domestic garages.

There are no known or registered landfill sites and no potentially infilled areas within 250m of the study site boundary. Ground gas is not considered a risk to the site. Hazardous gas may be generated from made ground on site; however, this is strongly dependent upon its composition.

A Coal Mining Development High Risk area associated with a possible Coal Outcrop as indicated on Coal Authority records is indicated approximately 5m south west of the study site boundary. Therefore the Coal Authority will not oppose the development proposals.

Although the site is within a Radon Affected Area, protection measures are not required in new dwellings and extensions.

The preliminary contamination conceptual model for Worsborough View, Pilley, as illustrated in Table 6-1 has identified seven generic potential pollutant linkages, six of which are considered possible at this stage.

7.2 Recommendations

In accordance with NPPF, LKC consider that sufficient information on the potential contaminative status of the site is available in this Preliminary Risk Assessment report to allow the validation of any future planning application by the Local Planning Authority and for conditional planning approval to be granted. Such conditional approval will likely include standard prescriptive conditions requiring a site investigation, risk assessment and, if appropriate, a remedial strategy are completed to the satisfaction of the Local Planning Authority prior to the commencement of any development.

LKC would recommend that a Phase 2 intrusive survey should be carried out across the site to investigate the identified potential pollutant linkages further. Ideally the scope of this Phase 2 survey should be prior agreed with the Local Authority in the form of a Site Investigation Brief.

In order to address potential pollutant linkages 1, 2, 5, 6 and 7 solid samples should be collected from trial pits and/or boreholes undertaken across the site subjected to appropriate chemical analyses based upon a broad range of contaminants, including those identified in Section 6.2. The investigation will follow guidance set out in BS10175[14] and

[13] Defra (2002). "Potential Contaminants for the Assessment of Land." R&D Publication CLR 8
[14] British Standard (2011). "Investigation of Potentially Contaminated Sites – Code of Practice." BS10175:2011

BS5930[15]. Some sampling locations will target historical features such as residential properties and domestic garages. Full details of the proposed site investigation should be forwarded to the Local Authority for approval.

Pollutant linkage 4 may be investigated by the sampling and chemical analysis of any groundwater on site or by testing for any leachable contamination in the soils on site. This will be dependent upon prevailing site conditions. If no substantial contamination is identified, groundwater sampling may not be required.

It should be noted that boreholes or trial pits may also be utilised to provide appropriate geotechnical information on sub-surface conditions.

This investigation, in conjunction with appropriate geotechnical testing, will delineate any existing areas of potential contamination and identify and characterise any contaminants encountered. Information from this investigation can then be used to provide a more detailed assessment of the identified pollutant linkages, provide appropriate foundation solutions and, if necessary, identify appropriate remedial measures to ensure that the site is made suitable for its proposed end use.

A copy of this report should be sent as part of the planning application.

7.3 Further Considerations

Potential Asbestos Containing Materials (ACMS) were identified within the garages on the site during the site reconnaissance; there may also be ACMS in the soil, given the age of the former properties. Therefore we would advise that a Pre-Demolition and Major Refurbishment Asbestos Survey is undertaken prior to demolition of the garages by a professional contractor. The LK Group have a designated Asbestos Department would be happy to advise you on the appropriate steps to take in order to have the building suitably surveyed.

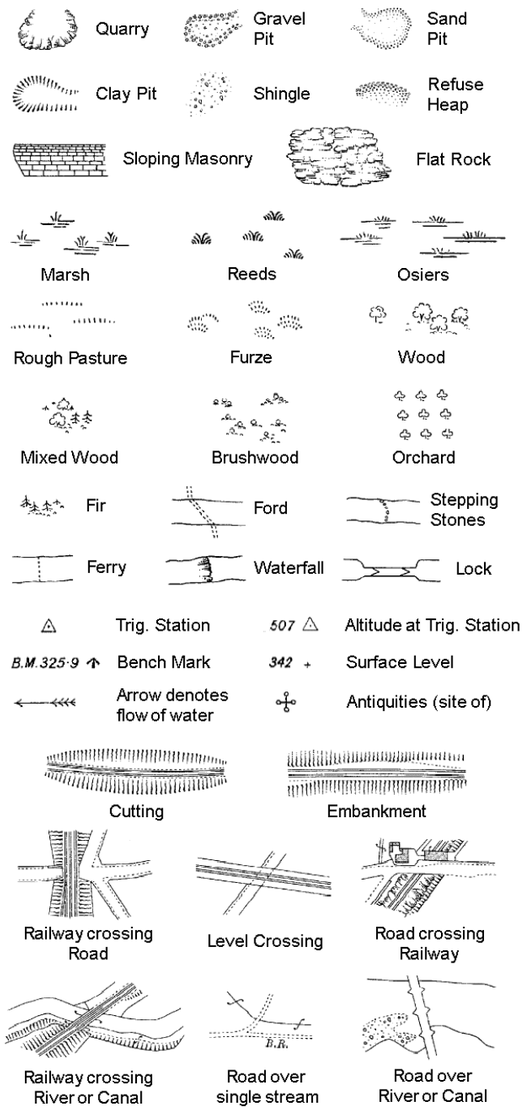
[15] British Standard (1999). “Code of Practice for Site Investigations. “ BS5930:1999

APPENDIX A

HISTORICAL MAPS

Historical Mapping Legends

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



County Boundary (Geographical)

County & Civil Parish Boundary

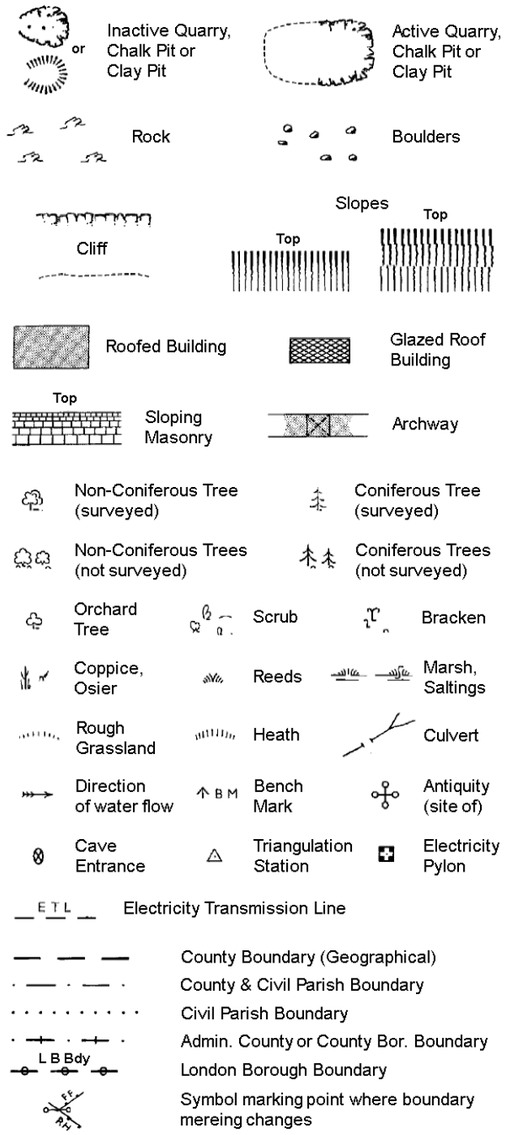
Administrative County & Civil Parish Boundary

Co. Boro. Bdy. County Borough Boundary (England)

Co. Burgh Bdy. County Burgh Boundary (Scotland)

B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	St.	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



County Boundary (Geographical)

County & Civil Parish Boundary

Civil Parish Boundary

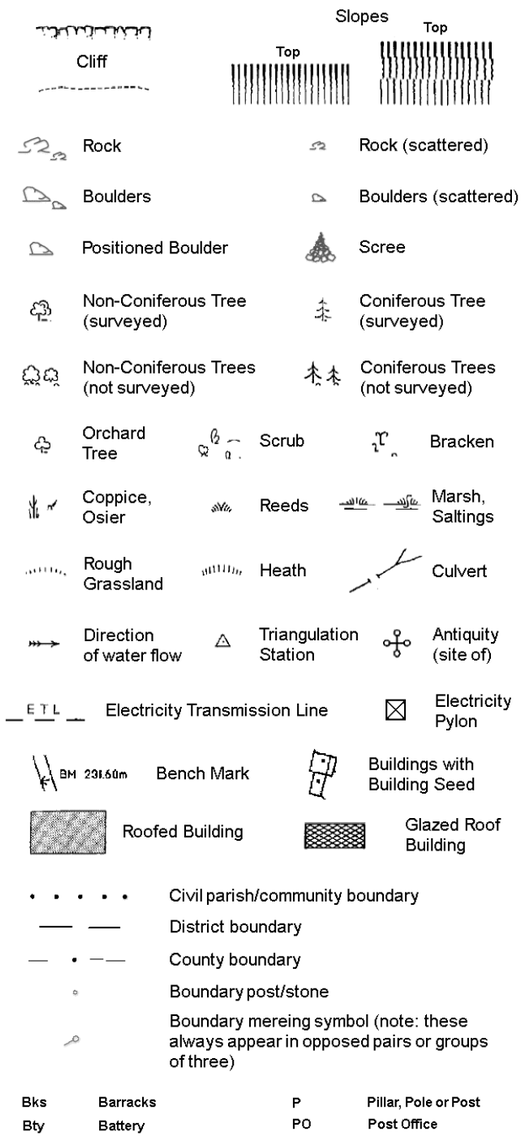
Admin. County or County Bor. Boundary

L B Bdy 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
El 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



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)

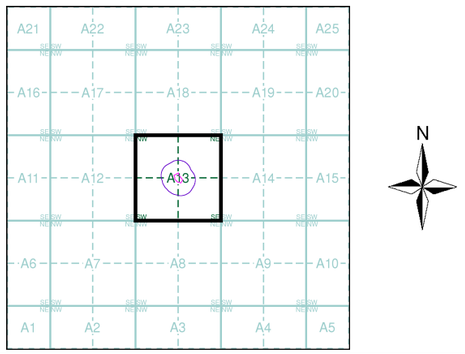
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El 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 Governer	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

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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Yorkshire	1:2,500	1893	2
Yorkshire	1:2,500	1905	3
Yorkshire	1:2,500	1931	4
Ordnance Survey Plan	1:2,500	1957	5
Ordnance Survey Plan	1:2,500	1963 - 1974	6
Additional SIMs	1:2,500	1963 - 1991	7
Additional SIMs	1:2,500	1982	8
Large-Scale National Grid Data	1:2,500	1993	9
Large-Scale National Grid Data	1:2,500	1993	10
Large-Scale National Grid Data	1:2,500	1998	11

Historical Map - Segment A13



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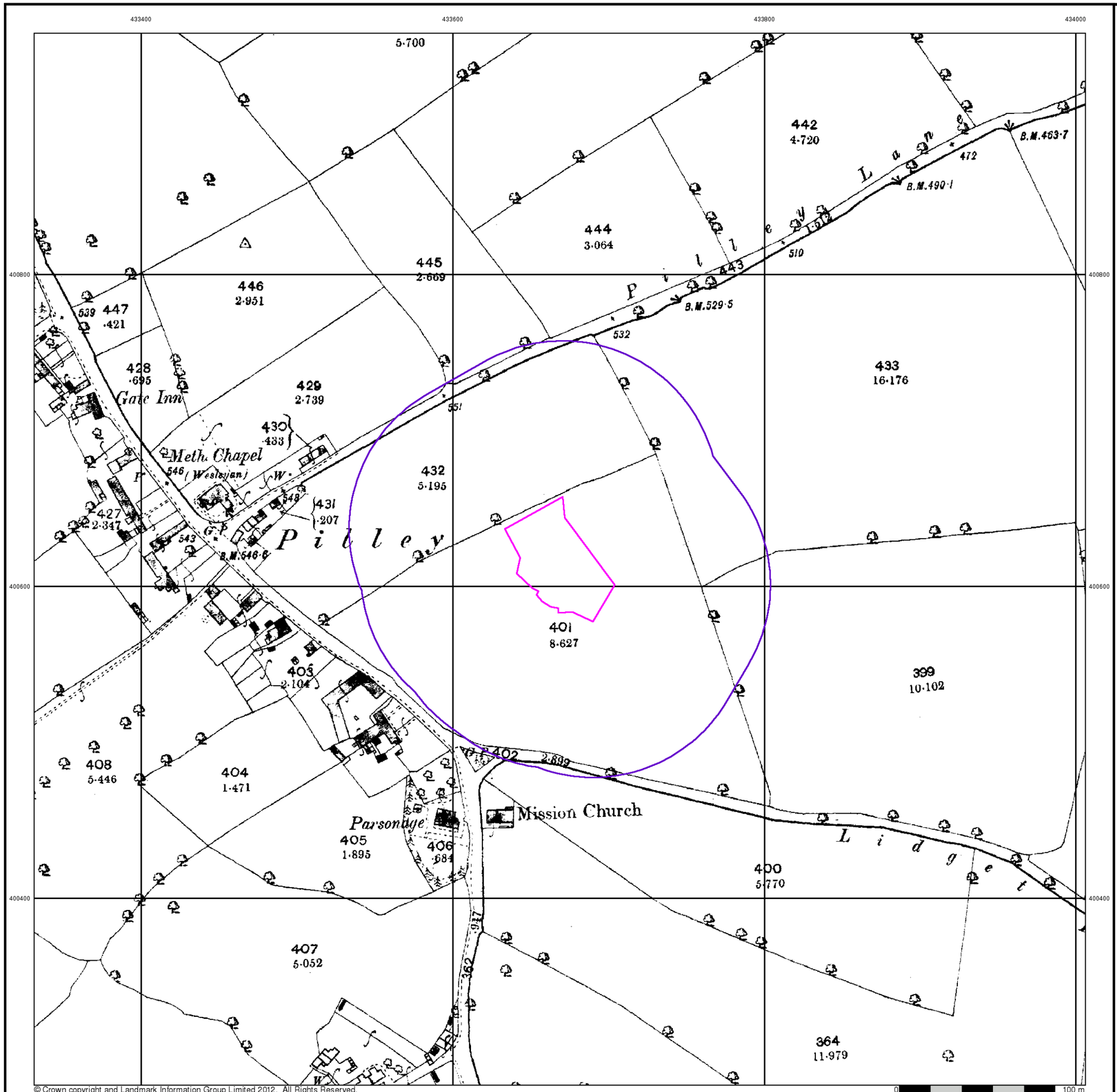
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Search Buffer (m):	100

Site Details

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Yorkshire

Published 1893

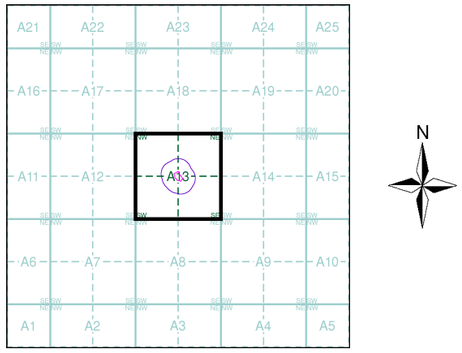
Source map scale - 1:2,500

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

Map Name(s) and Date(s)

282_07
1893
1:2,500

Historical Map - Segment A13



Order Details

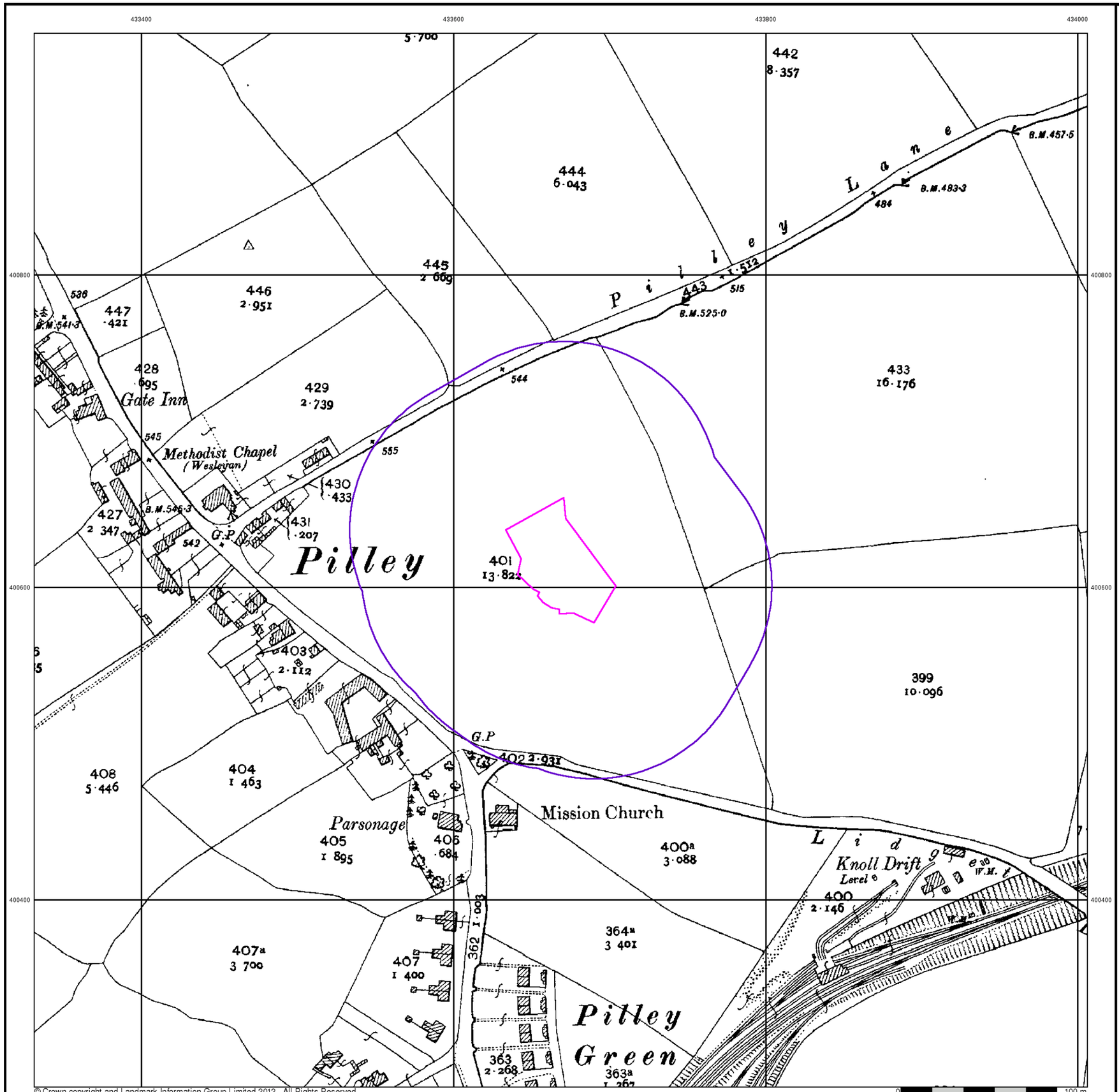
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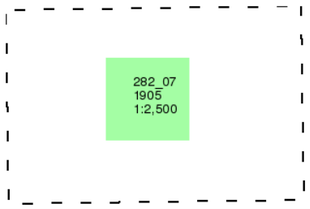
Yorkshire

Published 1905

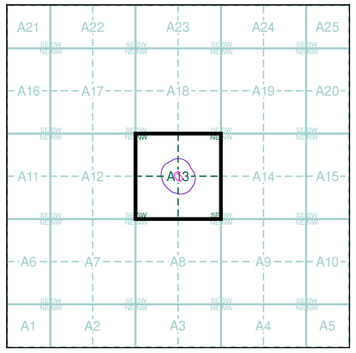
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A13



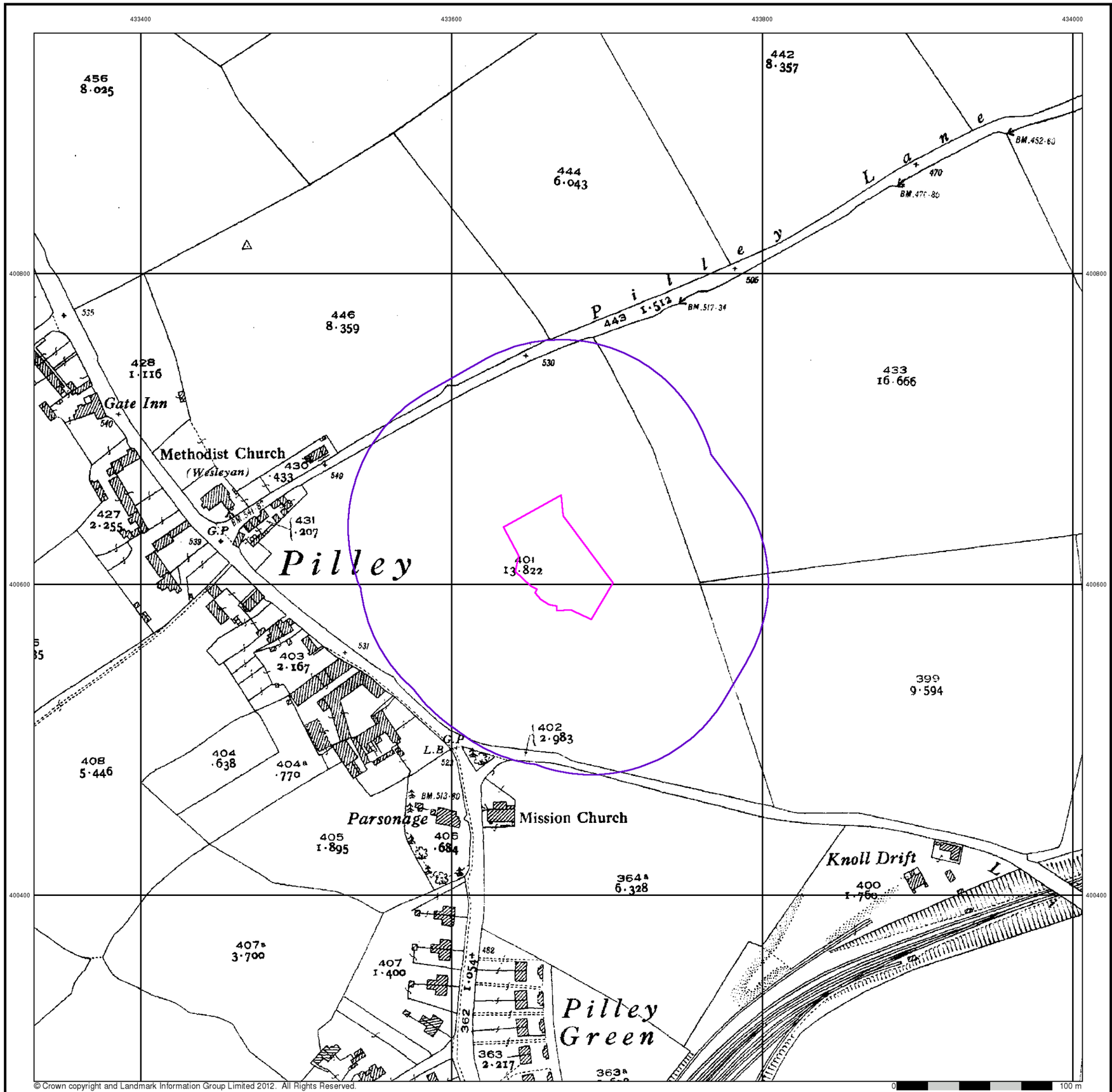
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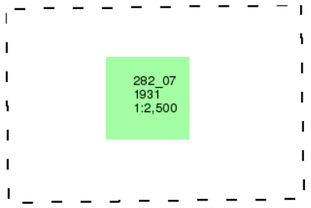
Yorkshire

Published 1931

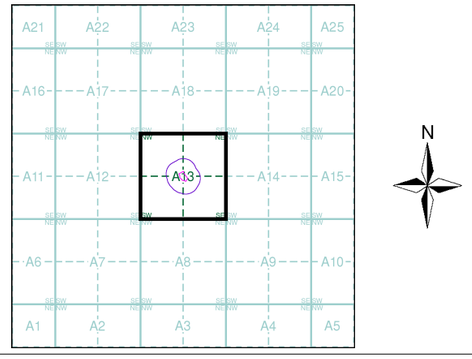
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Map Name(s) and Date(s)



Historical Map - Segment A13



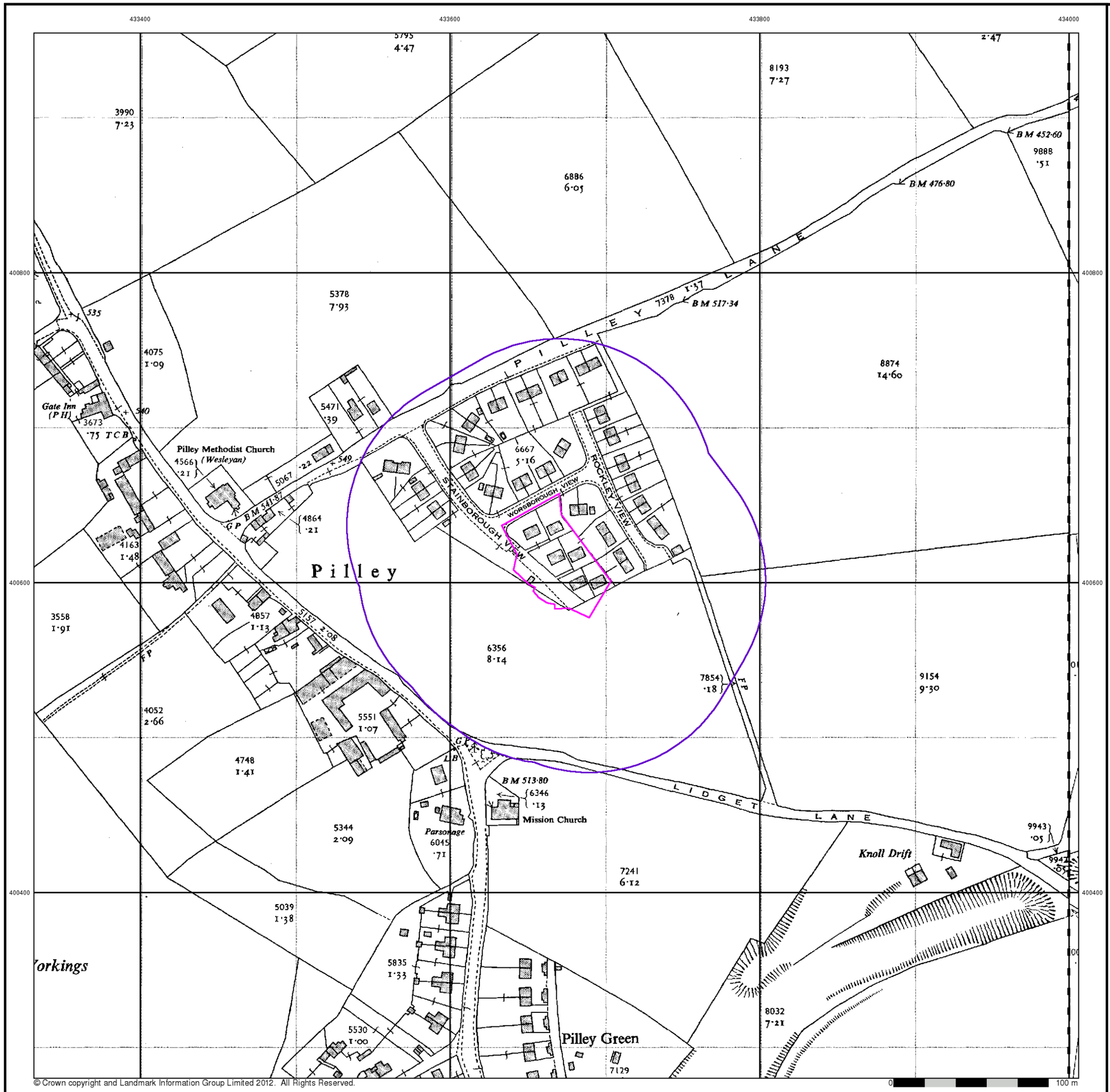
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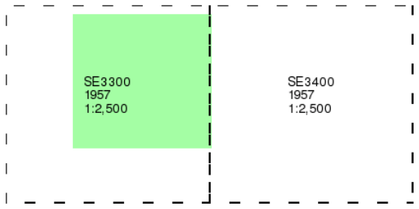
Ordnance Survey Plan

Published 1957

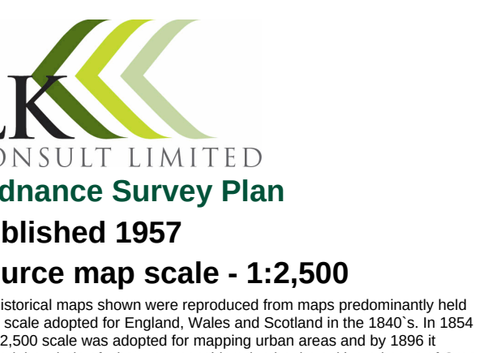
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Historical Map - Segment A13



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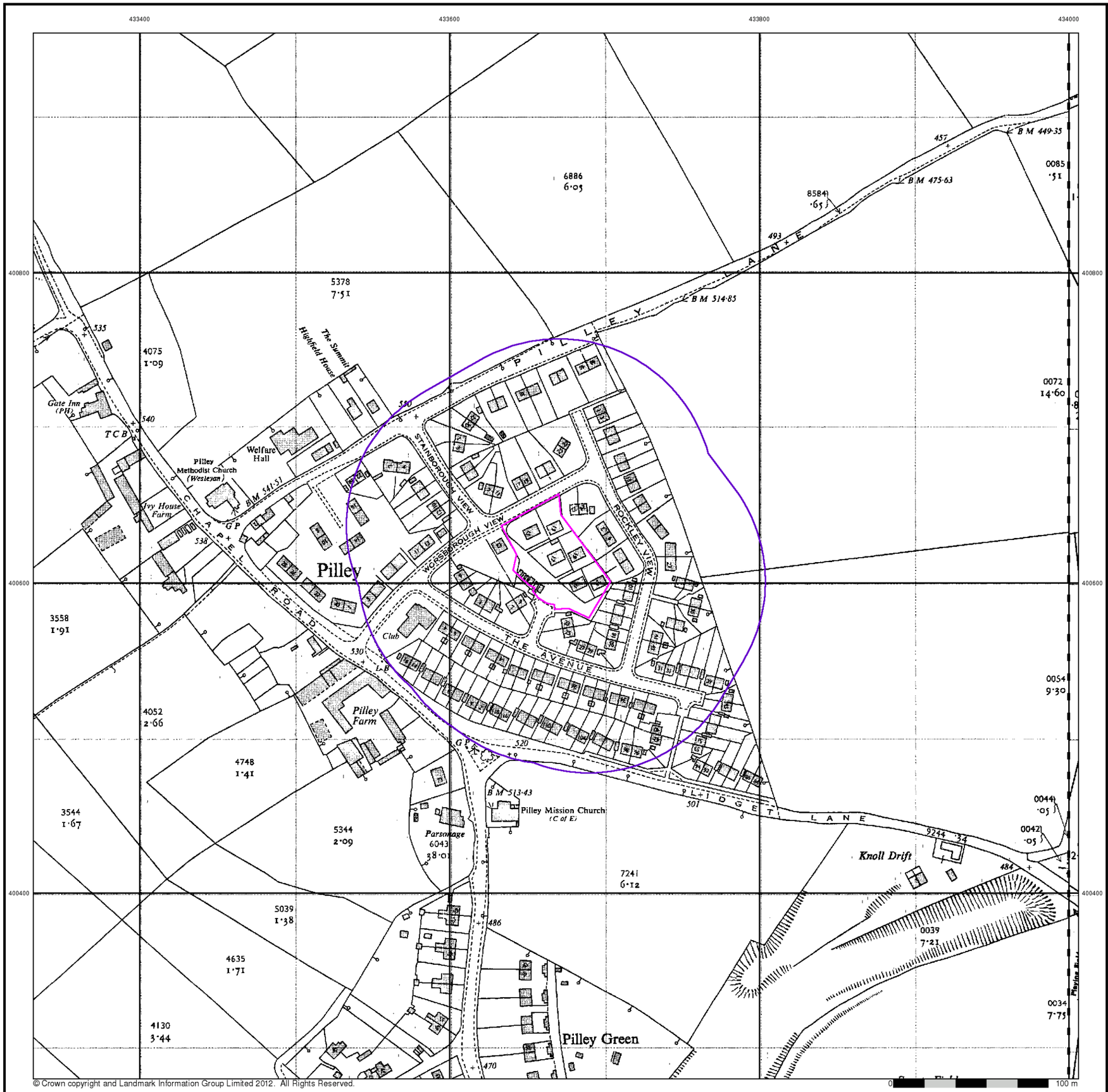
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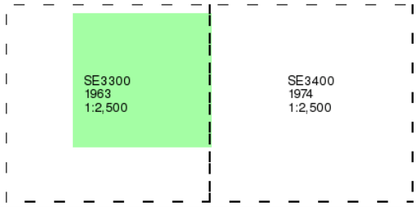
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Published 1963 - 1974

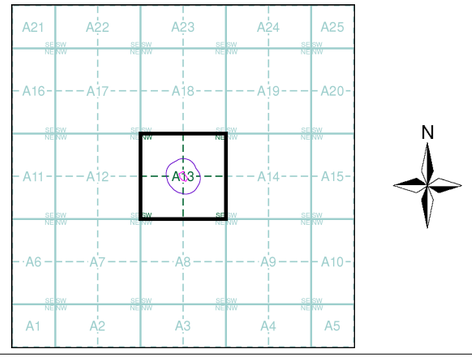
Source map scale - 1:2,500

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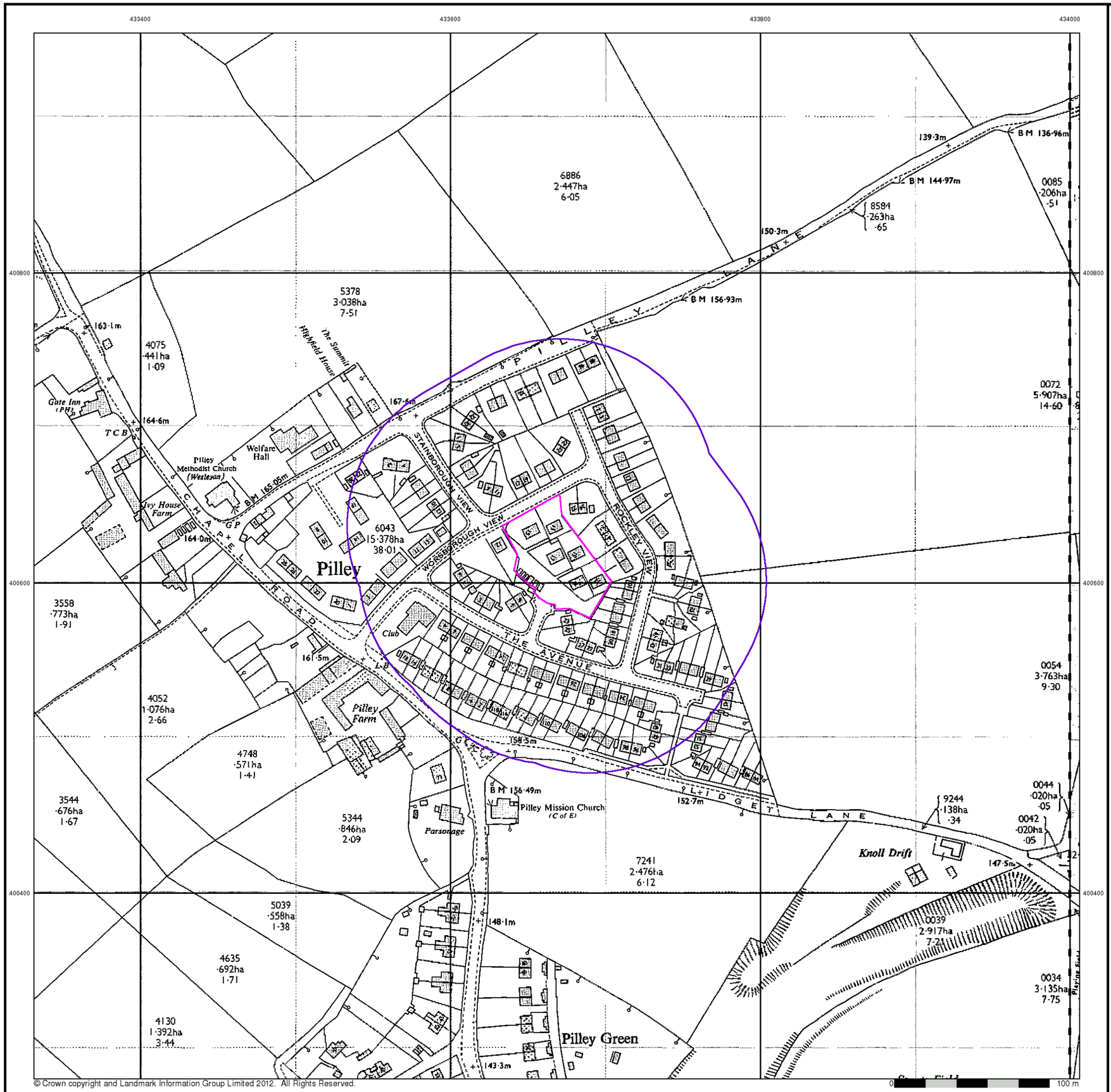
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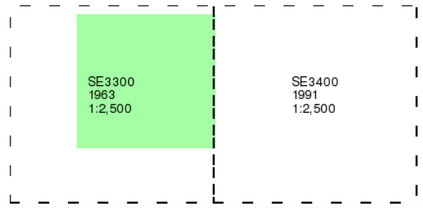
Additional SIMs

Published 1963 - 1991

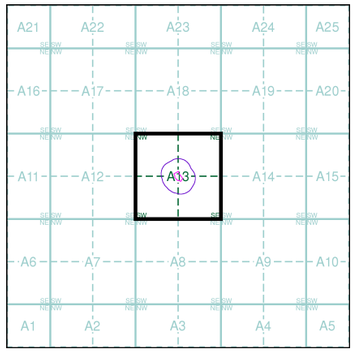
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



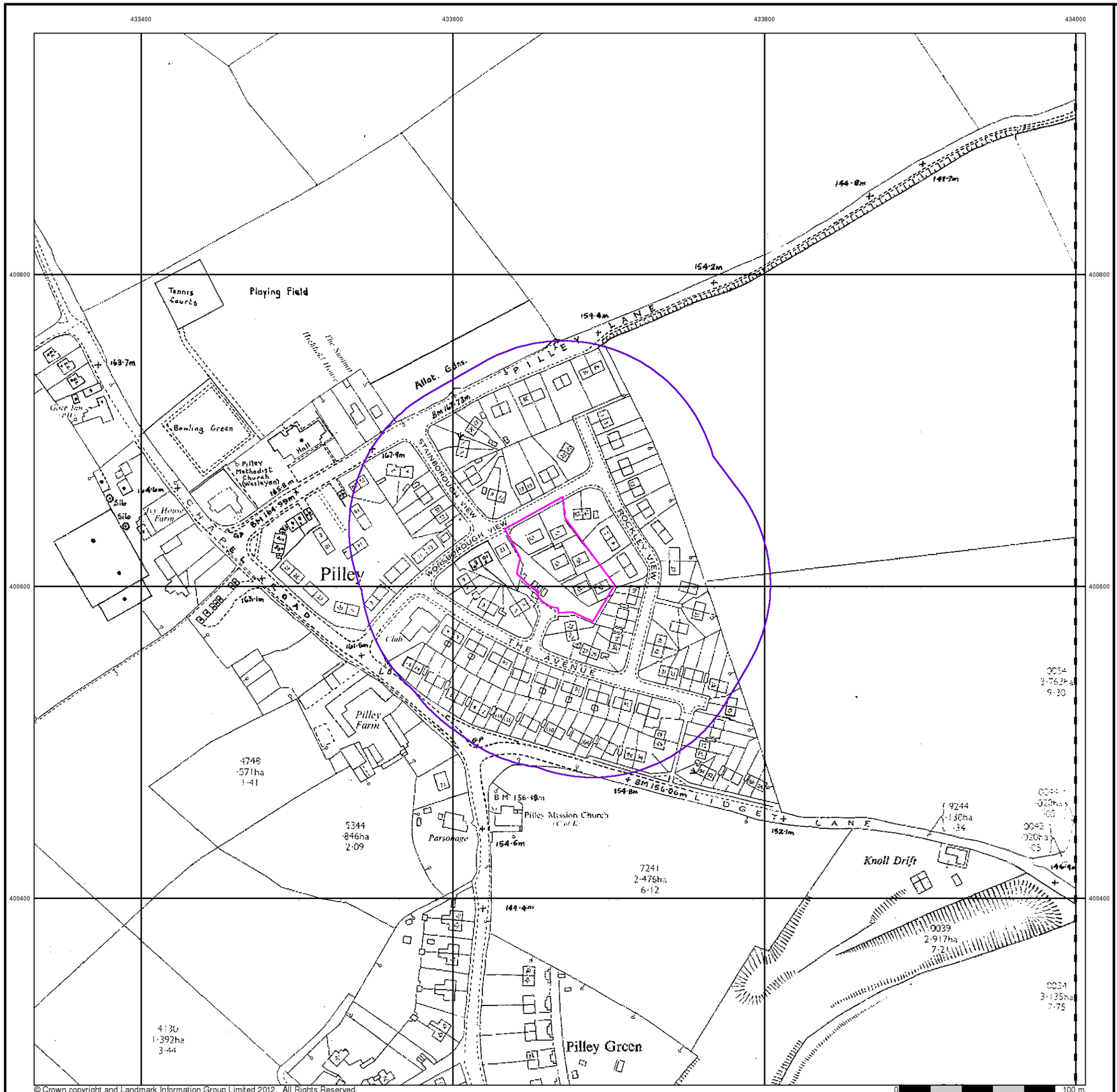
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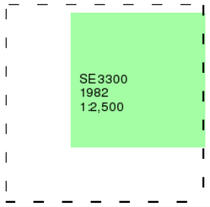
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Published 1982

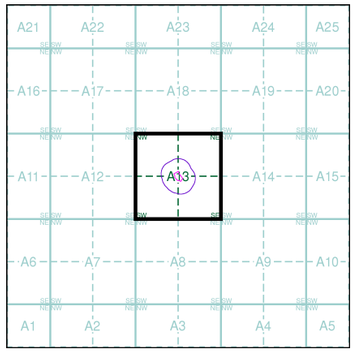
Source map scale - 1:2,500

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