



Phase 1

Environmental Assessment Report

**New Breaks Farm
King's Causeway
Swinefleet
DN14 8DZ**

Date: 15th July 2022

Version 1


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Document Verification

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Executive Summary

The preliminary environmental site assessment indicates that the site can be classified as moderate risk in terms of contamination and the risks to the identified receptors (e.g. human health) following redevelopment is considered to be moderate.

This classification is due to previous and current agricultural site use. There is the potential for some contamination to be present in the ground beneath the site from spillages associated with historic site use. Potential contaminants include heavy metals, asbestos, polyaromatic hydrocarbons (PAHs), hydrocarbons, pesticides and solvents. Whilst hardstanding across the site will mitigate against the majority of these potential contaminants, the risk of vapours still remains.

It is recommended a Phase 2 intrusive ground investigation is undertaken prior to site redevelopment to obtain additional information on the ground conditions and the contamination status. The investigation should be carried out by qualified and competent persons. The scope of works for the investigation will need to be submitted and approved by the local authority prior to the commencement of the Phase 2 intrusive works.

Disclaimer

This report has been prepared by EnviroSolution Ltd who has exercised such professional skill, care and diligence as may reasonably be expected of a properly qualified and competent consultant experienced in preparing reports of a similar scope.

However, to the extent that the report is based on or relies upon information contained in records, reports or other materials provided to EnviroSolution Ltd, which have not been independently produced or verified, EnviroSolution Ltd, gives no warranty, representation or assurance as to the accuracy or completeness of such information.

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1 Introduction

1.1 Background

EnviroSolution Ltd was commissioned to undertake a Phase 1 Environmental Site Assessment at a site located at King's Causeway in Swinefleet, DN14 8DZ. This report was commissioned to provide information on the potential contamination status of the site to inform proposals for the conversion of one on-site barn to residential land use

1.2 Objectives

The objective of the preliminary environmental site assessment was:

1. To provide a summary of the environmental setting and historical land use of the site and immediate surrounding area.
2. To obtain information on the ground conditions present beneath the site.
3. To develop a conceptual site model and complete a generic quantitative risk assessment to identify any environmental risks and liabilities associated with ground conditions at the site.

1.3 Scope of Work

To achieve the objectives, the following scope of work was completed:

1. A desk-based study of the site comprising a review of available environmental information for the site such as geological and hydrogeological data and historical land use information.
2. Assessment of potential hazards and constraints during construction and longer term.

This work has been devised to generally comply with the relevant principles and requirements of the following legalisation and guidance:

- Part IIA of the Environmental Protection Act, 1990 and Section 57 of the Environmental Act 1995;
- Contaminated Land (England) (Amendment) Regulations 2012 and Contaminated Land Statutory Guidance (DEFRA, April 2012);
- National Planning Policy Framework (Ministry of Housing, Communities and Local Government, February 2019);
- BS10175: 2011 +A2:2017 "Investigation of Potentially Contaminated Sites- Code of Practice"; and

- Environment Agency (2020) Land Contamination Risk Management Report LCRM “How to assess and manage the risks from land contamination”.

1.4 Information Sources

Historical Ordnance Survey maps have been obtained from historical records, ranging from 1854 to 2022. These maps provide high quality information on historical site use.

The British Geological Survey Geoindex database has been used to provide information on geo-environmental aspects of the site and the immediate surrounding area such as geological, hydrogeological and hydrological data.

The Environment Agency website (www.gov.uk/government/organisations/environment-agency) and Magic website (www.magic.gov.uk) was also used to obtain environmental information.

Industry Profiles produced by the Department of the Environment were utilised to obtain information on processes, materials and wastes associated with potential contaminative land uses near the site.

Readily available information sources have been used to produce this desk-based study. Additional information may be requested by the Local Planning Authority (e.g. local authority environmental information request).

2 The Site

2.1 Site Location

The site is located at New Breaks Farm, King's Causeway, Swinefleet, DN14 8DZ. The British National Grid Reference for the approximate site centre is GR: 480307, 420858.

The site location is shown on **Figure 1** in **Appendix A**.

2.2 Site Description

The site is irregular in shape and covers an approximate area of 3,375 square metres.

The site is within the curtilage of New Breaks Farm and encompasses several barns and outbuildings, which form a courtyard in the centre of the site. The site is bounded by two sections of woodlands along the eastern and north-western boundaries.

The barn which is being converted is the one that forms the western boundary of the central courtyard. It is a two-storey building with brick walls and a double-pitched tiled roof that seem to be in good condition. The internal surface of the barn is mainly covered in concrete, which appears to be in good condition, and paving stone. There is an attached single-storey building to the south of the main building, also with brick walls and double-pitched tiled roof. The roof is in need of some repairs.

The two sections of the barn are currently used as a storage barn/hay barn. Remaining barns and buildings are being used mainly as storage, or stables for farm animals and as an existing dwelling.

The site can be accessed from the south, via a gated path, flanked by trees, off King's Causeway.

The site is flat with an approximate mean elevation of 3m aOD.

Land use in the surrounding area is agricultural.

No petrol filling stations have been identified within a 250m radius of the site.

The existing site plan is shown on **Figure 2** which is included in **Appendix A**.

2.3 Development Proposals

Formal development plans have been submitted for the site to the East Riding of Yorkshire Council. Development plans include the conversion of an agricultural building to residential use.

The proposed development plan is shown on **Figure 3** which is included in **Appendix A**.

2.4 Site History

The development site and surrounding area has been reviewed with reference to historical Ordnance Survey (OS) maps. The history of the site and immediate surrounding area is summarised in Table 1. Copies of the historical OS maps are included in **Appendix C**. A search buffer of 250m has been used.

Table 1 - Historic Mapping Review

Date	Scale	On Site	Off Site
1854	1:10,560	The site is occupied by several agricultural buildings of New Breaks Farm and includes the intersection between two fields.	Surrounding land is occupied by agricultural land.
1890	1:2,500	Pump within the southern section of the site.	Site of gibbet 240m southeast of the site.
1906	1:2,500	Building erected in the northeast corner of the site.	No significant change.
1947-1948	1:10,560	No significant change.	No significant change.
1965-1969	1:2,500	No significant change.	Drains directly northeast and southwest of the site.
1976	1:2,500	No significant change.	No significant change.
1999	1:10,000	No significant change.	No significant change.
2022	1:10,000	No significant change.	No significant change.

3 Environmental Setting

3.1 Geology

Geological maps of the area indicate that the site is underlain by Holocene superficial alluvial deposits. They consist of unconsolidated clay, silt, sand and gravel.

The underlying bedrock is the Triassic Mercia Mudstone Group. The Group consists of dominantly red, less commonly green-grey, mudstones and subordinate siltstones with thick halite-bearing units. Sandstones can also be present.

There are no records of geological faults located within a 1 km radius of the site.

Two borehole records (Ref: SE72SE41 and SE81NW4) were obtained from BGS online records, 950m southwest and 1250m south-southeast of the site respectively. Both boreholes show a superficial alluvial succession of clay, silt and sand, with peat levels, 12 to 15m thick, overlying Triassic marls, mudstones and sandstones with some gypsum layers.

A copy of the geological maps is included in **Appendix D**. A copy of the BGS borehole records is included in **Appendix E**.

3.2 Radon

The site lies within the lowest band of radon potential where it is estimated that less than 1% of the properties are above the action level (low probability). Radon protective measures are not deemed necessary for the development.

3.3 Coal Mining Activity

The site does not fall within a Coal Mining Reporting Area described as having minable coal deposits and does not lie within a 'Development High Risk Area' for coal mining, as defined by the Coal Authority. As such, it is considered that there are no coal mining related hazards which could affect the site.

3.4 Hydrogeology

The superficial alluvial deposits are designated as a Secondary A Aquifer, defined as; 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.

The underlying Mercia Mudstone Group is designated as a Secondary B Aquifer, defined as; mainly lower permeability layers that may store and yield limited amounts of groundwater through characteristics like thin cracks (called fissures) and openings or eroded layers.

The site is not located within a Source Protection Zone.

There is a single record of groundwater abstraction licence located within a 1km radius of the site. It is located 950m southwest of the site and is for general agriculture.

A copy of the hydrogeological maps is included in **Appendix F**.

3.5 Hydrology

There are no significant surface water features (rivers, lakes and reservoirs) located within a 1km radius of the site.

There are 2 no. drains directly northeast and southwest of the site.

3.6 Flood Risk

The site lies within a Zone 3: areas benefitting from flood defences (high probability), land assessed as having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding.

The completion of a detailed flood risk assessment is recommended.

A copy of the flood risk map is included in **Appendix G**.

3.7 Waste Management Facilities

There are no records of historic or currently authorised landfill sites located within a 1km radius of the site.

There are no records of sites operating under an environmental permit for waste operations operating within a 1km radius of the site.

3.8 Environmental Permits, Incidents and Registers

There are no records of sites located within a 1km radius of the development site operating under an environmental permit for discharges to water and groundwater.

There are no records of pollution incidents recorded by the Environment Agency having occurred within a 1km radius of the site.

3.9 Designated Environmentally Sensitive Sites

There is a single record of designated environmentally sensitive sites located within a 1km radius of the site.

The environmental designations are summarised in Table 2 below:

Table 2 - Environmental Designations Summary

Designation	Distance	Details
Nitrate Vulnerable Zone	On Site	The site lies within a Nitrate Vulnerable Zone.

A copy of the environmental designations map is included in **Appendix H**.

4 Preliminary Conceptual Site Model

4.1 Introduction

In order to assess the environmental risks present, a preliminary conceptual model has been developed for the site. This model has been developed using best practice guidelines in conjunction with the current assessment framework taking into account the development proposals. This preliminary conceptual model is based on the gathered desk-based information (e.g. historical OS data and data sourced from the EA, Geindex and Magic databases).

The conceptual site model is a representation of the hypothesised relationships between sources, pathways and receptors which allows the identification of potential pollutant linkages and whether these linkages have the potential to comprise significant harm and/or pollution of controlled waters in relation to the site. This model comprises three elements:

Source – the key pollutant hazards associated with the site

Receptor – the key targets at risk from the sources

Pathway – the means by which the contaminant can cause harm to the receptor

If all three elements are present, then a potential pollutant linkage exists, and this may require further assessment.

4.2 Potential Contamination Sources

The site has been occupied by the New Breaks Farm since as far back as 1854. Several buildings/barns occupy the site. Areas for parking and maintenance of vehicles and farming machinery are expected across the site. Additionally, there is the potential for hazardous substances related to farming to be stored on site including fuels, oils and pesticides. Based on the land uses at the site there is the potential for ground contamination to be present. Potential contaminants could include heavy metals, asbestos, polyaromatic hydrocarbons (PAHs), hydrocarbons, pesticides and solvents.

No off-site land uses have been identified in the surrounding area that have the potential to contaminate the shallow soils at the site.

4.3 Receptors

The potential receptors considered to be at risk from soil and groundwater contamination associated with the site are summarised in Table 3 below:

Table 3 - Receptor Description

Receptor	Details
Human (On Site)	<ul style="list-style-type: none"> - Construction workers - Future site users - Site visitors
Human (Off Site)	<ul style="list-style-type: none"> - Adjacent site users
Controlled Waters	<ul style="list-style-type: none"> - Secondary A Aquifer - Secondary B Aquifer - Drains
Building/ construction materials	<ul style="list-style-type: none"> - Foundations - Buried services
Environmental Receptors	<ul style="list-style-type: none"> - Nitrate Vulnerable Zone

4.4 Pathways

The potential exposure pathways linking contamination with the receptors identified above are summarised in Table 4 below:

Table 4 - Exposure Pathways Summary

Receptor	Details of Exposure Pathway
Human (on-site)	<ul style="list-style-type: none"> - Direct ingestion of contaminated soil/groundwater - Dermal contact with soil/groundwater - Inhalation of gases and vapours
Human (off-site)	<ul style="list-style-type: none"> - Inhalation of fibres and particulates - Inhalation of migrating gases and vapours
Controlled waters	<ul style="list-style-type: none"> - Vertical and lateral migration of dissolved phase contaminants via preferential pathways to groundwater aquifers

Receptor	Details of Exposure Pathway
	- Direct surface water run-off to surface water features
Building/construction	- Buried materials/services - Contact with contaminated soil and/or groundwater

4.5 Potential Pollution Linkages

4.5.1 Human Health

Development plans include the conversion of a barn from agricultural use to residential. This is considered to be a sensitive end use.

The presence of buildings and hardstanding would eliminate the risk of exposure, via the dermal contact and ingestion pathways to future site users to any ground contamination that may remain following development.

Any ground gases (i.e. methane and carbon dioxide) and vapours that are present within the soils beneath the site could potentially ingress into future buildings through preferential pathways (e.g. service entry points). Therefore, there would be a risk of exposure via inhalation to future site users.

There is the potential for construction workers and adjacent land users to be exposed to soil and groundwater contamination during site redevelopment. However, the use of appropriate PPE and the adoption of suitable Health and Safety methods will help to reduce the risks posed to human health during this work.

4.5.2 Controlled Waters

The site is immediately underlain by alluvial deposits which are designated as a Secondary A Aquifer. It is considered that if any contamination is present at the surface, it would be in direct contact with the underlying aquifer and could allow the migration of contaminants to the groundwater. However, the site does not lie within a Source Protection Zone and the nearest groundwater abstraction licence held 950m from the site, used for general agriculture, which is not considered a sensitive use.

There are two drains directly northeast and southwest of the site.

Overall, the risk to controlled waters is deemed to be low.

4.5.3 Building/Construction Materials/Buried Services

The presence of any soil and groundwater contaminants beneath the site could potentially impact on construction materials for future new developments, such as below ground structures and services. Concrete foundations are particularly sensitive to aggressive ground conditions, i.e. sulphate attack. However, no new foundations are proposed.

If ground gases and vapour are present in the soil beneath the site, then there would be the potential risk of ingress into new properties which could present a risk of explosion.

4.6 Environmental Designations

The proposed development is not considered to pose a risk to the identified environmental receptors, although this may require further assessment with regards to water neutrality.

4.7 Preliminary Hazard Assessment

A preliminary hazard assessment is presented in Table 5. The preliminary hazard assessment is a qualitative assessment of the risks posed by each potential pollutant linkage described above and is used to identify the requirement for additional work (e.g. intrusive ground investigation).

Table 5 – Preliminary Hazard Assessment

Source 1	Pathway	Receptor	Likelihood	Effect	Risk	Assessment
Contaminated soil	Ingestion (via soil dust), inhalation (via soil dust and vapours), ingestion through dirty hands, dermal contact with soil/water.	Future site users Adjacent site users Construction workers	1	3	Low	Contamination source potential identified. Hardstanding and building footprint sever any exposure pathways. No proposed areas of new soft landscaping. Risk to potential future construction workers mitigated through use of PPE.
Contaminated soil groundwater	Direct contact	Buildings/ services	1	3	Low	Contamination source potential identified. No new foundations proposed.
Contaminated groundwater	Downward or lateral migration Surface water run-off	Secondary A Aquifer Secondary B Aquifer Drains	1	3	Low	Contamination source potential identified. The site does not lie within a Source Protection Zone and nearest groundwater abstraction licence held is located 950m from the site.
Ground gas / vapours	Inhalation, ingress into buildings	Buildings / services Future site users Adjacent site users	2	4	Moderate	Ground gas source not identified.

Source 1	Pathway	Receptor	Likelihood	Effect	Risk	Assessment
Radon		Construction workers				Semi-volatile organic compounds (PAHs) potential identified. Migration pathway through paved stone feasible. Site located within a low probability area for radon.

Using Risk Matrix (Table 6) Degree of Risk (R) = Likelihood (L) x Effect (E)

Table 6 - Risk Matrix, Degree of Risk (R) = Likelihood (L) x Effect (E)

Likelihood	Description	Probability	Effect (E)	Description
5	Almost certain	>70%		
4	Probable	50-70%	4	Severe
3	Likely	30-50%	3	Medium
2	Unlikely	10-30%	2	Mild
1	Negligible	<10%	1	Minor
Risk (R)	Risk Level	Action		
1-5	Low	None required		
6-10	Moderate	Further assessment via Phase 2 intrusive ground investigation.		
>10	High	Further assessment via Phase 2 intrusive ground investigation.		

5 Conclusions and Recommendations

The preliminary environmental site assessment indicates that the site can be classified as moderate risk in terms of contamination and the risks to the identified receptors (e.g. human health) following redevelopment is considered to be moderate.

This classification is due to previous and current agricultural site use. There is the potential for some contamination to be present in the ground beneath the site from spillages associated with historic site use. Potential contaminants include heavy metals, asbestos, polyaromatic hydrocarbons (PAHs), hydrocarbons, pesticides and solvents. Whilst hardstanding across the site will mitigate against the majority of these potential contaminants, the risk of vapours still remains.

It is recommended a Phase 2 intrusive ground investigation is undertaken prior to site redevelopment to obtain additional information on the ground conditions and the contamination status. The investigation should be carried out by qualified and competent persons. The scope of works for the investigation will need to be submitted and approved by the local authority prior to the commencement of the Phase 2 intrusive works.

APPENDICES

Appendix A – Site Location and Site Plan



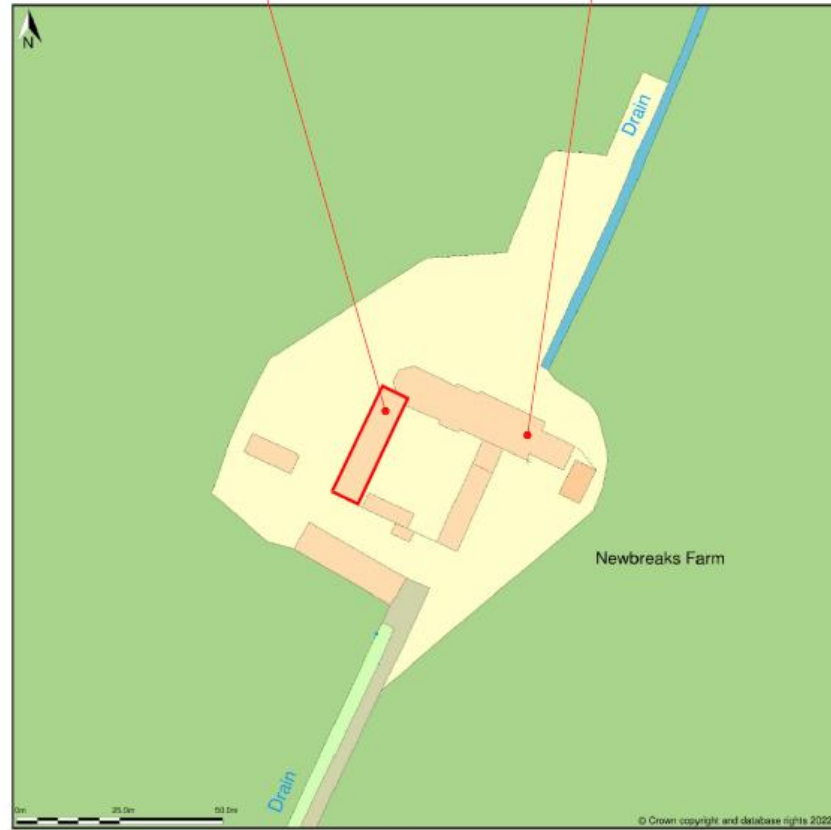
enviro | solution

Site Location Map

Figure 1

EXISTING BARN TO BE
CONVERTED TO RESIDENTIAL
PROPERTY

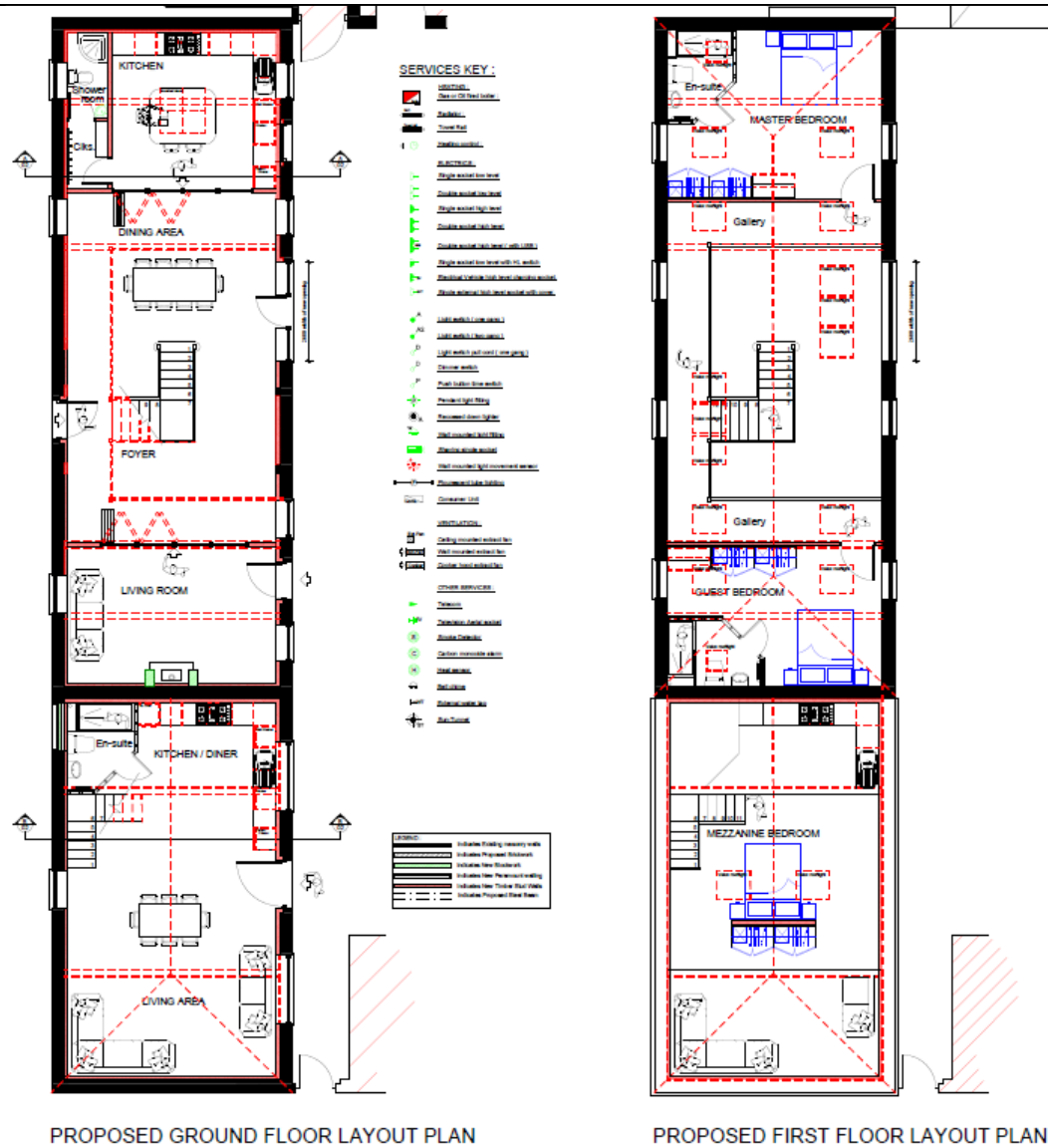
EXISTING DWELLING



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Existing Site Plan

Figure 2



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Proposed Development Plan

Figure 3

Appendix B – Site Photographs



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Access path off King's Causeway
Image taken from Street View



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View of central courtyard looking west, showing front elevation of the barn being converted



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Concrete floor inside the barn



enviro | solution

View of the back of the barn looking south



enviro | solution

View of concrete floor inside the barn



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View of floor inside the barn, showing paving stone and concrete slab

Appendix C - Historical 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)
 ----- Co. Boro. 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 **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**

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
 - L B Bdy - London Borough Boundary
 X X X X X 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**

BM 231.60m Bench Mark **Buildings with Building Seed**
Roofed Building **Glazed Roof Building**

• • • • • Civil parish/community boundary
 --- District boundary
 - - - - - County boundary
 o 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

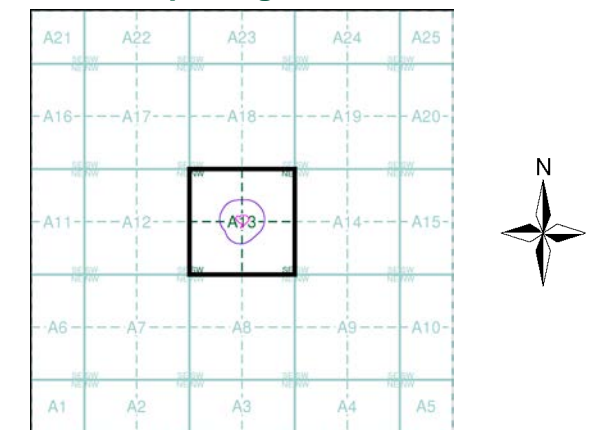
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LANDMARK INFORMATION GROUP®

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Yorkshire	1:2,500	1890	2
Yorkshire	1:2,500	1906	3
Ordnance Survey Plan	1:2,500	1965 - 1969	4
Ordnance Survey Plan	1:2,500	1976	5
Additional SIMs	1:2,500	1982	6
Large-Scale National Grid Data	1:2,500	1993 - 1994	7

Historical Map - Segment A13



Order Details

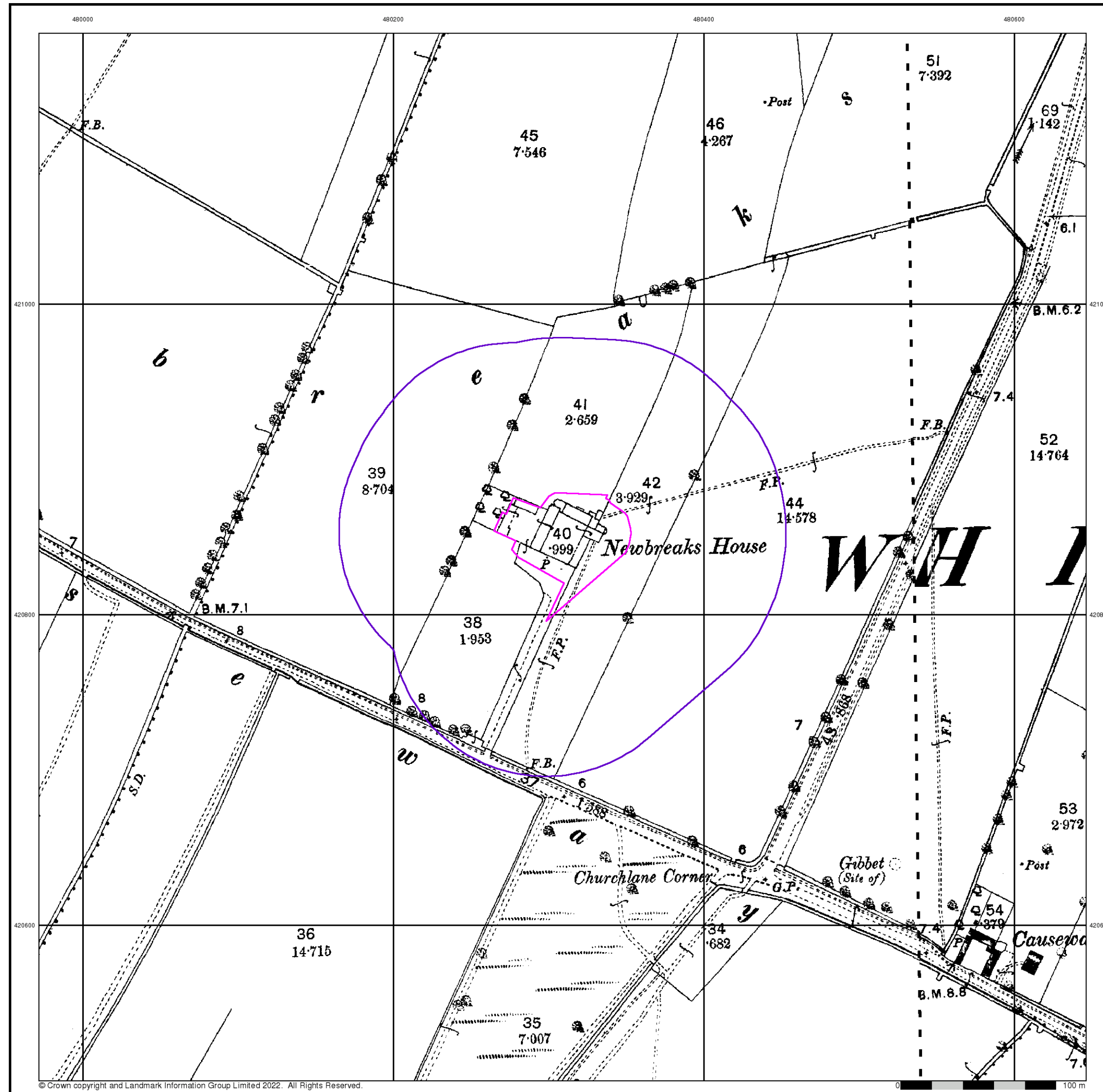
Order Number: 297724576_1_1
 Customer Ref: ES300622
 National Grid Reference: 480310, 420840
 Slice: A
 Site Area (Ha): 0.39
 Search Buffer (m): 100

Site Details

Newbrakes Farm, Swinefleet, GOOLE, DN14 8DZ

Landmark
 INFORMATION GROUP

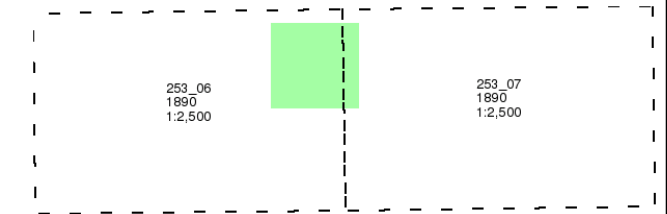
Tel: 0844 844 9952
 Fax: 0844 844 9951
 Web: www.envirocheck.co.uk



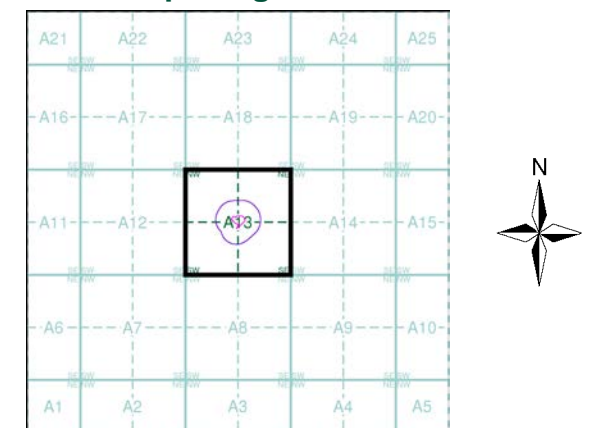
Yorkshire
Published 1890
Source map scale - 1:2,500

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



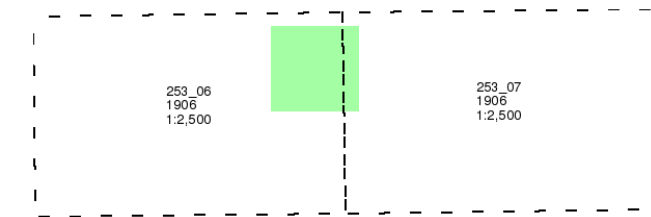
Order Details
 Order Number: 297724576_1_1
 Customer Ref: ES300622
 National Grid Reference: 480310, 420840
 Slice: A
 Site Area (Ha): 0.39
 Search Buffer (m): 100

Site Details
 Newbrakes Farm, Swinefleet, GOOLE, DN14 8DZ

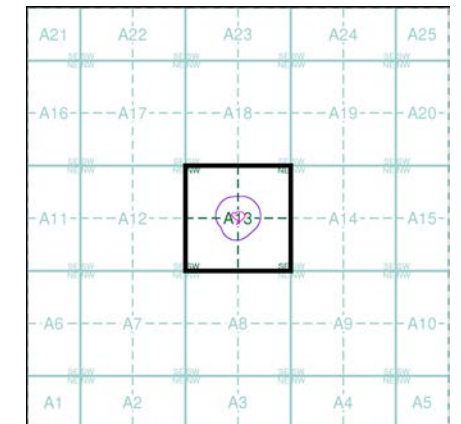
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The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered 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

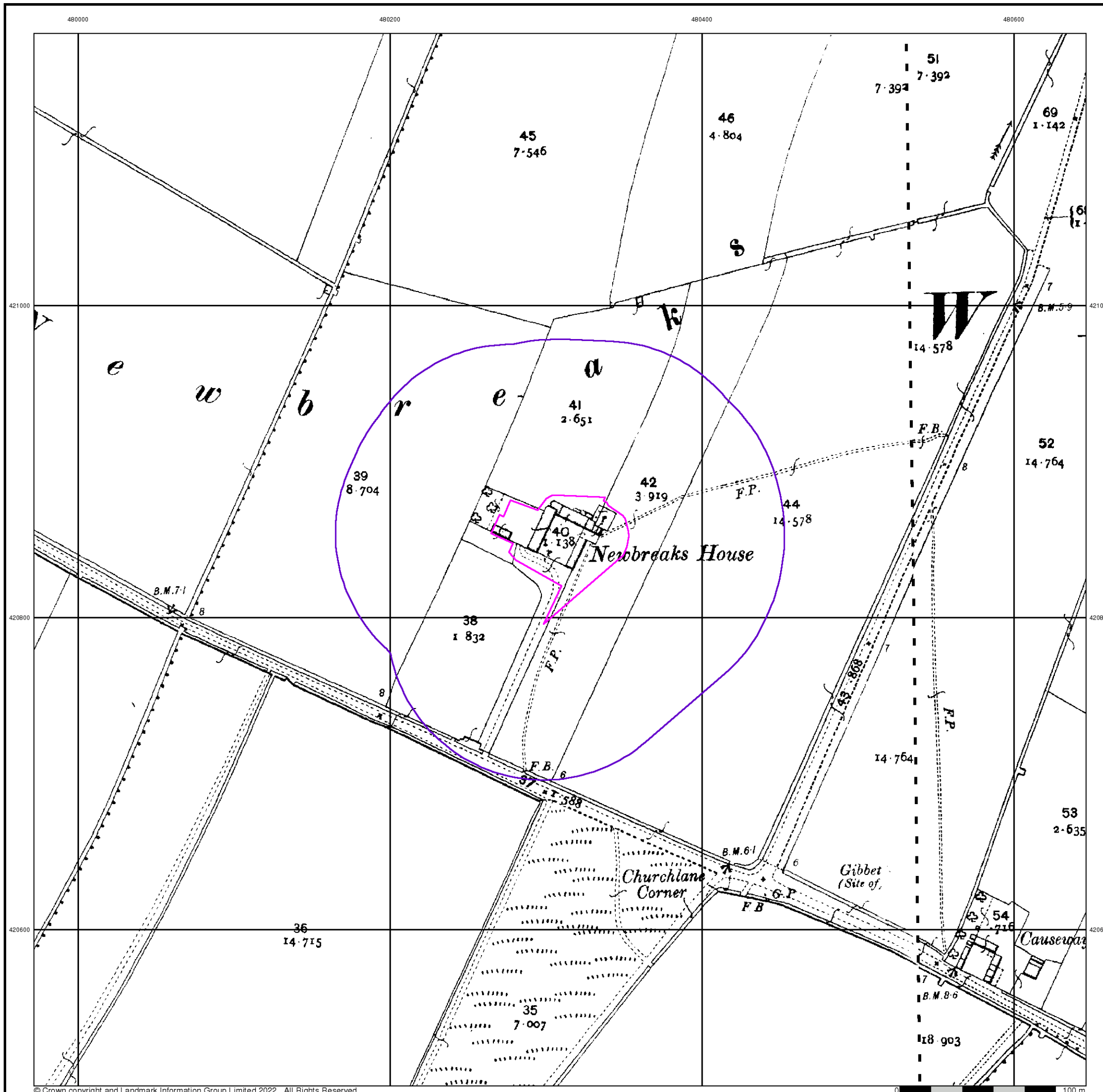


Order Details

Order Number: 297724576_1_1
 Customer Ref: ES300622
 National Grid Reference: 480310, 420840
 Slice: A
 Site Area (Ha): 0.39
 Search Buffer (m): 100

Site Details

Newbrakes Farm, Swinefleet, GOOLE, DN14 8DZ



Ordnance Survey Plan

Published 1965 - 1969

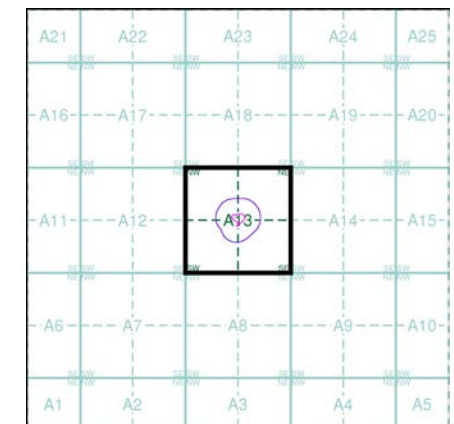
Source map scale - 1:2,500

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)

SE7921 1965 1:2,500	SE8021 1969 1:2,500
SE7920 1965 1:2,500	SE8020 1969 1:2,500

Historical Map - Segment A13

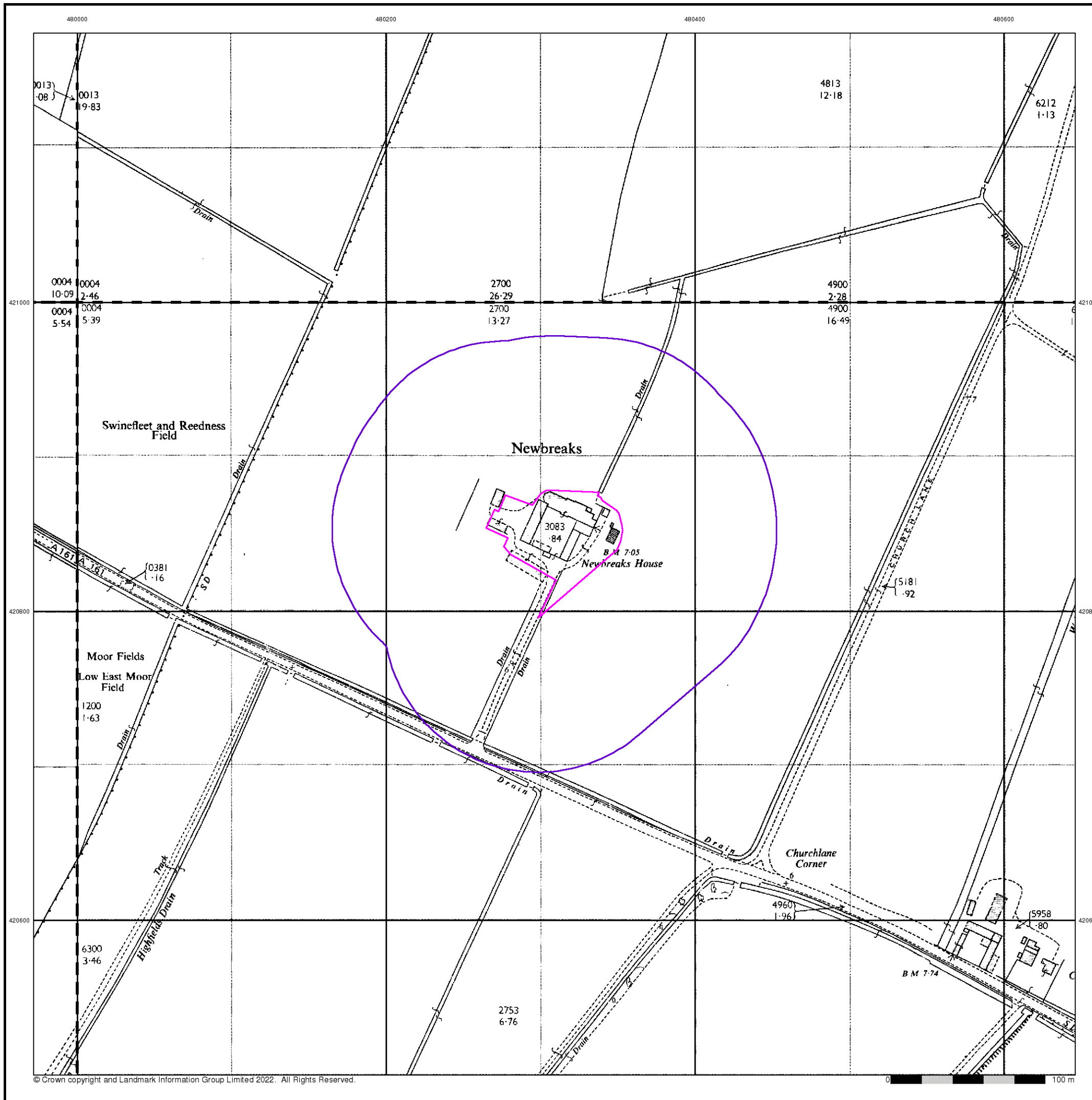


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 Site Area (Ha): 0.39
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Site Details

Newbrakes Farm, Swinefleet, GOOLE, DN14 8DZ



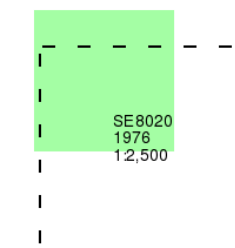
Ordnance Survey Plan

Published 1976

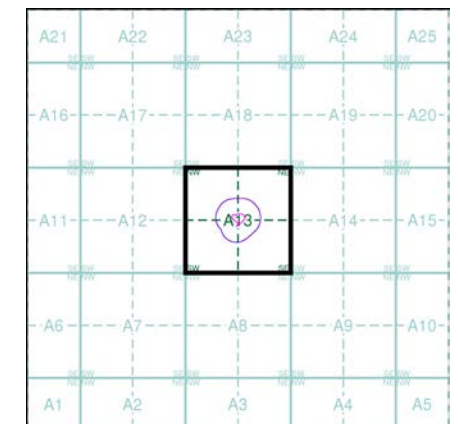
Source map scale - 1:2,500

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

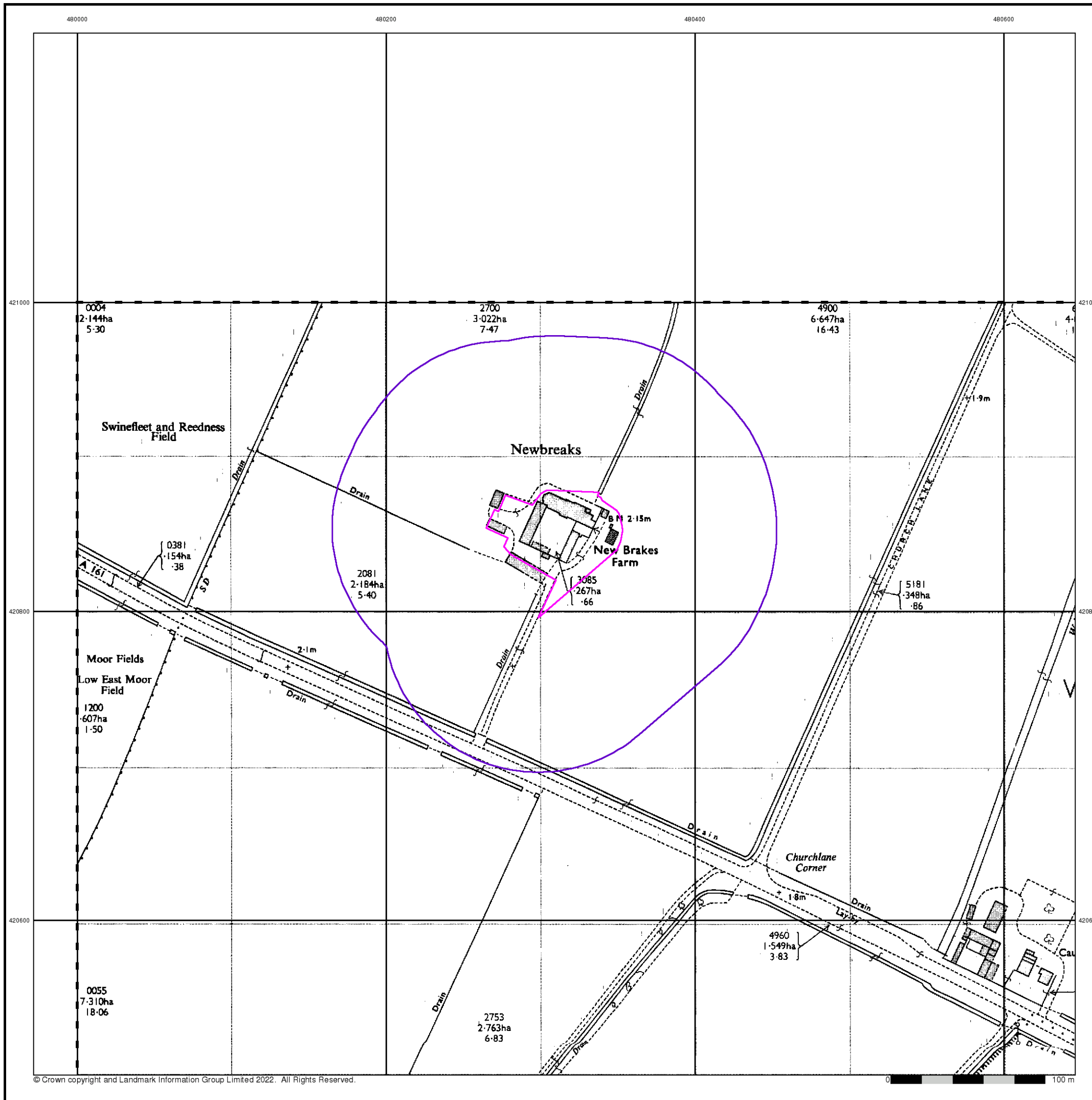


Order Details

Order Number: 297724576_1_1
 Customer Ref: ES300622
 National Grid Reference: 480310, 420840
 Slice: A
 Site Area (Ha): 0.39
 Search Buffer (m): 100

Site Details

Newbrakes Farm, Swinefleet, GOOLE, DN14 8DZ



Large-Scale National Grid Data

Published 1993 - 1994

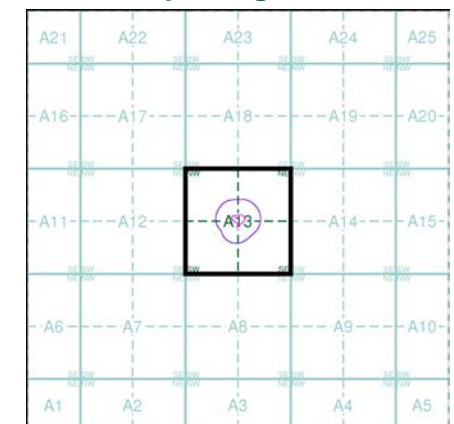
Source map scale - 1:2,500

'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)

SE7921 1993 1:2,500	SE8021 1994 1:2,500
SE7920 1993 1:2,500	SE8020 1994 1:2,500

Historical Map - Segment A13

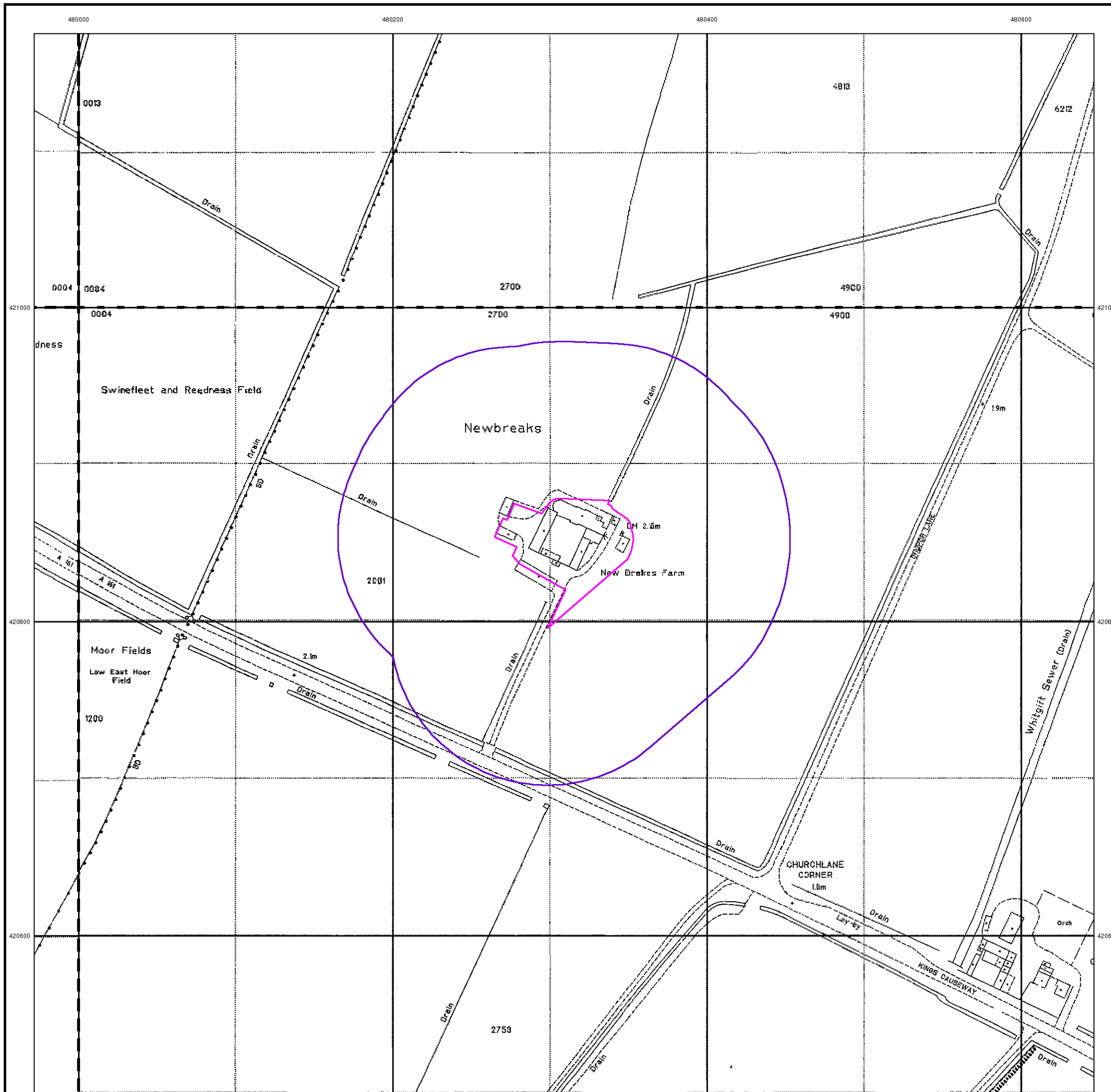


Order Details

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Site Details

Newbrakes Farm, Swinefleet, GOOLE, DN14 8DZ



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		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		Pol Sta Police Station
	Ch Church		PO Post Office
	CH Club House		PC Public Convenience
	F E Sta Fire Engine Station		PH Public House
	FB Foot Bridge		SB Signal Box
	Fn Fountain		Spr Spring
	GP Guide Post		TCB Telephone Call Box
	MP Mile Post		TCP Telephone Call Post
	MS Mile Stone		W Well

1:10,000 Raster Mapping

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

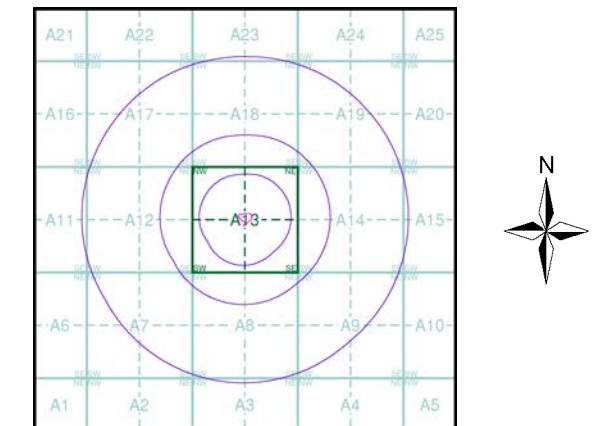
Envirocheck

LANDMARK INFORMATION GROUP

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Yorkshire	1:10,560	1854	2
Yorkshire	1:10,560	1891 - 1892	3
Yorkshire	1:10,560	1907 - 1908	4
Yorkshire	1:10,560	1907 - 1908	5
Yorkshire	1:10,560	1947 - 1948	6
Ordnance Survey Plan	1:10,000	1956	7
Ordnance Survey Plan	1:10,000	1956	8
Ordnance Survey Plan	1:10,000	1967 - 1969	9
Ordnance Survey Plan	1:10,000	1971 - 1979	10
Ordnance Survey Plan	1:10,000	1984 - 1987	11
10K Raster Mapping	1:10,000	1999	12
Street View	Variable		13

Historical Map - Slice A



Order Details

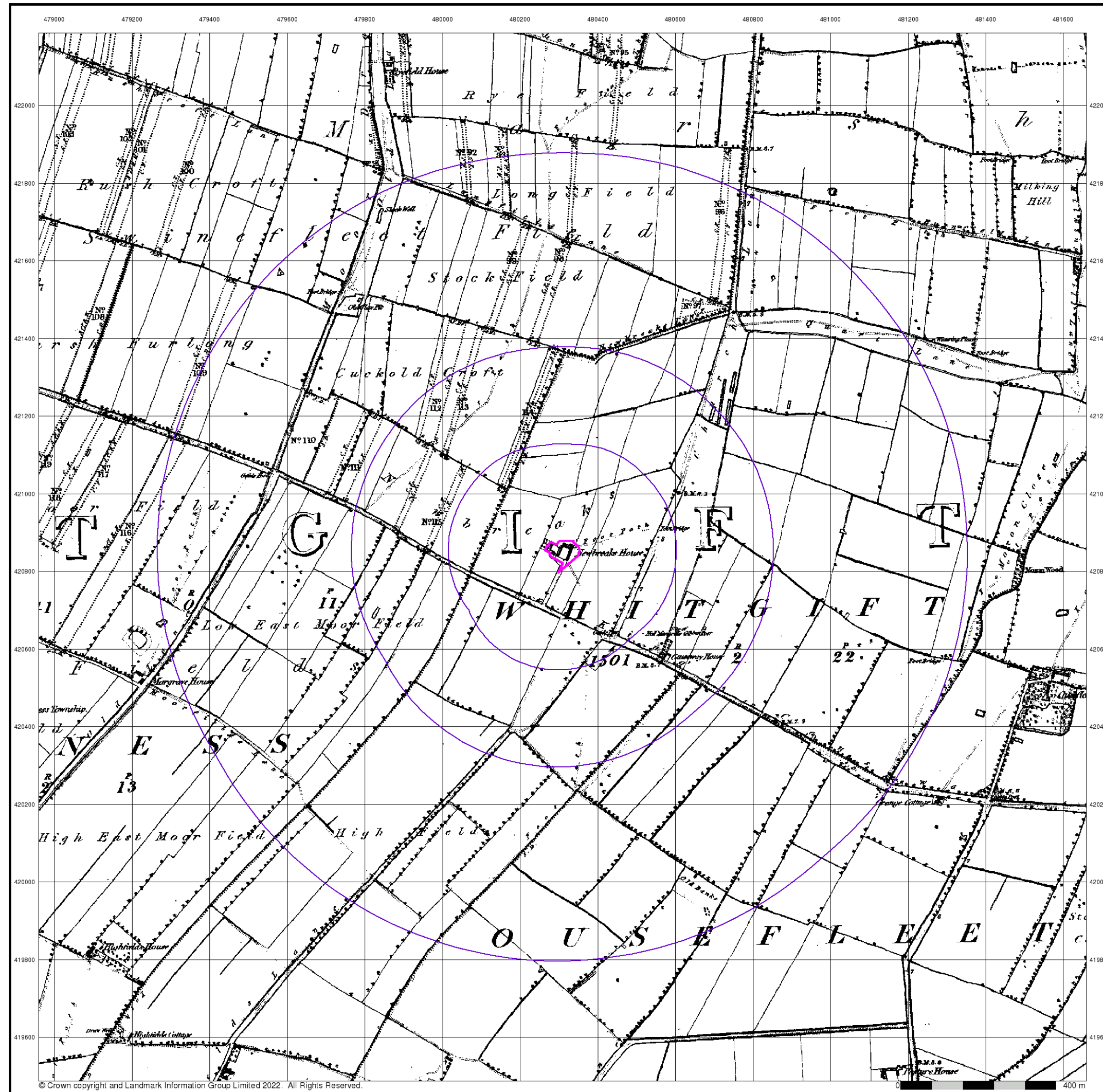
Order Number: 297724576_1_1
 Customer Ref: ES300622
 National Grid Reference: 480310, 420840
 Slice: A
 Site Area (Ha): 0.39
 Search Buffer (m): 1000

Site Details

Newbrakes Farm, Swinefleet, GOOLE, DN14 8DZ

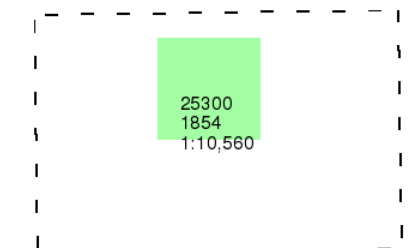
Landmark
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Tel: 0844 844 9952
 Fax: 0844 844 9951
 Web: www.envirocheck.co.uk

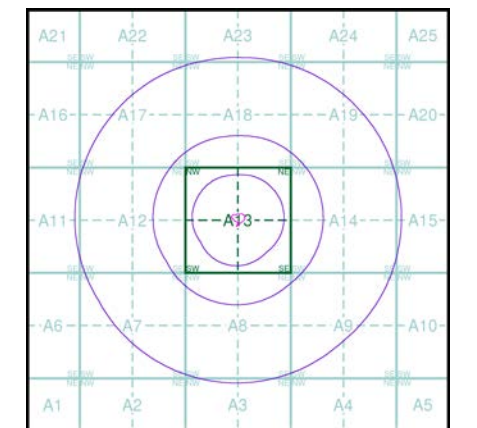


The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some 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

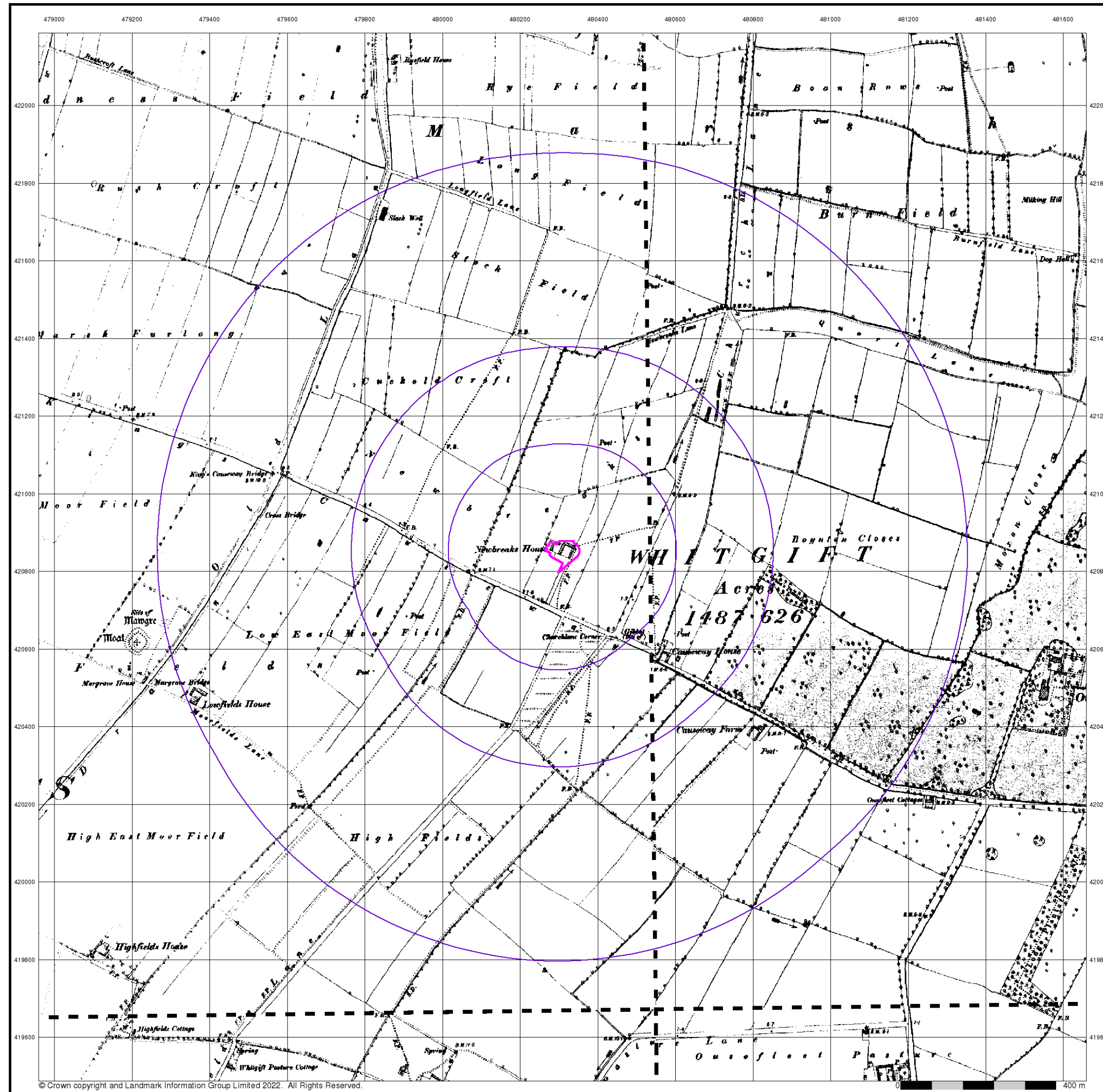


Order Details

Order Number: 297724576_1_1
 Customer Ref: ES300622
 National Grid Reference: 480310, 420840
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 Search Buffer (m): 1000

Site Details

Newbrakes Farm, Swinefleet, GOOLE, DN14 8DZ



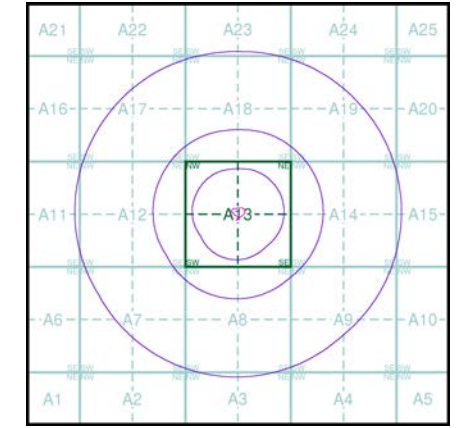
Yorkshire
Published 1891 - 1892
Source map scale - 1:10,560

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)

253NW 1891 1:10,560	253NE 1892 1:10,560
253SW 1892 1:10,560	253SE 1892 1:10,560

Historical Map - Slice A

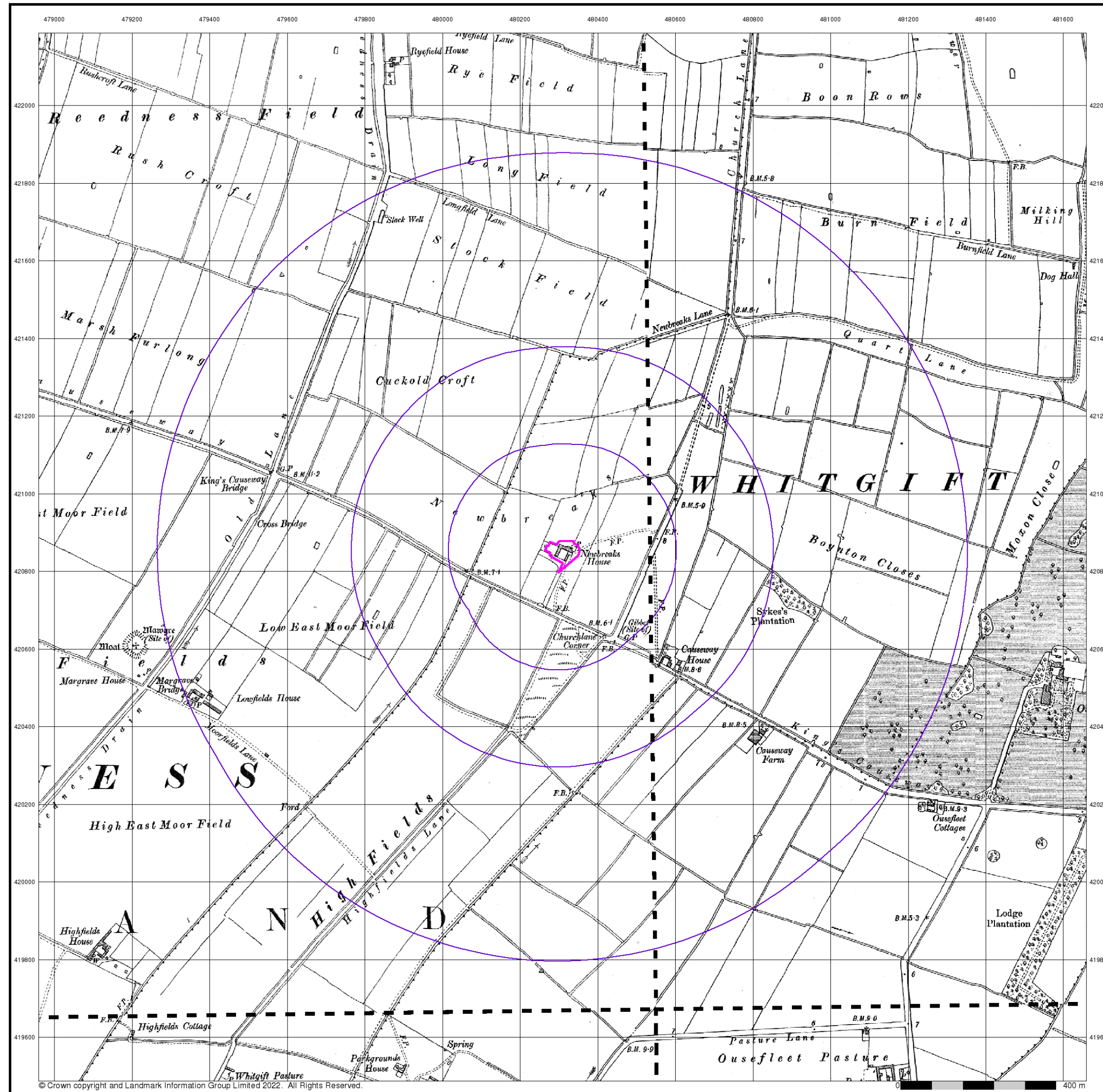


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Site Details

Newbrakes Farm, Swinefleet, GOOLE, DN14 8DZ



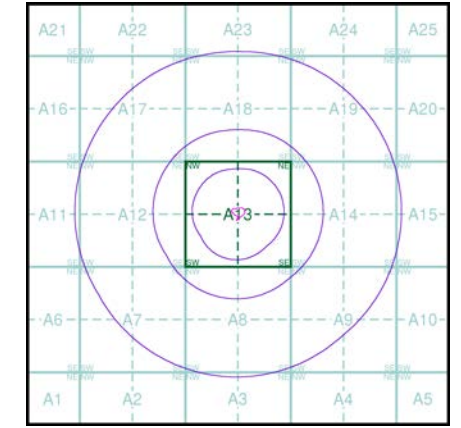
Yorkshire
Published 1907 - 1908
Source map scale - 1:10,560

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)

253NW 1907 1:10,560	253NE 1908 1:10,560
253SW 1907 1:10,560	253SE 1908 1:10,560

Historical Map - Slice A

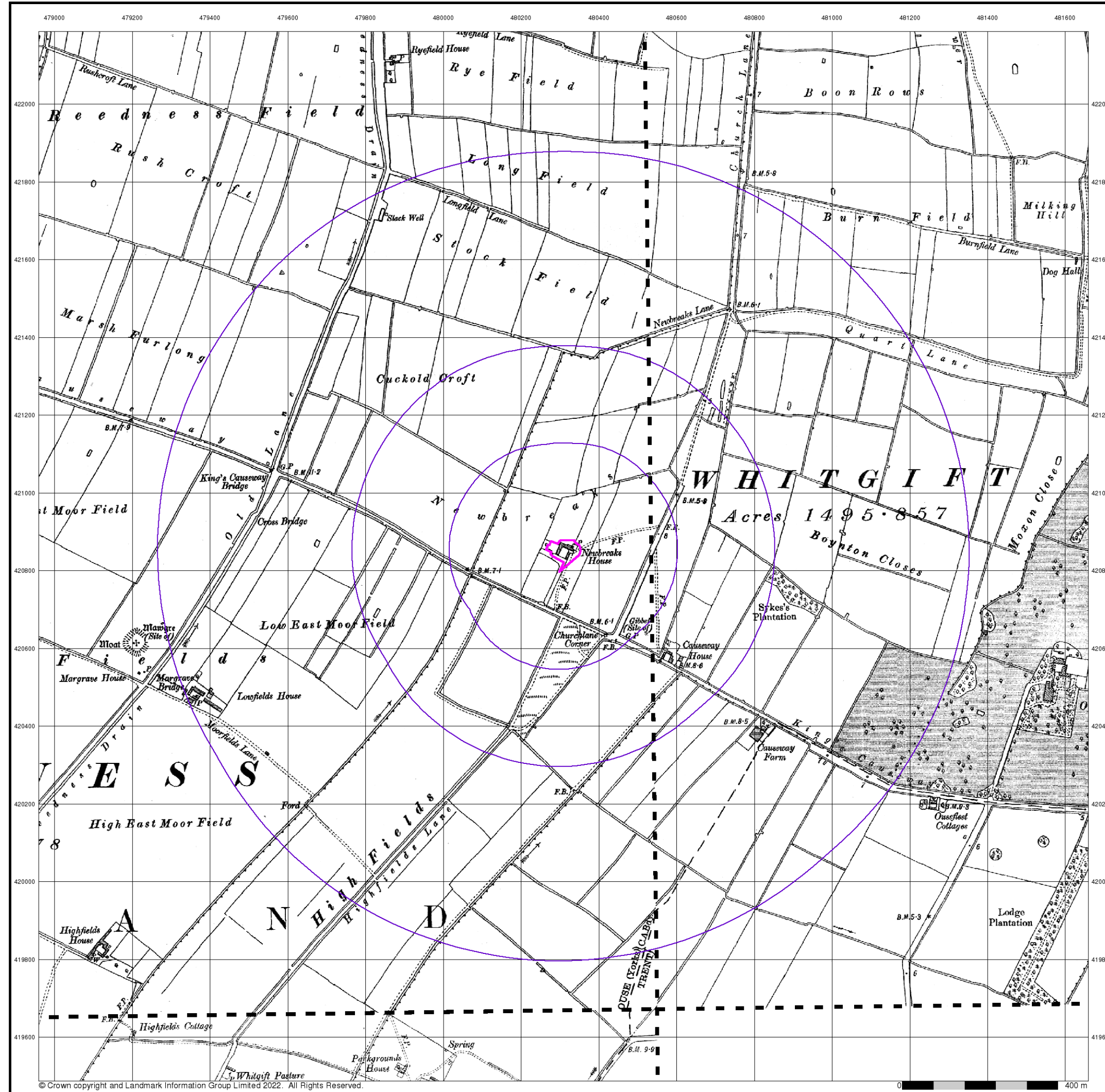


Order Details

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Site Details

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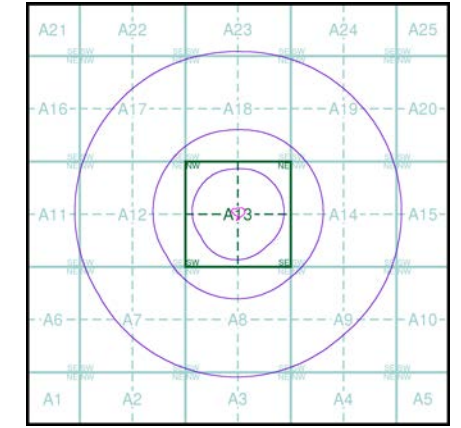
Yorkshire
Published 1907 - 1908
Source map scale - 1:10,560

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)

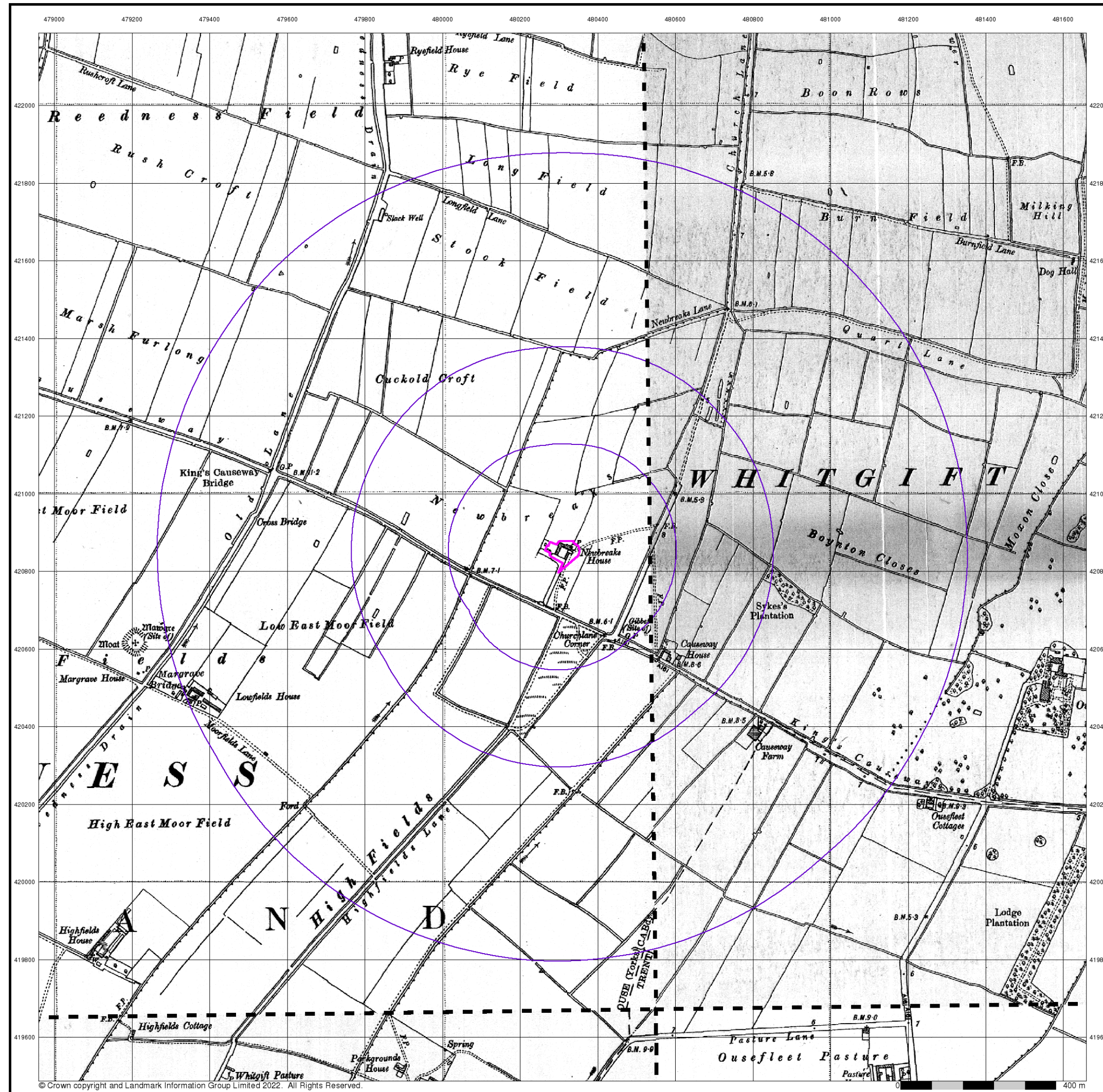
253NW 1907 1:10,560	253NE 1908 1:10,560
253SW 1907 1:10,560	

Historical Map - Slice A



Order Details
 Order Number: 297724576_1_1
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Site Details
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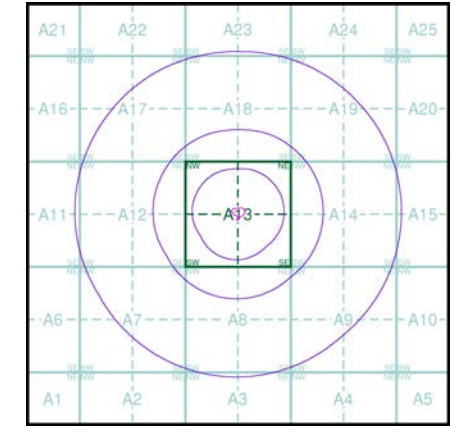
Yorkshire
Published 1947 - 1948
Source map scale - 1:10,560

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

Map Name(s) and Date(s)

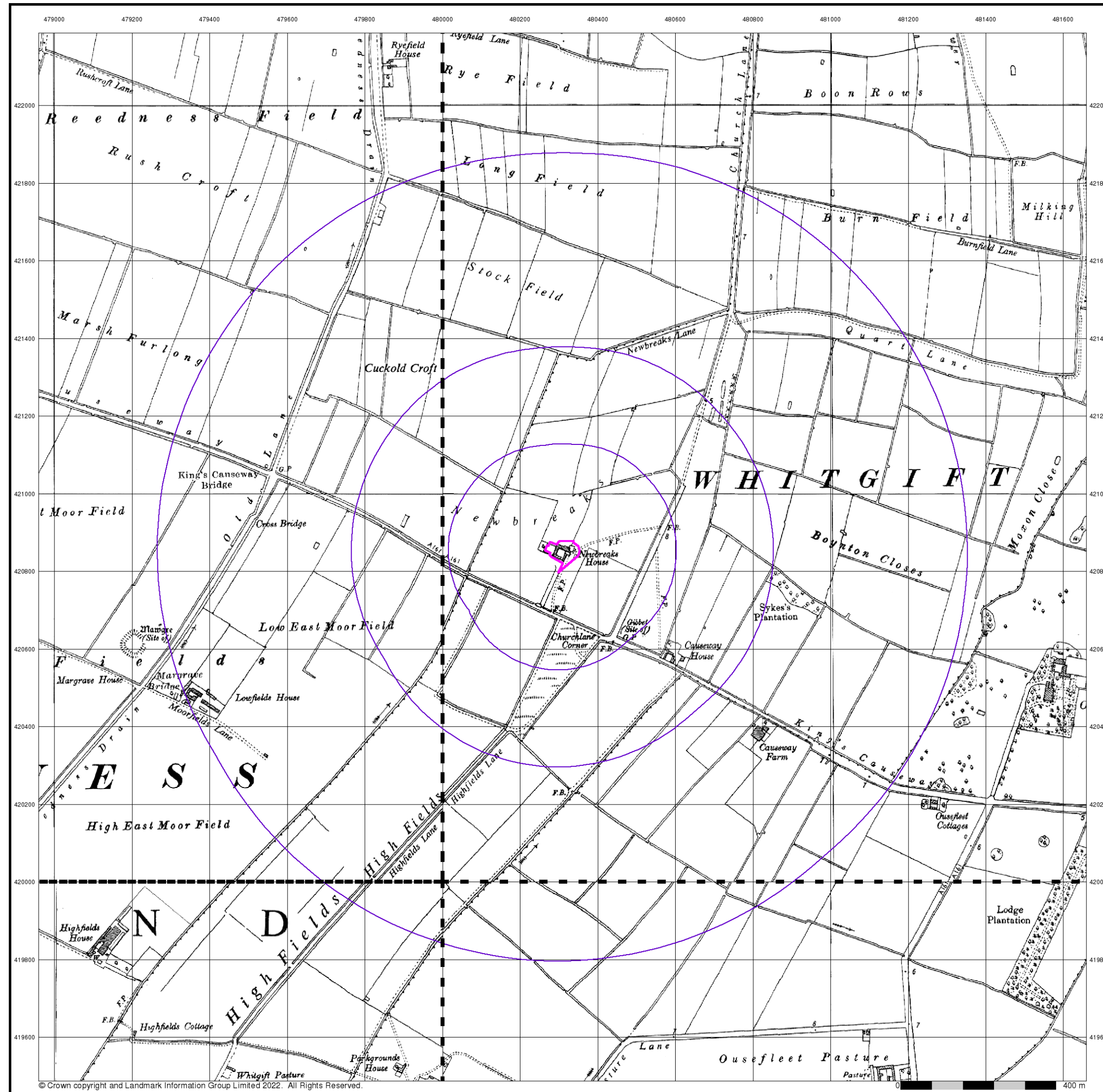
253NW 1948 1:10,560	253NE 1948 1:10,560
253SW 1947 1:10,560	253SE 1948 1:10,560

Historical Map - Slice A



Order Details
 Order Number: 297724576_1_1
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Site Details
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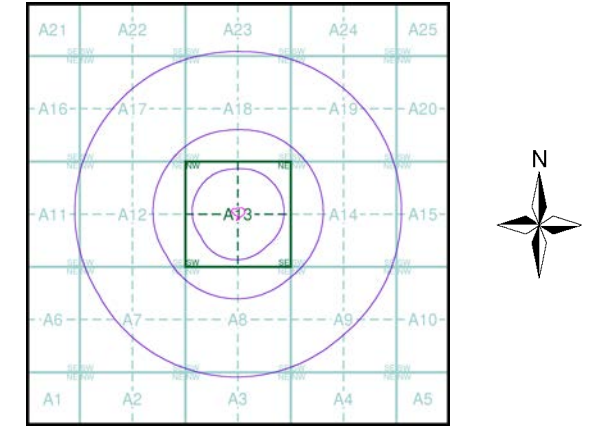
Ordnance Survey Plan Published 1956 Source map scale - 1:10,000

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

Map Name(s) and Date(s)

SE72SE	SE82SW
1956	1956
1:10,560	1:10,560
SE71NE	SE81NW
1956	1956
1:10,560	1:10,560

Historical Map - Slice A

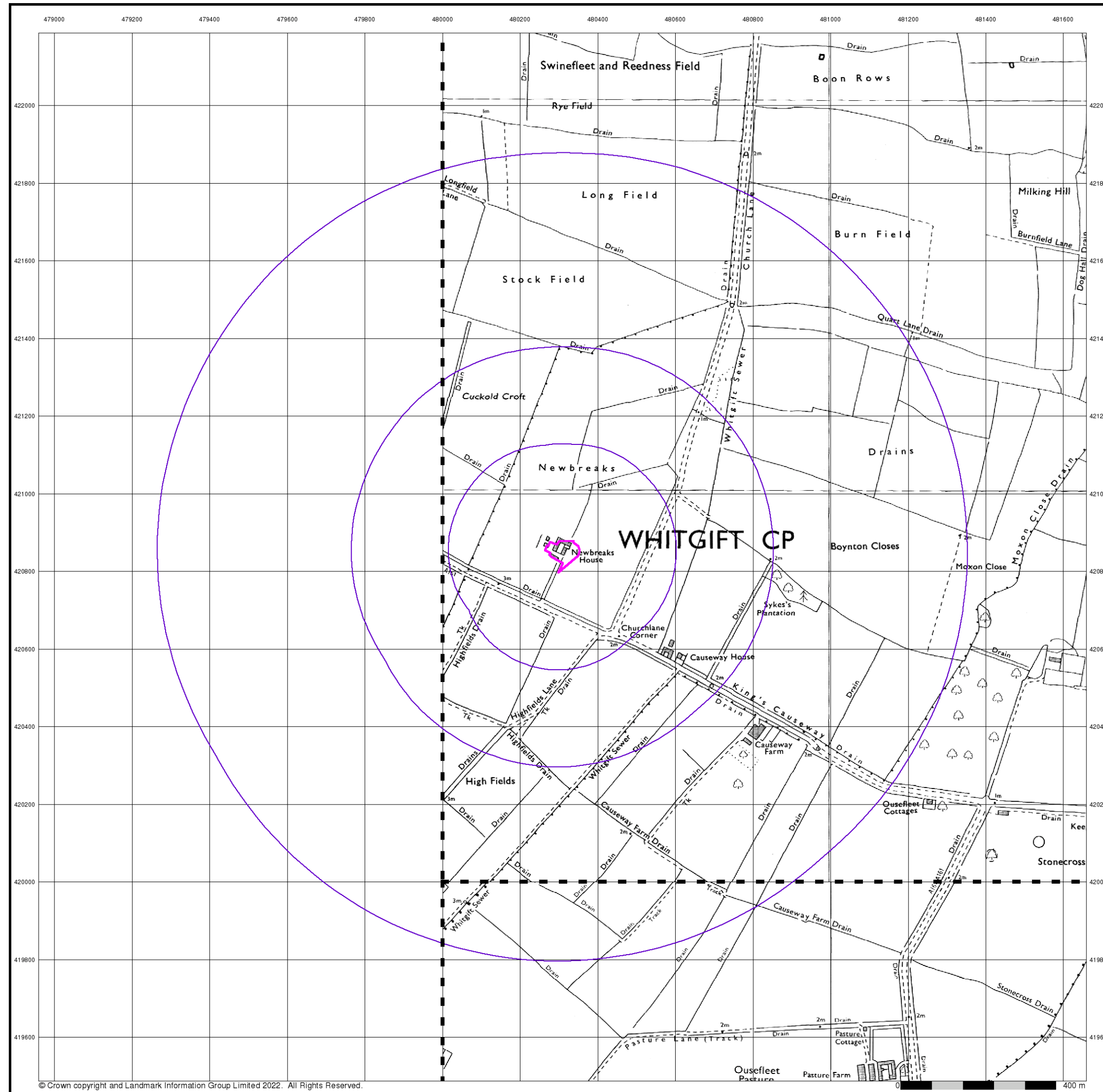


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Ordnance Survey Plan

Published 1971 - 1979

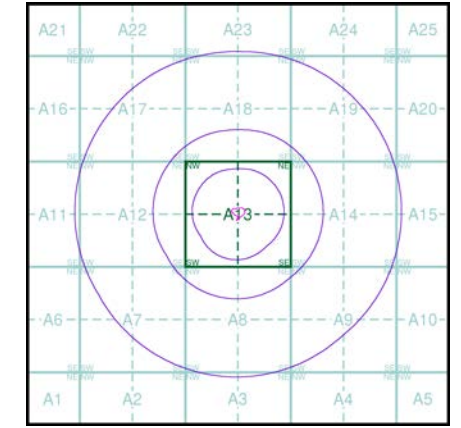
Source map scale - 1:10,000

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

Map Name(s) and Date(s)

SE82SW	1971	1:10,000
SE81NW	1979	1:10,000

Historical Map - Slice A

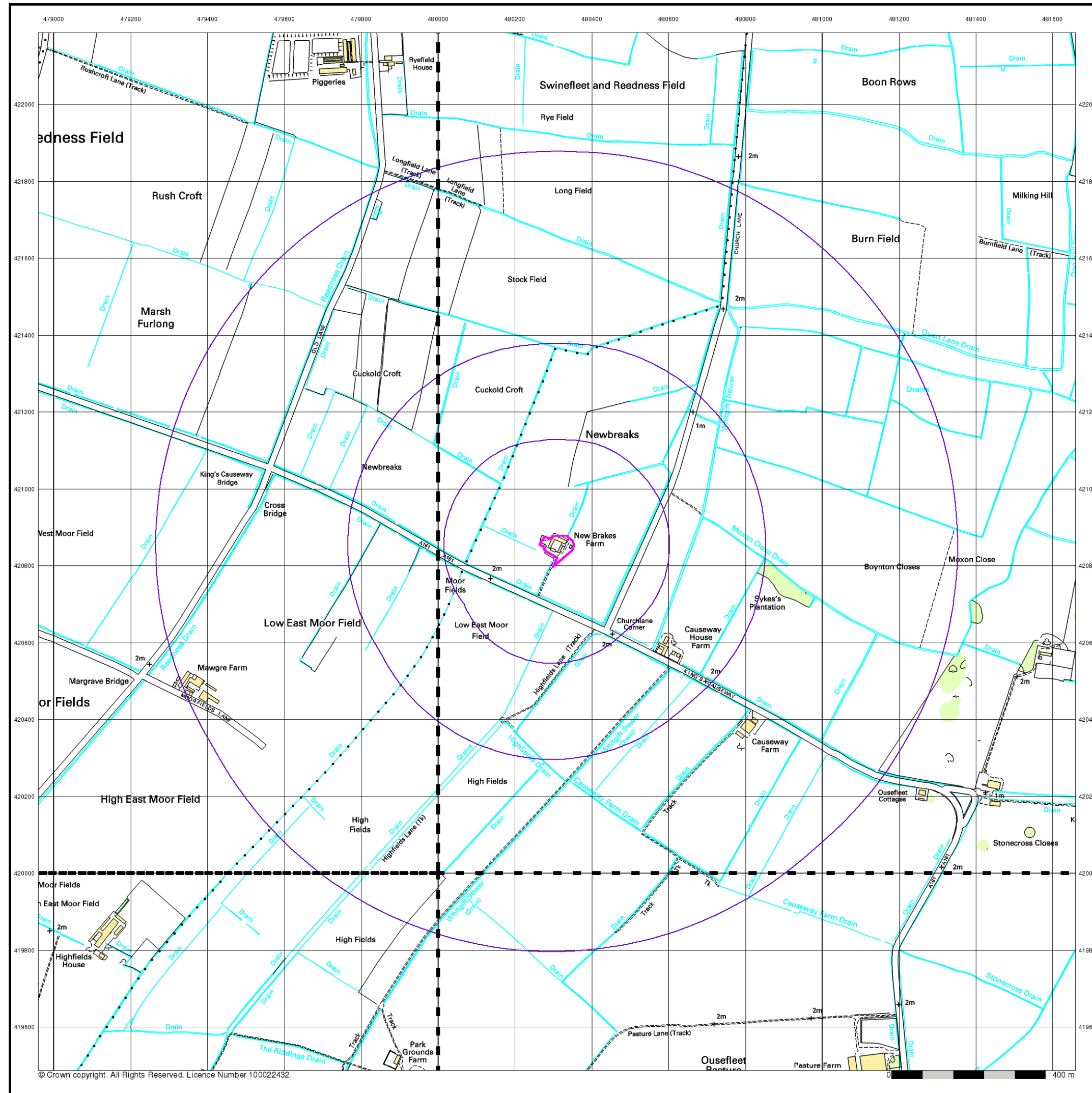


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Site Details

Newbrakes Farm, Swinefleet, GOOLE, DN14 8DZ



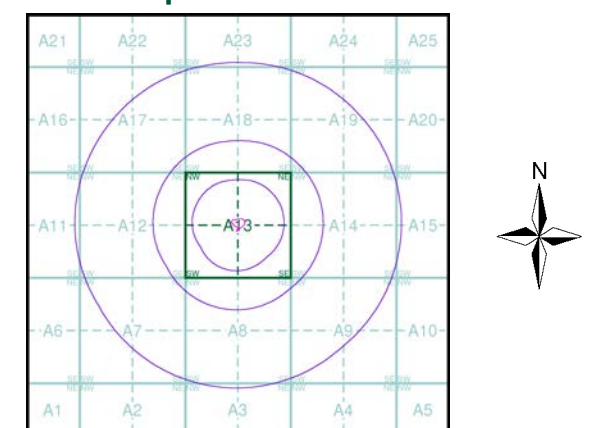
10k Raster Mapping
Published 1999
Source map scale - 1:10,000

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

Map Name(s) and Date(s)

SE72SE	SE82SW
1999	1999
1:10,000	1:10,000
SE71NE	SE81NW
1999	1999
1:10,000	1:10,000

Historical Map - Slice A

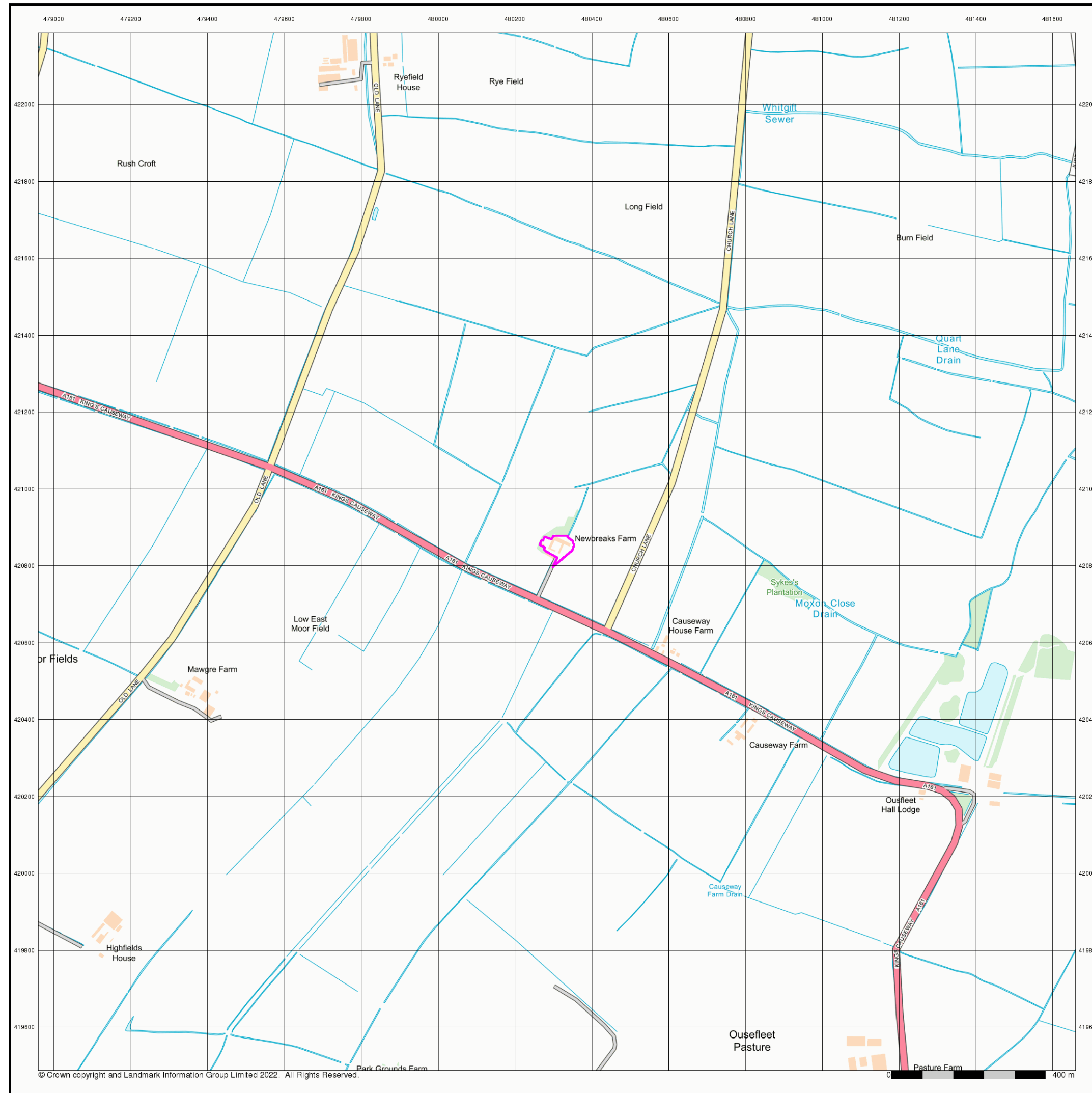


Order Details

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Site Details

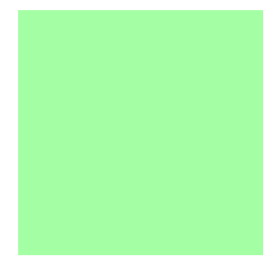
Newbrakes Farm, Swinefleet, GOOLE, DN14 8DZ



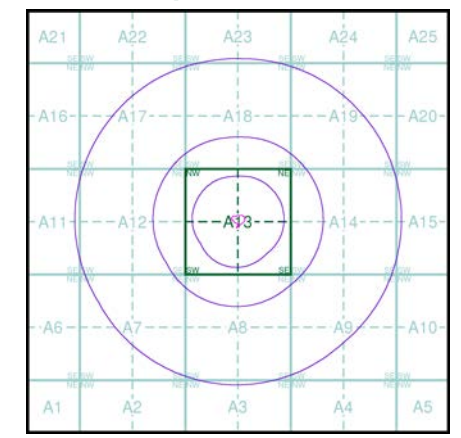
Street View
Published 2022
Source map scale - 1:10,000

Street View is a street-level map for the whole of Great Britain produced by the Ordnance Survey. These maps are provided at a nominal scale of 1:10,000

Map Name(s) and Date(s)



Street View Map - Slice A



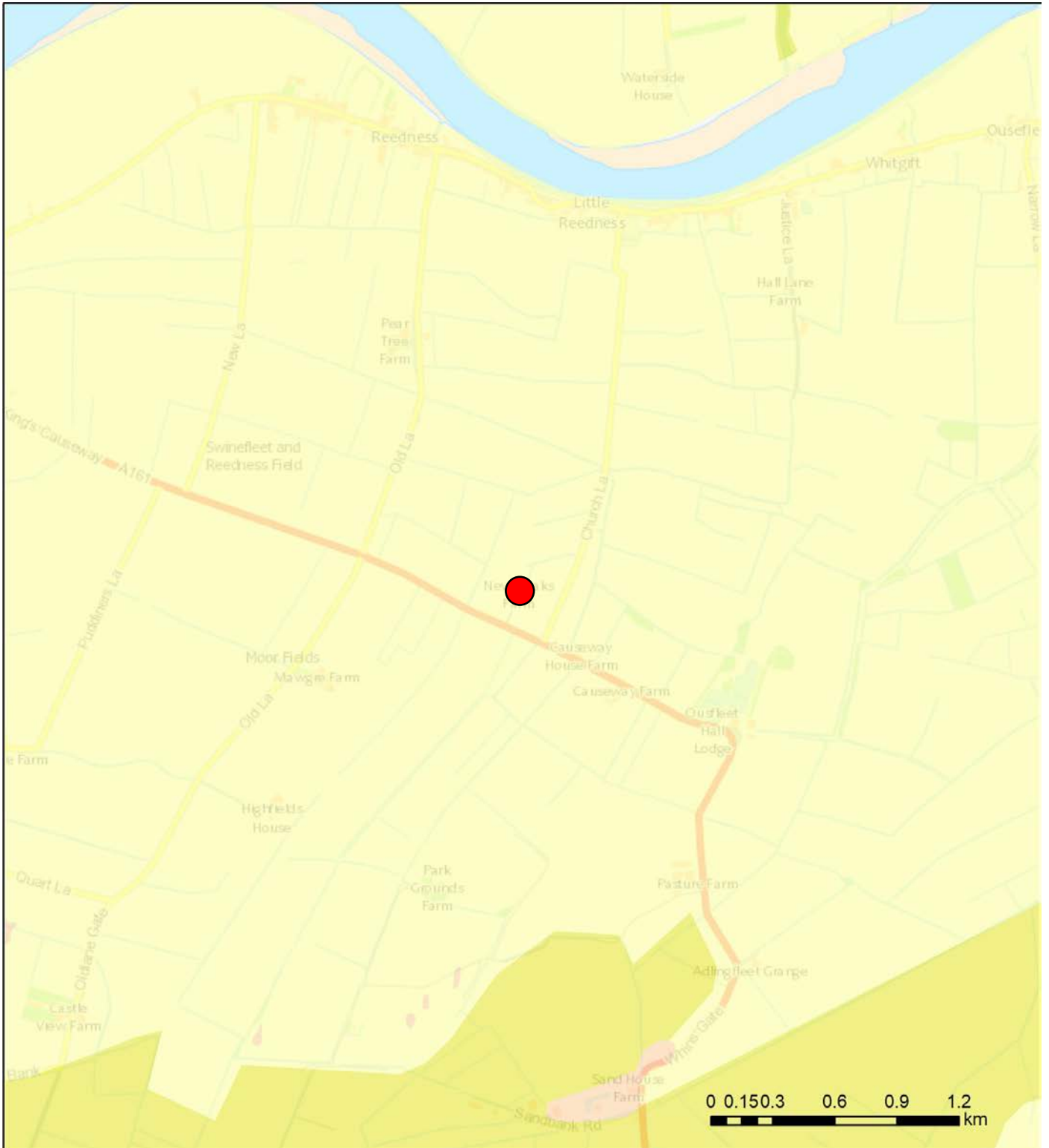
Order Details
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 National Grid Reference: 480310, 420840
 Slice: A
 Site Area (Ha): 0.39
 Search Buffer (m): 1000

Site Details
 Newbrakes Farm, Swinefleet, GOOLE, DN14 8DZ

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Appendix D – Geological Maps

Superficial Geology



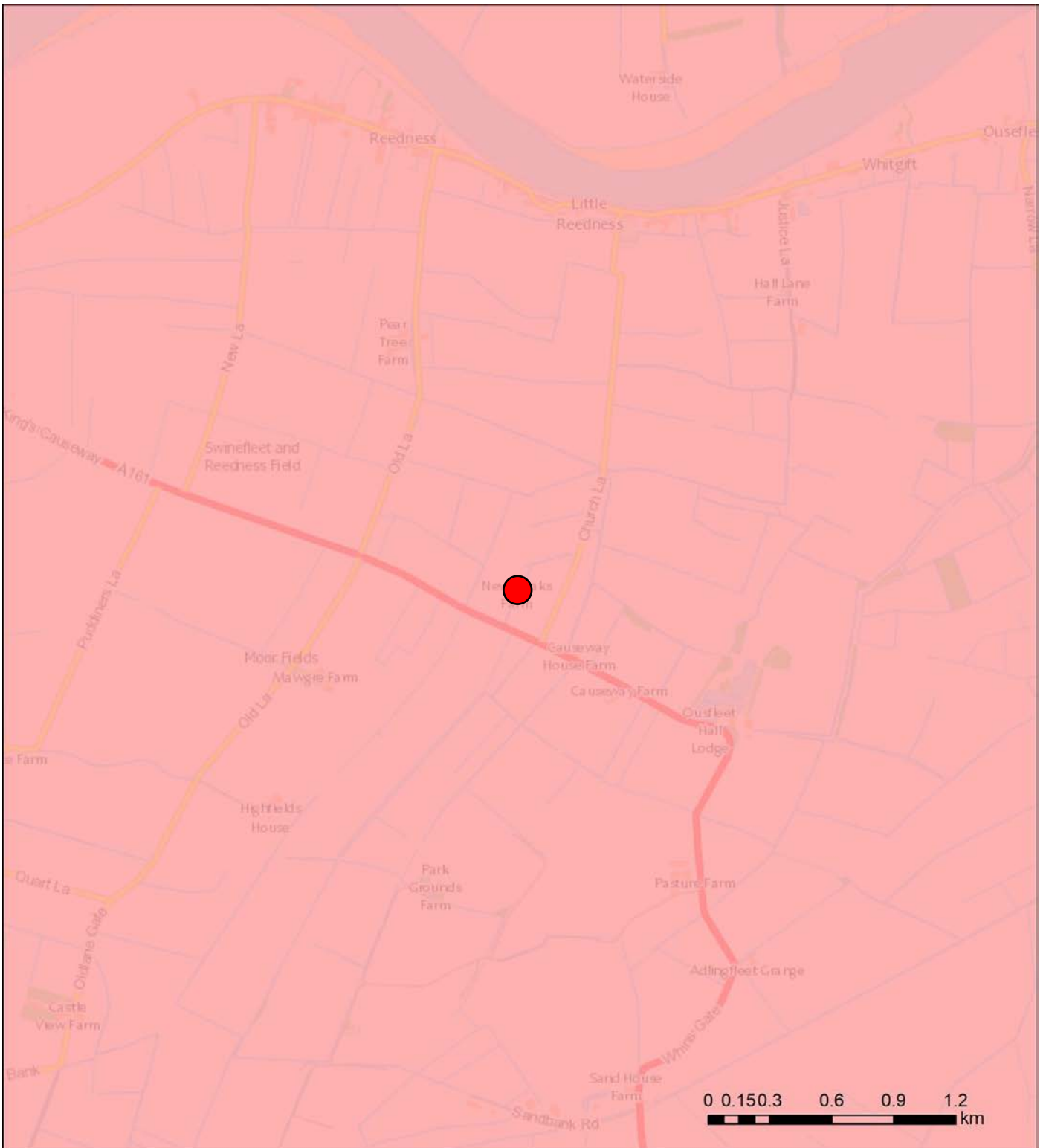
Superficial deposits 1:50,000 scale

 [ALLUVIUM - CLAY, SILT, SAND AND GRAVEL](#)

 [BRIGHTON SAND FORMATION - SAND](#)

 [WARP - CLAY AND SILT](#)

Bedrock Geology



Bedrock geology 1:50,000 scale

 MERCIA MUDSTONE GROUP - MUDSTONE

Appendix E – BGS Borehole Records

Ref: SE72SE41

British Geological Survey

British Geological Survey

British Geological Survey

D STRATA LOG		NRA No.	
Mawgre Farm Production Borehole			
Geological Classification (BGS)	<u>Description of Strata</u>	Thickness	Depth
	Top Soil	0.4	0.4
	Brown to Grey Clay (Sticky)	1.5	1.9
	Grey Clay	8.6	10.5
	Grey Clay becoming Sandy	2	12.5
	Brown Marl	36.5	49
	Brown / Grey Marl with Gypsum Layers	53	102
	Soft Sandstones	6	108
	Firmer Sandstones	13	121
	Marl Band	1	122
	Firm Sandstone + Hard Bands	39	161

British Geological Survey

British Geological Survey

British Geological Survey

British Geological Survey

British Geological Survey

British Geological Survey

Appendix F: Mineral Assessment Unit Borehole Records

British Geological Survey SE 81 NW 4 8066 1958 British Geological Survey Cusefleet Pasture British Geological Survey Block A

Surface level (+2.4 m) +8 ft
 Water level 0 m (0 ft)
 October 1973

Overburden 7.6 m (25.0 ft)
 Mineral 6.9 m (22.5 ft)
 Waste 0.8 m (2.5 ft)
 Bedrock 0.8 m+ (2.5 ft+)

		Thickness		Depth	
		m	(ft)	m	(ft)
	Soil	0.4	(1.5)	0.4	(1.5)
Alluvium	Silt and peat	3.8	(12.5)	4.2	(14.0)
25-ft Drift	Clay, reddish brown, silty at top	3.4	(11.0)	7.6	(25.0)
Older River Sand and Gravel	Sand, reddish brown, 'clayey' at top & base: fine, rounded to well rounded quartz with coal, chert and mudstone	6.9	(22.5)	14.5	(47.5)
	Sandy silt, reddish brown	0.8	(2.5)	15.3	(50.0)
Keuper Marl	Mudstone, reddish brown, gypsiferous	0.8+	(2.5+)	16.1	(53.0)

		%	mm	%	Depth below surface (m)	Fines	Percentage Sand	Gravel
Gravel	0		+16	0	7.6 - 8.6	17	83	0
			-16+4	0	8.6 - 9.6	14	86	0
Sand	90		-4+1	0	9.6 - 10.5	8	92	0
			-1+ $\frac{1}{4}$	9	10.5 - 11.5	5	95	0
			- $\frac{1}{4}$ +1/16	81	11.5 - 12.5	4	96	0
					12.5 - 13.5	4	96	0
Fines	10		- 1/16	10	13.5 - 14.5	17	83	0

British Geological Survey

British Geological Survey

British Geological Survey

British Geological Survey

British Geological Survey

British Geological Survey

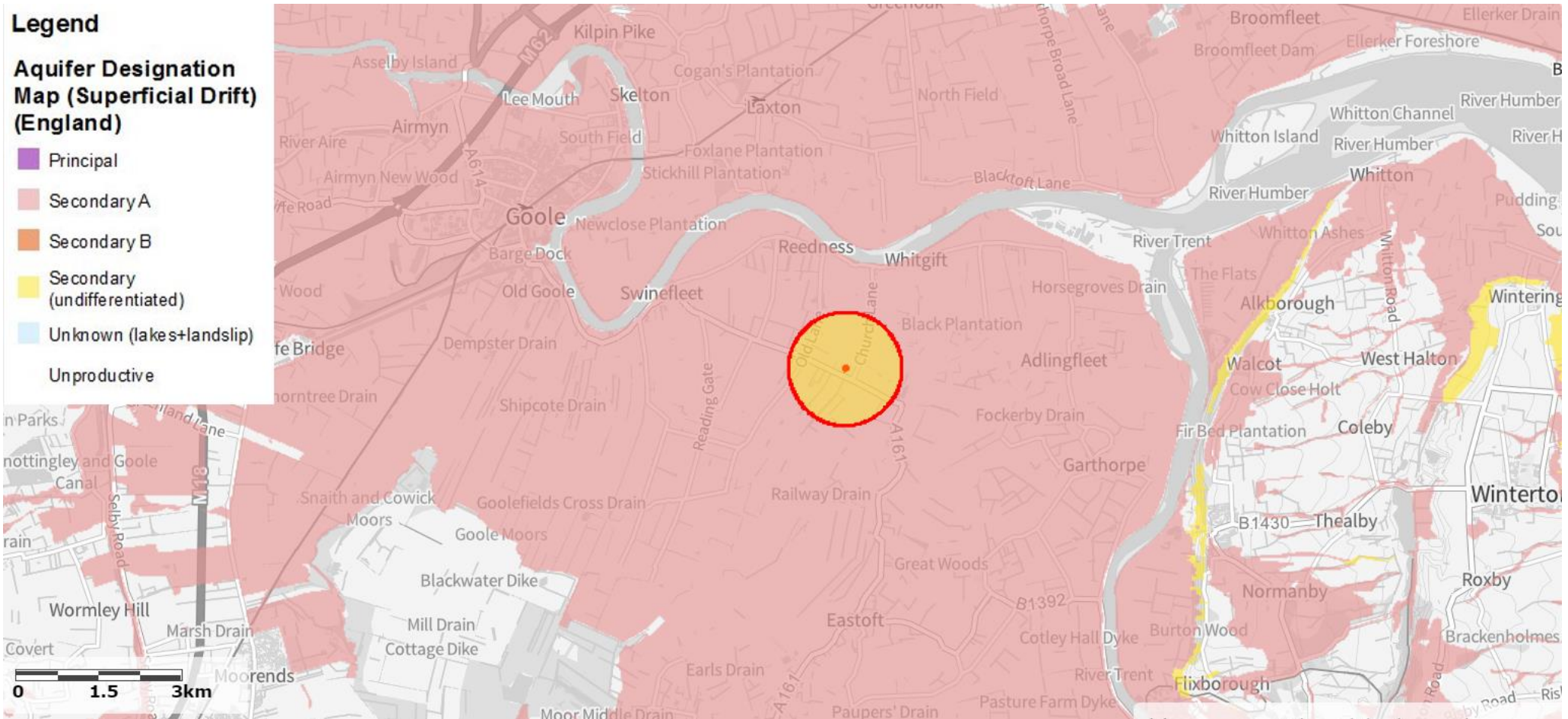
Appendix F – Hydrogeology Maps

Superficial Aquifer

Legend

Aquifer Designation Map (Superficial Drift) (England)

- Principal
- Secondary A
- Secondary B
- Secondary (undifferentiated)
- Unknown (lakes+landslip)
- Unproductive

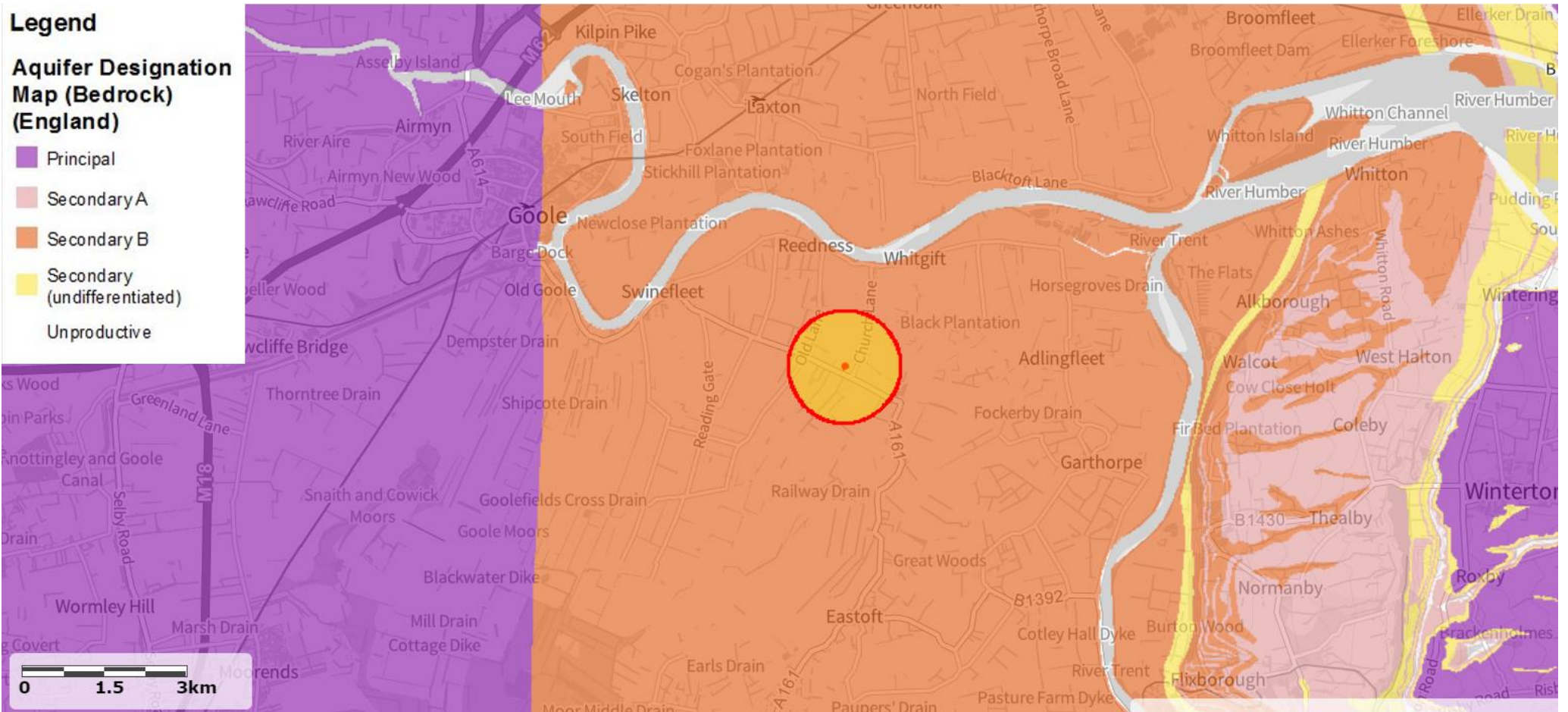


Bedrock Aquifer

Legend

Aquifer Designation Map (Bedrock) (England)

- Principal
- Secondary A
- Secondary B
- Secondary (undifferentiated)
- Unproductive

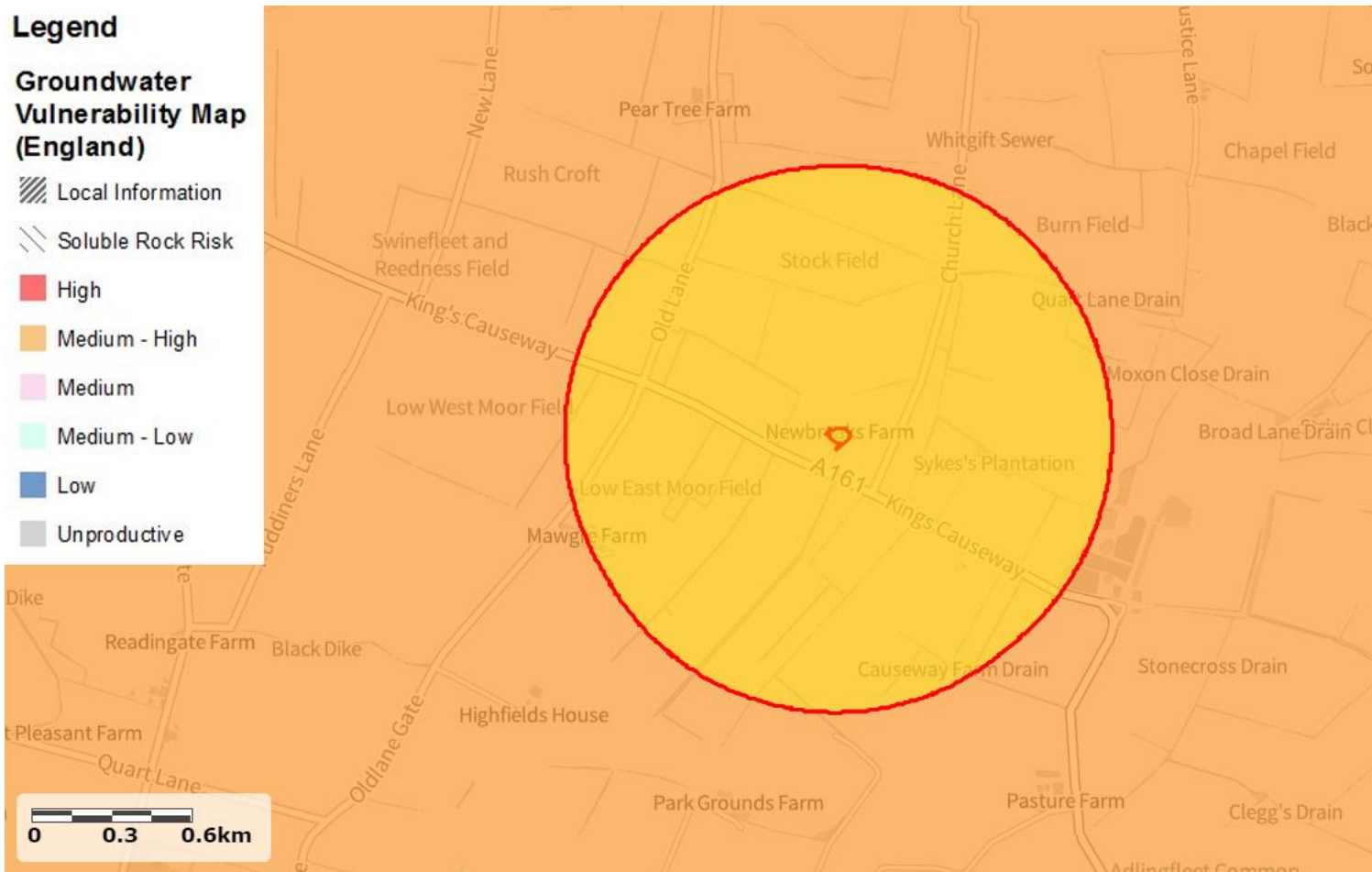


Groundwater Vulnerability

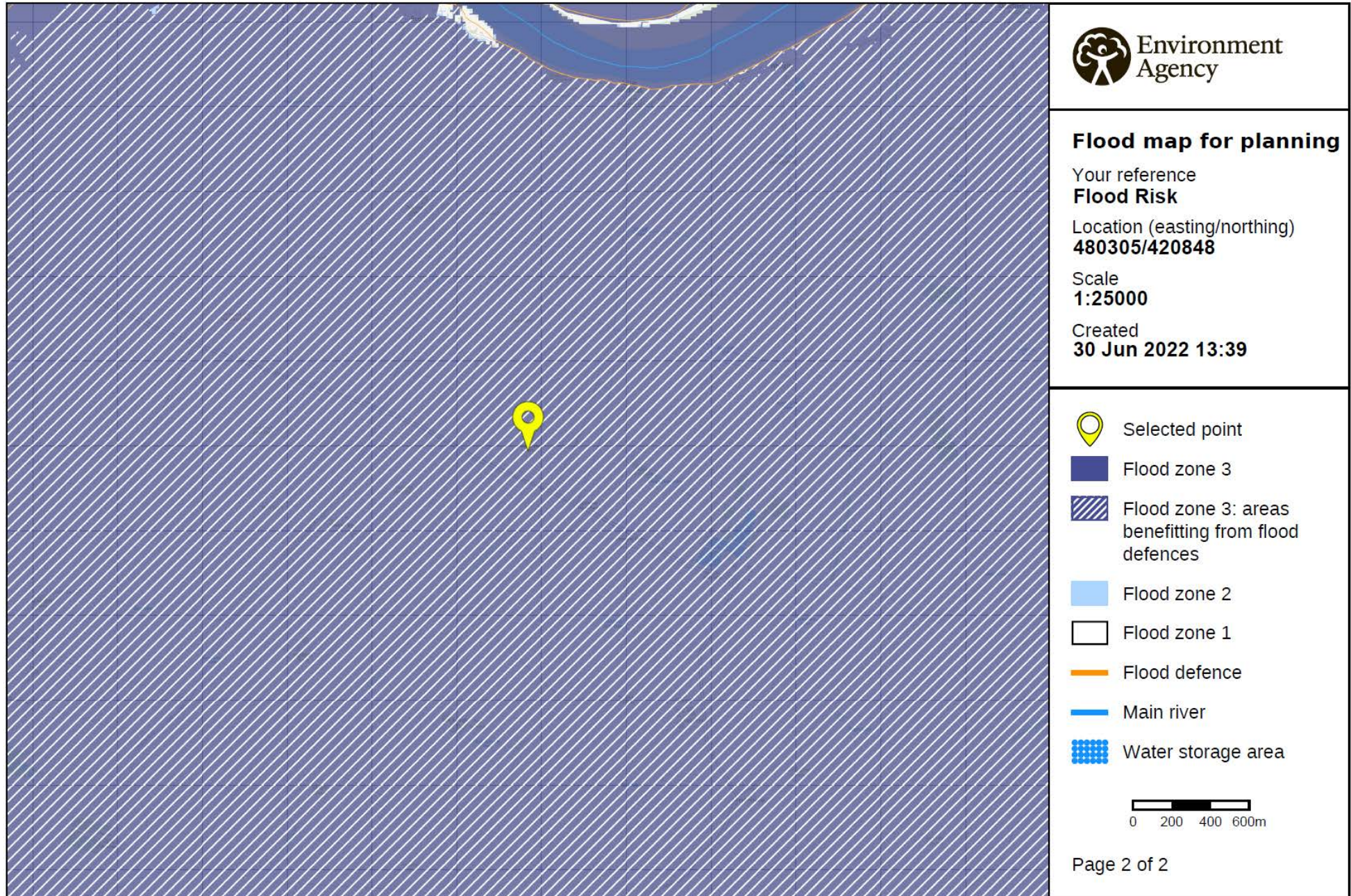
Legend

Groundwater Vulnerability Map (England)

-  Local Information
-  Soluble Rock Risk
-  High
-  Medium - High
-  Medium
-  Medium - Low
-  Low
-  Unproductive



Appendix G – Flood Risk Map



Appendix H – Environmental Designations

Legend

- Nitrate Vulnerable Zones
- 2017 Designations (England)

