

Geo-Environmental Desk Study

At:

Preston Farm,
Shoreham Road,
Sevenoaks,
TN14 7UD

For:

Rural Work Space Ltd

Private and Confidential



Ref: 3837 20 10 05 Rpt 01 Rev B RD RM

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Association of Geotechnical &
Geo-environmental Specialists



Sevenoaks
Environmental
Consultancy Ltd

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	Consultant's Name	Consultant's Signature	Date
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SCOPE, SOURCES AND LIMITATIONS

This report has been conducted in line with the source-pathway-receptor (SPR) linkage risk assessment based methods referred to in Part IIA of the Environmental Protection Act 1990, introduced by Section 57 of the Environment Act 1995.

To establish past site use, possible indications of contamination or ground instability and potential pollutant linkages, this assessment relies on publicly available historic maps, published geological information, information from Local Authority, Building Control and other statutory and non-statutory bodies, data provided by electronic search engines, a walkover survey of the site from ground level only and other information (as reported herein) obtained from non-intrusive sources. All information, comments and opinions given in this report are based on documentary records made available to us at the time of writing.

It should be noted that documentary sources and records may not be totally accurate, precise or complete. It is possible, therefore that there may be potential or actual contaminants or adverse ground conditions that remain undetected.

This report is written in the context of an agreed scope of work between SEC and the Client and should not be used in a different context. In light of additional information becoming available, a change in proposed end use improved practices and changes in legislation amendment or re-interpretation of the assessment or report in whole or part may be necessary after its original submission.

The scope of this report is restricted to potential ground contamination and its environmental impact; it does not cover above-ground hazards (e.g. asbestos in buildings), ecological sensitivities (e.g. bats), biological or horticultural hazards (e.g. Japanese Knotweed) or structural hazards (e.g. building stability) unless specifically referred to in the text of this report.

This report may make brief reference to the risk of flooding at the subject site but does not constitute a flood risk assessment in accordance with current planning guidance. An ecological survey, an asbestos survey, a geo-technical assessment, a topographical survey, a Safety Audit a Mechanical and Electrical Survey and a flood risk assessment of the site are beyond the scope of this report.

Advice and recommendations given in this report are provided for information purposes; they are not exhaustive and do not constitute a specification for further investigation / remediation or other works.

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1 Introduction

Sevenoaks Environmental Consultancy Ltd (SEC) was commissioned by Rural Work Space Ltd to produce a Geo-Environmental Desk Study Report for the site known as Preston Farm, Shoreham Road, Sevenoaks, Kent, TN14 7UD (See Appendix A Figure 1 – Site Location Plan).

The site comprises an approximately rectangular shaped plot of land with a long access drive occupied by a number of existing agricultural buildings with external areas laid to both hardstanding and soft landscaping (See Appendix A Figure 2 – Existing Site Layout Plan).

It is understood that the proposed development involves the redevelopment of the existing farmyard with the refurbishment of 1 no. building, the demolition of some existing structures and construction of 2 no. buildings, one a single-storey and the other a 2-storey building and parking associated with the development.

This Geo-Environmental Desk Study Report has been prepared to support planning conditions associated with the redevelopment of the site. This report also aims to establish the likely geology and hydrogeology on site, produce a conceptual risk model, conduct a qualitative risk assessment and provide recommendations based on the results of preliminary enquiries and in accordance with current guidance.

The scope of this assessment was agreed with Rural Work Space Ltd and comprises:

- A site reconnaissance;
- The collection and review of geological and hydrogeological plans;
- The procurement and review of historical maps;
- The review of environmental data relating to the site setting;
- The development of a site conceptual model;
- A preliminary qualitative risk assessment of potential contamination issues; and
- Presentation of recommendations based on the risk assessment.

This Geo-Environmental Desk Study has been compiled and conducted in line with the source-pathway-receptor (SPR) linkage risk assessment based methods referred to in Part IIA of the Environmental Protection Act 1990, introduced by Section 57 of the Environment Act 1995 and brought into force in April 2000.

SEC has not been provided with any previous reports for the site.

2 Site Details

2.1 Site Location

The site was located at Preston Farm, Shoreham Road, Sevenoaks, Kent, TN14 7UD, on Ordnance Survey (OS) national grid reference 552690, 162660 (see Appendix A Figure 1 Site Location Plan).

2.2 Site Description

The site forms an approximately rectangular shaped plot (see Appendix A Figure 2 – Existing Site Layout Plan) with a long access drive which comprised a farmyard and is occupied by a number of agricultural buildings including barns and stables with external areas laid to both hardstanding and soft landscaping. In addition, there are also 2 No. Sand Schools laid to recycled rubber chippings. An arboricultural company also occupied part of the site with an enclosed yard and office.

2.3 Current Site Activity

At the time of writing the farmyard was in active use as a livery for horses and in part occupied by a commercial arboricultural company.

2.4 Site Setting and Topography

The site was located within an agricultural setting and was noted to be surrounded by fields and two residential properties adjacent to the east either side of the accessing drive. The site was situated on the western facing side of a valley and therefore the ground level across the site sloped down toward the west. Offsite ground level was noted to slope the same way.

2.5 Site Walkover

A site walkover inspection was undertaken by SEC in October 2020. The following paragraphs note the observations made during this visit (see Appendix B Site Photos). Given the size of the site and the number of buildings, for the purposes of the walkover commentary and ease of reference, the site has been divided into 5 No. areas referred to as Area A-E with buildings numbered 1-14. Reference should be made to Appendix A figure 05 for an annotated site plan depicting the areas that have been adopted. Accordingly the following walkover discussion is structured by the 5 site areas and refers to the allocated building numbers.

The site was accessible via Shoreham Road situated to the east of the site and a long single track access road laid to tarmac crossed the fields.

Area A - North Western Area of Site:

At the time of the walkover, Area A was occupied by Down To Earth Tree Surgeons and comprised a secure yard area that was fenced off from the rest of the site. Access to this area was restricted however through the fencing it was noted that the yard was laid to concrete hardstanding. The yard area appeared to be in use for vehicle parking and the storage of felled tree trunks and waste vegetation and tree chippings. A modern above ground fuel storage tank (assumed to relate to heating oil) was noted to the western side of building no. 4 however it was unclear whether any staining was apparent to the hardstanding beneath / around the tank. At the eastern side of Area A and the yard were 4 No. structures identified as buildings 1 to 4. They were not accessed during the walkover however are assumed to relate to office space and storage associated with the tree surgeon business. Externally to the west and north of the yard were some areas laid to soft landscaping.

Area B – North East Area of Site:

Area B comprised the entrance to the main site area. It was laid to both areas of hardstanding (concrete and tarmac chippings) and grassed softcover. Two buildings occupied this area (referred to as buildings no. 5 and 6). Building no. 6 comprised an old barn of timber construction with a tile roof. Inside the barn the ground was laid to concrete hardstanding with some light oil staining. The barn appeared to have previously been used as a workshop and possibly vehicle repairs given evidence of tools and a suspected vehicle inspection pit at the eastern end of the barn. Currently however the barn was used for general storage of wood, kitchen appliances, scaffolding and some general construction materials. A small lean-to was noted to adjoin the western end of the barn and adjacent to the lean-to was what appeared to be a former plinth considered likely to have related to a former above ground tank (possibly a fuel tank). No evidence of surface oil staining was however noted to the ground surface beneath the former tank plinth. A manhole cover was noted immediately adjacent to the former tank plinth also which may have received any spilt or leaked liquids / fuels associated with the tank. Within an area of grassed soft landscaping to the northern part of Area B was a large burning ground which had been used for bonfires. A concrete slab was noted to south western corner of Area B which potentially related to a former structure that has since been removed. No staining was noted to the slab. Adjacent to the slab was a former oast building which had been converted to commercial offices and was occupied by Down to Earth Tree Surgeons. Some of the site boundaries around Area 5 comprised hedges.

Area C – Western side of Site:

At the time of the walkover, Area C comprised of 2 No. long buildings (numbers 7 and 8) which related to a barn and stable respectively situated to the eastern side of Area C. The barn (building number 7) was a large open sided barn used to store hay. The stable (building number 8) was in active use as a stable for horses. Both buildings were positioned to the eastern side of Area C and were surrounded by concrete hardstanding to the eastern sides

generally with grassed soft landscaping to the west. The northern area of Area C was laid to concrete hardstanding and used for vehicle parking.

Two sand schools were observed to the western and southern areas of Area C which were laid to recycled rubber chippings. The areas surrounding the sand school rings were predominantly laid to soft landscaping, particularly to the western side of the site where there was a grassy bank which slopped downwards toward the western site boundary, which was formed by a river.

Area D – East side of Site:

At the time of the walkover, Area D comprised of No.5 buildings associated with horse stables and barns. The barns were used to store equipment including hay and horse riding equipment as well as agricultural vehicles such as a tractor and telehandler and some oil drums. Buildings 9 – 12 were located adjacent to one another and related to barns. Whilst the ground within the barns was laid to concrete hardstanding some oil staining was noted within building number 9 associated with a parked tractor and a telehandler and some oil drums. In addition the ground level in some of the barns was arranged over a split ground level given the sloping ground level on site. Building 13 was located to the southern end of Area D and related to a block of stables and tac rooms.

The barns were in part clad / roofed with suspected cement bonded asbestos sheeting and fragment debris were noted to the ground surrounding the barns.

Given the site's position on the side of a valley, the eastern side of Area D (and E) had been cut into the sloping ground by several meters. Part of the cut was supported by walling but around the stockpiles of manure the cut was open and unsupported.

Area E – South Eastern corner of the Site:

Area E was predominantly unoccupied by buildings and was in the most part laid to concrete hardstanding and used for the parking of horsebox lorries and trailers. A small portacabin (Building 14) was positioned in the north western corner of Area E which appeared to be used as a staff room. 2 No. metal freight containers were also positioned to the south east corner of Area E which were in a state of disrepair and previously appeared to have been used for office space. In addition stockpiles of manure were observed in this area of the site together with an overflowing surface water catchpit which appeared to receive surface water runoff from this area of hardstanding. The overflowing runoff of leachate from the manure heaps was noted to be discharging from the catchpit in a westerly / north westerly direction towards building 11.

Off site Land Use

Land use surrounding the site was rural generally comprising fields however the western site boundary was formed by a river flowing in a northerly direction. The river water level was noted to be approximately 1m to 2m lower than the river bank ground level on site. Two residential

houses were positioned immediately adjacent to the east of the site, situated north and south of the site access drive that passed between the properties.

2.6 Services

It was outside the scope of this report to obtain and review service plans from the Statutory Authorities. Service locations should be verified with the relevant utilities where accurate information is required, for example before conducting any intrusive exploratory holes or excavation works.

2.7 Site History

The site history has been derived from a review of the available historical maps for the site (See Appendix C Historical Maps) and has been summarised below in Table 1.

Table 1: Historical Map Review

Date	Scale	On Site	Off Site
1870-1871	1:10,560	The site area was largely undeveloped and comprised of field / orchards although centrally to the eastern side of the site were several building footprints including a large rectangular shaped building indicative of a barn. Part of a (River Darent) flows through the south western corner of the site in a north to south orientation.	1 No. small building was identified on the east boundary of site which appeared to be consistent with the existing residential house at this position. A railway line was located immediately adjacent to the east of the access drive to the site orientated in a north to south direction and is consistent with the existing railway line. The remaining land surrounding the site was identified to have generally comprised a mixture of woodland and open fields.
1894	1:2,500	Additional small buildings were identified in the eastern area of the site and a small unidentified irregular shaped feature was also identified at the northern end of the site which was possibly indicative of a former pond.	The land surrounding the site appeared to remain generally unchanged from that previously identified.
1896	1:2,500	The site had undergone further development with more buildings identified towards the north east corner of the site. The river passing through (and past the site) was identified to flow in a	A small chalk pit was identified ~80m to the east of the site and in addition land adjacent to the south west of the site was identified as "Liable to Floods"

		northerly direction.	
1897	1: 10,560	The site remained generally unchanged from that previously identified.	Land use surrounding the site appeared to remain generally unchanged from that previously identified.
1909	1:2,500 1:10.560	An extension was developed to merge two buildings on the east side of site which was indicative of an oast and appeared consistent with the existing converted oast building (no. 5) currently on site. The previous reference to a suspected pond above was supported by this clearer mapping. Also a new building which appeared consistent with the existing barn (building no. 12) was identified to the eastern side of the site.	An additional area of land immediately adjacent to the west of the site was also labelled as "Liable to Floods" and a well was identified ~200m to the north east of the site.
1936-1952	1:10.560	The site appeared to remain generally unchanged from that previously identified except that the site was identified as Preston Farm.	Land surrounding the site appeared to remain generally unchanged from that previously identified
1937-1938	1:2,500	The pond previously identified on site was no longer identified and appeared to have been infilled and the remainder of the site appeared to have remained generally unchanged from that previously identified.	Land surrounding the site appeared to remain generally unchanged from that previously identified
1938	1:10,560	The site appeared to remain generally unchanged from that previously identified	Land surrounding the site appeared to remain generally unchanged from that previously identified
1961	1:10,560	Some additional buildings appeared to have been developed on the site to the south of those previously identified.	Land use surrounding the site appeared to remain generally unchanged from that previously identified.
1963	1:2,500	The buildings identified on site at this time were beginning to	The well previously identified ~200m to the north east was no longer identified and the

		resemble some of those that currently occupy the site. In addition a "Platform" was identified adjacent to the oast house (building No. 5) to the northern end of the site. The south west corner of the site was identified as a marsh.	former Chalk Pit ~80m to the east of the site was identified to be occupied by trees indicating that it was no longer actively mined at this time. 4 No. tanks were identified ~160m to the north west of the site
1963 - 1989	1:2,500	2 No. tanks were identified to the northern end of the site. A large square shaped feature was identified at the northern end of the site also, possibly relating to either an area of hardstanding or a building. The existing buildings identified as numbers 9 – 12 and 13 were identified on site at this time. The river channel passing through the site was no longer identified and the former route appeared to have been infilled.	A large tank was identified immediately adjacent to the east of the site. The tanks identified previously to the north west were recorded to have formed part of Lullingstone Pumping Station which was identified at this position together with an electrical sub-station..
1967	1:10,560	The site appeared to remain generally unchanged from that previously identified.	The land around the site appeared to remain generally unchanged from that previously identified.
1980 - 1985	1:2,500	A large building footprint was identified at the southern end of the site as this mapping noted that the river still passed through the site at this time (although from the site walkover it is noted that the river no longer follows the route previously mapped on site and therefore the infilling of the channel appears to have been conducted despite the contradictory mapping, although the infilling may have taken place between 1985 – 1989)	The former Chalk pit ~80m to the east of the site was no longer identified and appeared to have been infilled.
1985	1:2,500	The site appeared to remain generally unchanged from that previously identified.	Land use locally to the site appeared to remain generally unchanged from that previously identified.

1989	1:10,000	The site appeared to remain generally unchanged from that previously identified.	Land use locally to the site appeared to remain generally unchanged from that previously identified.
1992	1:2,500	This mapping shows once again that the route of the River Darent through the south western corner of the site had changed and this former channel was no longer identified, inferring that it had been infilled. This appears to have been the only change to the site since the previous mapping in the 1980s.	Land use locally to the site appeared to remain generally unchanged from that previously identified.
1999	1:10,000	The site appeared to remain generally unchanged from that previously identified although it is possible that the 2 No tanks to the northern end of the site had been removed	Land use locally to the site appeared to remain generally unchanged from that previously identified.
2020	1:10,000	The site appeared to remain generally unchanged from that previously identified	Land use locally to the site appeared to remain generally unchanged from that previously identified.

Following a review of the historical maps, potential on site sources of contamination have been identified as listed below:

- Made Ground associated with previous phases of development on the site between prior to 1870 and 1990's, an infilled pond to the northern end of the site between 1894 – 1937 and the infilling of the former river channel to the south west corner of the site between 1870 – 1992, an oast house since 1909 and a platform in 1963; and
- Previous site use for agricultural purposes associated with Preston Farm farmyard;
- Former marsh which covered the south western corner of the site; and
- 2 No. tanks previously identified to the northern end of the site between 1963 and 1992

Potential off site sources of contamination identified included:

- Agricultural land use immediately adjacent to the site;
- Railway land ~ 50m to the east since 1870;

- A former infilled chalk pit ~80m to the east of the site;
- A former large tank immediately adjacent to the east of the site between 1963 – 1990's;
- A pumping station ~160m to the north west of the site since 1963 with 4 No. tanks and an electrical sub-station

2.8 Archaeology

The historical maps which were studied to establish the site's history did not identify any obvious archaeological features of potential interest however, detailed research on the archaeology of the site was outside the scope of this assessment and has not been undertaken.

2.9 Existing Monitoring

SEC is not aware of any environmental monitoring being undertaken at (or in close proximity to) the site.

2.10 Asbestos in Buildings

This report does not constitute an asbestos survey and a survey for asbestos containing materials was outside the scope of this report.

2.11 Ecological Considerations

A formal ecological survey is beyond the scope of this study.

3 Geology and Hydrogeology

3.1 Geology

The geological records for the site obtained from the British Geological Survey map (England and Wales Sheet 287 Solid and Drift Edition) and website indicate that the site is underlain by solid geology comprising of the New Pit Chalk Formation with no overlying superficial deposits.

From a brief review of British Geological Survey borehole records, a borehole ~600m to the north east of the site (BGS ref: TQ56SW202) recorded Topsoil up to 0.1m bgl; over chalk up to 60.0m bgl (see Appendix D for Borehole Log). Groundwater was recorded within this borehole at 42.45m bgl. Whilst these ground conditions were observed at some distance from site they appear to possibly be consistent with the conditions identified by BGS mapping at the site.

3.2 Hydrogeology and Hydrology

Since April 2010 the Environment Agency (EA) has implemented the use of Aquifer designations that are consistent with the Water Framework Directive. These designations reflect the importance of Aquifers in terms of groundwater as a resource (drinking water supply) but also their role in supporting surface flows and wetland ecosystems. The Aquifer designations have been split into two different types; Superficial (Drift) and Bedrock (solid permeable formations).

The Groundwater Vulnerability Map indicates that the bedrock geology present beneath the site, the New Pit Chalk Formation, is classified as a Principal Aquifer.

There was 1no. surface water feature identified on site, relating to a river however this has been infilled. There was also a river situated immediately adjacent to the west of the site flowing in a northerly direction. It is inferred that the local groundwater gradient is possibly towards the west/ north given the location of the River Darent.

4 Environmental Data Search

A search of public registers for environmental data was conducted using an automated search engine and is presented in Appendix E. It should be noted that the data search is not exhaustive, and only considers a variable search area up to 2km from the site with data that may be approximated or limited and only periodically updated. The findings of this search are summarised below:

4.1 Local Authority Pollution Prevention Controls

There were no Local Authority Pollution Prevention and Control records identified in relation to the site or within 250m of the site.

4.2 Discharge Consents

There were no discharge consents recorded that related to the site.

The closest off site discharge was recorded 341m to the north of the site and related Trade Discharge (Process water) from Castle Farm/Dunstall Farm, Shoreham, Sevenoaks, Kent into land. Given the distance of this discharge from the site and its location down inferred groundwater gradient from the site, it is considered likely to pose only a low potential risk and therefore has not been considered further.

4.3 Pollution Incidents to Controlled Waters

There were no pollution incidents identified relating to the site.

There was 1 No. previous pollution incident recorded within 1000m of the site. This was located ~942m to the north of site and related to a oil spill into the River Darent in 1997 at the Outside Visitors Centre at Lullingstone Park.

Given the distance of this incident from the site and that the River Darent's direction of flow is to the north, it is only considered likely to pose a low potential risk and therefore has not been considered further in this report.

4.4 Water Abstractions

The site is located within in a Zone 1 (Inner) and Zone 2 (Outer) groundwater Source Protection Zone (SPZ).

Whilst there were no surface water abstractions located identified within 2000m of the site, potable groundwater abstractions were identified 109m to the north west of the site associated with Lullingstone Pumping Station.

The Groundwater and surface water were therefore considered sensitive receptors.

4.5 Floodplains

The site was identified to be at risk of flooding from River or sea without defences. The risk associated with groundwater flooding on site was also recorded to be possible for a property situated below ground level. It is also noted that historically the land immediately adjacent to the west of the site was identified to flood.

4.6 River Quality Monitoring Data

Chemical quality data is based on the general quality assessment headline indicators scheme (GQAH). In England, each chemical sample is measured for ammonia and dissolved oxygen. The results are graded from A (Very Good) to F (Bad).

There was no recorded chemical quality data within 1000m of the site.

4.7 Registered Landfill Sites

The environmental data indicated a historical landfill located 858m west of site. It is owned by Sevenoaks Borough Council and was used for deposited waste including inert waste. Given the distance of this landfill from the site it is only considered to pose a low potential risk and has not been considered further.

4.8 Control of Major Accident Hazard Sites (COMAH), Notification of Installations Handling Hazardous Substances (NIHHS) and Planning Hazardous Substances Consent.

The environmental data indicated no recorded Control of Major Accident Hazard Sites (COMAH), Planning Hazardous Substances Consents or Notification of Installations Handling Hazardous Substances (NIHHS) within 500m of the site.

4.9 British Geological Survey

The environmental data indicates the geology beneath the site comprises a bedrock formation of the New Pit Chalk Formation with no overlying superficial or artificial deposits on record. SEC notes that this is consistent with the ground conditions identified by BGS records.

The site was described as having:

- Low hazard potential associated with shrinking or swelling clay;
- Very low hazard potential associated with collapsible rocks;
- Very low hazard potential associated with landslide instability;
- Very low hazard potential associated with ground dissolution of soluble rocks;
- Low hazard associated with running sand; and
- Moderate hazard potential associated with compressible ground.

Although the observations made above may have a bearing on foundation design measures, a geotechnical assessment of the site is beyond the scope of this report.

4.10 Natural and Mining Cavities

The environmental data search did not identify any historical coal mining, brine extraction, gypsum extraction, tin mining or natural cavities on or within the vicinity of the site. However, No. 2 records of non-coal mining areas of Great Britain were identified, one of which was onsite and the other 45m north west (both are of rare risk). In addition a former mineral site was identified 81m to the east and related to Preston Farm chalk pit. This is consistent with the former chalk pit identified on the historical maps at this location.

4.11 Contemporary Trade Directory Entries

The environmental data search identifies records of both active and inactive potentially contaminative land uses within the 2km of the site.

There were no contemporary trade directory entries recorded in relation to the site however it is noted that the site is occupied by a horse livery and an arboricultural company.

4.12 Environmentally Sensitive Area, Ramsar Site, Site of Special Scientific Interest (SSSI), Special Protection Area (SPA), Special Area of Conservation (SAC), National Nature Reserve (NNR), Local Nature Reserve (LNR), Area of Outstanding Natural Beauty (AONB), National Park (NP), Nitrate Sensitive Areas (NSA) and Green Belt Land

The environmental data search identified that the site is within an Area of Outstanding Natural Beauty and Area of Adopted Green Belt. There was 12. No counts of Ancient Woodland within 1000m from site with the closest to the site located 355m to the south east. In addition, a Site of Specific Scientific Interest 180m south east of site called the Otford to Shoreham Downs.

This site is therefore considered to be located in an environmentally sensitive area.

4.13 Nitrate Vulnerable Zone (NVZ)

The environmental data search identified that a Nitrate Vulnerable Zone was identified 568m north of site.

4.14 Radon

The Department of Environment, Transport and Regions (DETR) 'Radon: guidance on protective measures for new dwellings' published in 2007 indicates that the site is not located within an intermediate probability Radon affected area as 1-3% of properties are estimated to be above the Action Level.

The environmental data search also indicates that no radon protective measures are necessary.

5 Consultations

See Appendix G Correspondence with the Regulators.

5.1 Environmental Health Officer (EHO)

SEC contacted the Environmental Health Officer (EHO) at Sevenoaks District Council to enquire about the sites Part IIA status and to establish where there are any private groundwater abstractions locally to the site and SEC. However, a response is still awaited and this report will require updating following receipt of comment.

5.2 Building Control Officer (BCO)

SEC contacted the Building Control Officer (BCO) at Sevenoaks District Council to enquire as to their understanding of the ground conditions locally to site and the possible depth of the groundwater. They noted that the topsoil is likely to be clayey gravel material but may contain flint and chalk and that the geology varies along the river valley. For instance, the hills on the side of the valley are chalk which is close to the surface. They were unaware of the depth to the groundwater however, given the proximity of the River Derwent the groundwater is possibly at shallow depth across the western side of the site. To the eastern side of the site, the groundwater may be deeper given that ground level is higher in this area of the site.

6 Conceptual Model and Qualitative Risk Assessment

6.1 Conceptual Model

In accordance with BS 10175 a conceptual model has been developed for the site, based on the potential sources, pathways and receptors identified from the available data including site observations made by SEC at the time of writing this report and the proposed end-use (see Appendix A Figure 4 for Conceptual Model).

6.2 Sources of Potential Contamination / Hazards

Based on the available information the following on site sources or potentially contaminative processes have been identified;

- Made Ground associated with previous phases of development on the site between prior to 1870 and 1990's, an infilled pond to the northern end of the site between 1894 – 1937 (Area A) and the infilling of the former river channel to the south west corner of the site between 1870 – 1992 (Area C), an oast house since 1909, a platform in 1963 (Area A / D) and a large ash burning ground to the northern end of the site (Area B); and
- Previous site use for agricultural purposes associated with Preston Farm farmyard including an oast house (Area B building No. 5), a workshop (Area B building No.6) with a potential vehicle inspection pit and localised oil staining to the ground slab, asbestos fragment debris to the ground surface around buildings 9 – 12 (Area D), a tree surgeons yard (Area A), vehicle parking including lorries and tractors (Areas A, B, D and E) and storage of small volume oil drums with localised oil staining to the slab of building 10 (Area D);
- Ground gas generation associated with organic rich ground conditions associated with the former marsh which covered the south western corner of the site between 1963 – 1980s (Area C), Made Ground deposits particularly in relation to the infilled features identified; and
- 2 No. historical tanks previously identified to the northern end of the site between 1963 and 1992 (Area B), evidence of a 3rd above ground fuel tank in the north western corner of the site adjacent to building 6 (Area B) and a 4th tank (existing) adjacent to building No. 4 within the yard at the northern end of the site (Area A); and
- Manure waste stockpiles with leachate run off flooding a catchpit to the south eastern corner of the site (Area E)

Potential off site sources of contamination identified included:

- Agricultural land use immediately adjacent to the site;
- Railway land ~ 50m to the east since 1870;
- A former infilled chalk pit ~80m to the east of the site;
- A former large tank immediately adjacent to the east of the site between 1963 – 1990's;
- A pumping station ~160m to the north west of the site since 1963 with 4 No. tanks and an electrical sub-station

6.3 Potential Receptors for Contamination / Hazards

The following potential receptors have been identified to require appraisal in the context of potential pollutant linkages;

- The proposed development (building fabric and landscaped areas);
- Existing and future site users;
- Groundworkers and maintenance workers;
- Neighbouring sites;
- Controlled waters (Groundwater (Principal Aquifer and potable groundwater abstraction ~109m to the north west) and Surface Water (River Darent immediately adjacent to the west)); and
- Ecologically sensitive areas (ANOB and SSSI ~355m to the south east)

6.4 Potential Pathways

The following potential pathways have been considered in relation to the sources and receptors identified above:

- Inhalation;
- Ingestion;
- Direct contact;
- Dust migration;
- Permeable strata;
- Percolation, infiltration and leaching;

- Groundwater and surface water migration;
- Explosive event.

6.5 Assessment of the Degree of Risk

A Preliminary qualitative risk assessment has been compiled using all available information based upon a source-pathway-receptor model and is presented in the table below.

The terms adopted for severity of impact are – serious, moderate and negligible and for risk to the receptor – high, medium and low. Definitions are presented in Appendix G.

Table 2: Preliminary Qualitative Risk Assessment

Sources of Potential Contamination	Receptor	Pathway	Severity of Impact	Risk	Recommended Action (to clarify level of risk and/or assess suitable mitigation measures or to mitigate the risk)
<p>On Site Sources: Made Ground associated with previous phases of development on the site between prior to 1870 and 1990's, an infilled pond to the northern end of the site between 1894 – 1937 (Area A) and the infilling of the former river channel to the south west corner of the site between 1870 – 1992 (Area C), an oast house since 1909, a platform in 1963 (Area A / D) and a large ash burning ground to the northern end of the site (Area B)</p>	<p>The proposed development Existing and future site users Groundworkers and maintenance workers Neighbouring sites Controlled waters (Principal Aquifer and Surface Water – River Darent) Ecologically Sensitive Sites</p>	<p>Inhalation Ingestion Direct contact Dust migration Permeable strata Percolation, infiltration and leaching Groundwater migration</p>	<p>Moderate</p>	<p>Medium</p>	<p>Made Ground is considered to be likely across the site and may extend to greater depth locally in relation to infilled features such as the former River Darent channel and a former pond. In order to help clarify potential risks an intrusive site investigation is recommended to help determine the extent and chemical nature of Made Ground across the site. An initial phase of investigation should include analysis of soils and any groundwater encountered for a general range of contaminants commonly associated with Made Ground including heavy metals, TPH, speciated PAH's, phenols and asbestos presence/absence. Surface water analysis from the River Darent is also recommended to confirm an absence of impact from the site. It would also be prudent to obtain chemical data that would help inform waste classification and facilitate appropriate disposal of waste arisings from site to licensed facilities.</p>

<p>On Site Source: Previous site use for agricultural purposes associated with Preston Farm farmyard including an oast house (Area B building No. 5), a workshop (Area B building No.6) with a potential vehicle inspection pit and localised oil staining to the ground slab, asbestos fragment debris to the ground surface around buildings 9 – 12 (Area D), a tree surgeons yard (Area A), vehicle parking including lorries and tractors (Areas A, B, D and E) and storage of small volume oil drums with localised oil staining to the slab of building 10 (Area D);</p>	<p>The proposed development Existing and future site users Groundworkers and maintenance workers Neighbouring sites Controlled waters (Principal Aquifer) and Surface Waters (River Darent) Ecologically Sensitive Sites</p>	<p>Inhalation Ingestion Direct contact Permeable strata Percolation, infiltration and leaching Groundwater migration</p>	<p>Moderate</p>	<p>Medium</p>	<p>Further site investigation is recommended to help, confirm an absence of contamination associated with the sites previous uses. Potential contaminants of concern may include hydrocarbons, PAHs, metals, asbestos, VOC's, BTEX, pesticides and herbicides.</p>
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<p>On Site Source: Ground gas generation associated with organic rich ground conditions associated with the former marsh which covered the south western corner of the site between 1963 – 1980s (Area C), Made Ground deposits particularly in relation to the infilled features identified.</p>	<p>The proposed development Existing and future workings Groundworks and maintenance workers Neighbouring sites</p>	<p>Inhalation Ingestion Direct contact Permeable strata Percolation, infiltration and leaching Groundwater migration Explosive event</p>	<p>Moderate</p>	<p>Medium / Serious</p>	<p>The potential exists for ground gas generation associated with infilled ground and former marshy deposits that have been identified on site. The recommended further site investigation should therefore include a ground gas risk assessment in accordance with current CIRIA C665.</p>
<p>On Site Source: 2 No. historical tanks previously identified to the northern end of the site between 1963 and 1992 (Area B), evidence of a 3rd above ground fuel tank in the north western corner of the site adjacent to building 6 (Area B) and a 4th tank (existing) adjacent to building No. 4 within the yard at the northern end of the site (Area A);</p>	<p>The proposed development Existing and future site workers Groundworkers and maintenance workers Neighbouring sites Controlled waters (Principal Aquifer) and Surface Waters (River Darent) Ecologically Sensitive Sites</p>	<p>Inhalation Ingestion Direct contact Permeable strata Percolation, infiltration and leaching Groundwater migration</p>	<p>Moderate</p>	<p>Medium</p>	<p>The further site investigation recommended above should include exploratory holes positioned to target the former and existing fuel tanks in order to confirm an absence of hydrocarbon impact. In addition ground gas monitoring should aim to confirm an absence of potential ground gas and vapours associated with any leaked or spilt hydrocarbons.</p>

<p>On Site Source: Manure waste stockpiles with leachate run off flooding a catchpit to the south eastern corner of the site (Area E)</p>	<p>The proposed development Existing and future site users Groundworks and maintenance workers Neighbouring sites Controlled waters (Principal Aquifer) and Surface Waters (River Darent) Ecologically Sensitive Sites</p>	<p>Inhalation Ingestion Direct contact Permeable strata Percolation, infiltration and leaching Groundwater / surface water migration</p>	<p>Moderate</p>	<p>Medium</p>	<p>Further site investigation is recommended to clarify potential impact to the ground beneath the site associated with the leachate run off. Accordingly, analysis of soil, any groundwater encountered and surface water should include ammonia in addition to metals, hydrocarbons, speciated PAHs. It is also recommended that the existing surface water drainage system to be repaired to prevent unauthorised discharges and potential contamination to the adjacent River Darent.</p>
<p>Off site Sources: Agricultural land use immediately adjacent to the site, Railway land ~ 50m to the east since 1870, a former infilled chalk pit ~80m to the east of the site, a former large tank immediately adjacent to the east of the site between 1963 – 1990's, a pumping station ~160m to the north west of the site since 1963 with 4 No. tanks and an electrical sub-station.</p>	<p>The proposed development Existing and future site users Groundworks and maintenance workers</p>	<p>Inhalation Ingestion Direct contact Permeable strata Percolation, infiltration and leaching Groundwater / surface water migration</p>	<p>Moderate</p>	<p>Low / Medium</p>	<p>Whilst potential risks associated with the off site sources identified are considered to be low the recommended site investigation should help to confirm this.</p>

7 Conclusions and Recommendations

A review of the available information has been undertaken and a qualitative risk assessment has been conducted based on the understanding from the Client that this assessment is to support planning conditions associated with the redevelopment of the site.

The risk assessment, presented as Table 2 above, assesses the potential source-pathway-receptor linkages of concern, and provides recommended actions to either clarify the level of risk or mitigate the risks. For full details reference should be made to Table 2.

Should the existing or proposed usage change (including layout) or additional information be obtained then a re-assessment of the potential risks associated with the site will be required by an Environmental Consultant. The recommendations made are subject to regulatory approval.

The following key recommendations have been made in relation to the proposed development of the site:

- That a Preliminary Intrusive Geo-Environmental Site Investigation be conducted to clarify potential risks associated with the sources of contamination identified including; Made, previous / existing site use for agricultural purposes, vehicle parking, arboriculturalist yard, vehicle repairs, ground gas associated with infilled features and former mash land on site, existing and former fuel tanks and stockpiled manure. The site investigation include analysis of samples (soils, groundwater if encountered and surface water) for the contaminants of concern and should include a ground gas risk assessment in accordance with current CIRIA C665 guidance and;
- That any existing waste chemicals, paints, fuels / oils and general rubbish be appropriately removed and disposed of from site to suitably licensed facilities (all disposal tickets to be retained) prior to the proposed redevelopment of the site;

In relation to the recommendations made above, SEC has made the following assumptions;

That any discharges from the site will be appropriately consented by the Environment Agency. Given the site's position is immediately adjacent to the River Darent and adjacent to/ within an area at risk from flooding it would be prudent to conduct a flood risk assessment to help inform potential flood risk to the proposed development.

The findings of this assessment are based upon SEC's current understanding of the site. Should circumstances change then the Risk Assessment should be revisited by an Environmental Consultant. The recommendations made above are subject to regulatory approval.

An ecological survey, an asbestos survey, a geotechnical assessment, a topographical survey, and a flood risk assessment of the site were beyond the scope of this report.

8 General Limitations and Exceptions

1. The advice given in this report with respect to contaminated land/pollution is based on the guidelines available at the time of writing.
2. The Client is advised that the conditions observed on site by SEC at the time of the investigation or assessments are subject to change. Certain indicators of the presence of hazardous substances may have been latent at the time of the most recent site reconnaissance or investigation and they may subsequently have become observable.
3. Comments made relating to land gas or groundwater conditions are based on observations made at the time of the investigation unless otherwise stated. The normal rate of conduct of an exploratory hole does not usually permit the recording of an equilibrium groundwater level for any one strike. Land gas and / or groundwater conditions may vary as a result of seasonal or other effects.
4. The opinions expressed in this report are based on the ground conditions revealed by the site works, together with an assessment of the site and of laboratory test results. Whilst opinions may be expressed relating to sub-soil conditions in parts of the site not investigated, for example between or beyond borehole positions, these are only for guidance only and no liability can be accepted for their accuracy.
5. Ground contamination often exists as small discrete areas of contamination and there can be no certainty that any or all such areas have been located, sampled and/or identified.
6. This assessment may be subject to amendment in light of additional information becoming available.
7. The findings and opinions conveyed in this report are based on information obtained from a variety of sources, including that from 1) previous site investigations and 2) chemical testing laboratories, and which SEC has assumed are correct. Nevertheless, SEC cannot and does not guarantee the authenticity or reliability of the information it has relied upon. SEC can accept no responsibility for inaccuracies within the data supplied by other parties.
8. This report is written in the context of an agreed scope of work between SEC and the Client and should not be used in a different context. In light of additional information becoming available, improved practices and changes in legislation amendment or re-interpretation of the assessment or report in whole or part may be necessary after its original submission.
9. This report is provided for sole use by the Client and is confidential to them. No responsibility whatsoever for the contents of the report will be accepted to anyone other than the Client.
10. SEC believes that providing information about limitations is essential to help the Client identify and thereby manage risks.

11. The copyright of written materials supplied shall remain the property of SEC but with a royalty free perpetual licence, granted to the Client on payment in full of any outstanding monies.
12. SEC does not provide legal advice and the advice of the Clients legal advisors may also be required.
13. SEC notes that this assessment is subject to regulatory review and approval.
14. This report represents a stage in an iterative process of investigation and assessment and as such it is possible that further work may be recommended.
15. An ecological, topographical or asbestos survey was outside of the scope of this report
16. The use of data generated by this site investigation for the design of foundations or geo-technical assessment was outside the scope of this report.

Appendix A

Figures



SITE: Preston Farm, Shoreham Road, Sevenoaks, Kent, TN14 7UD

SCALE: NTS

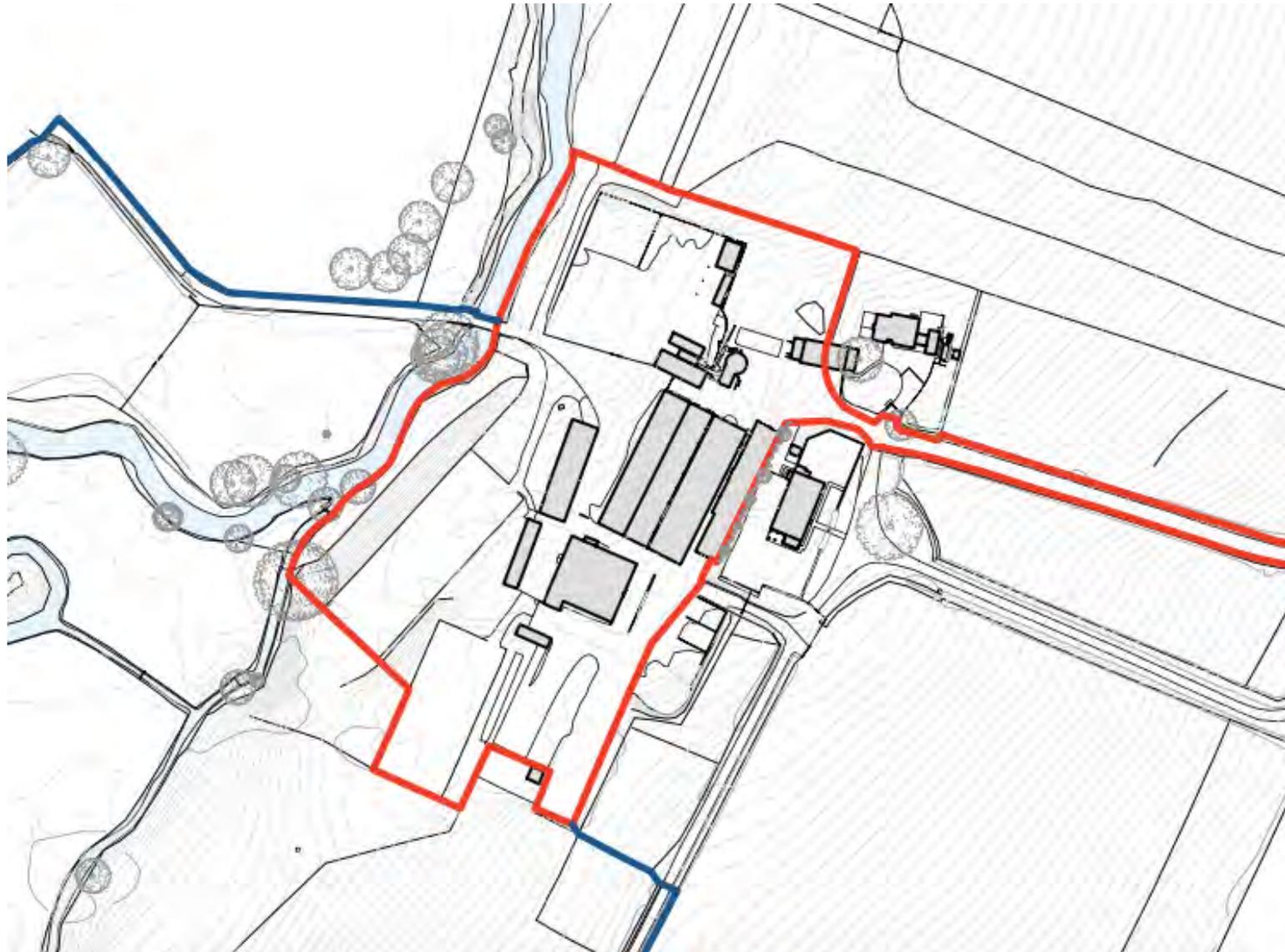
JOB NO: 3837

FIGURE TITLE: Site Location Plan

REV: 01

FIGURE NO: 01





SITE: Preston Farm, Shoreham Road, Sevenoaks, Kent, TN14 7UD

SCALE: NTS

JOB NO: 3837

FIGURE TITLE: Existing Site Layout Plan

REV: 01

FIGURE NO: 02





SITE: Preston Farm, Shoreham Road, Sevenoaks, Kent, TN14 7UD

SCALE: NTS

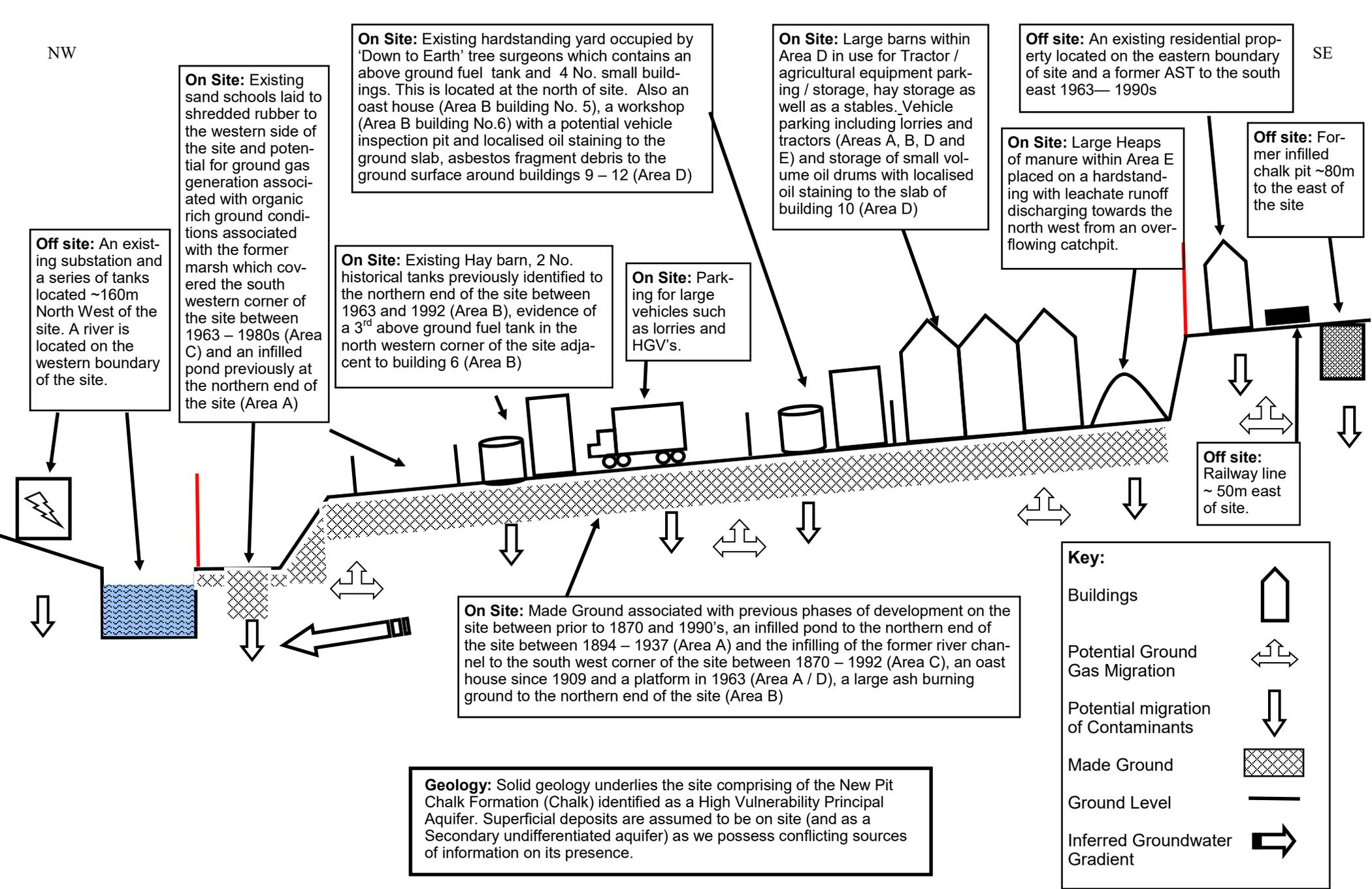
JOB NO: 3837

FIGURE TITLE: Proposed Site Plan

REV: 01

FIGURE NO: 03





SITE: Preston Farm, Shoreham Road, Sevenoaks, Kent, TN14 7UD

SCALE: NTS

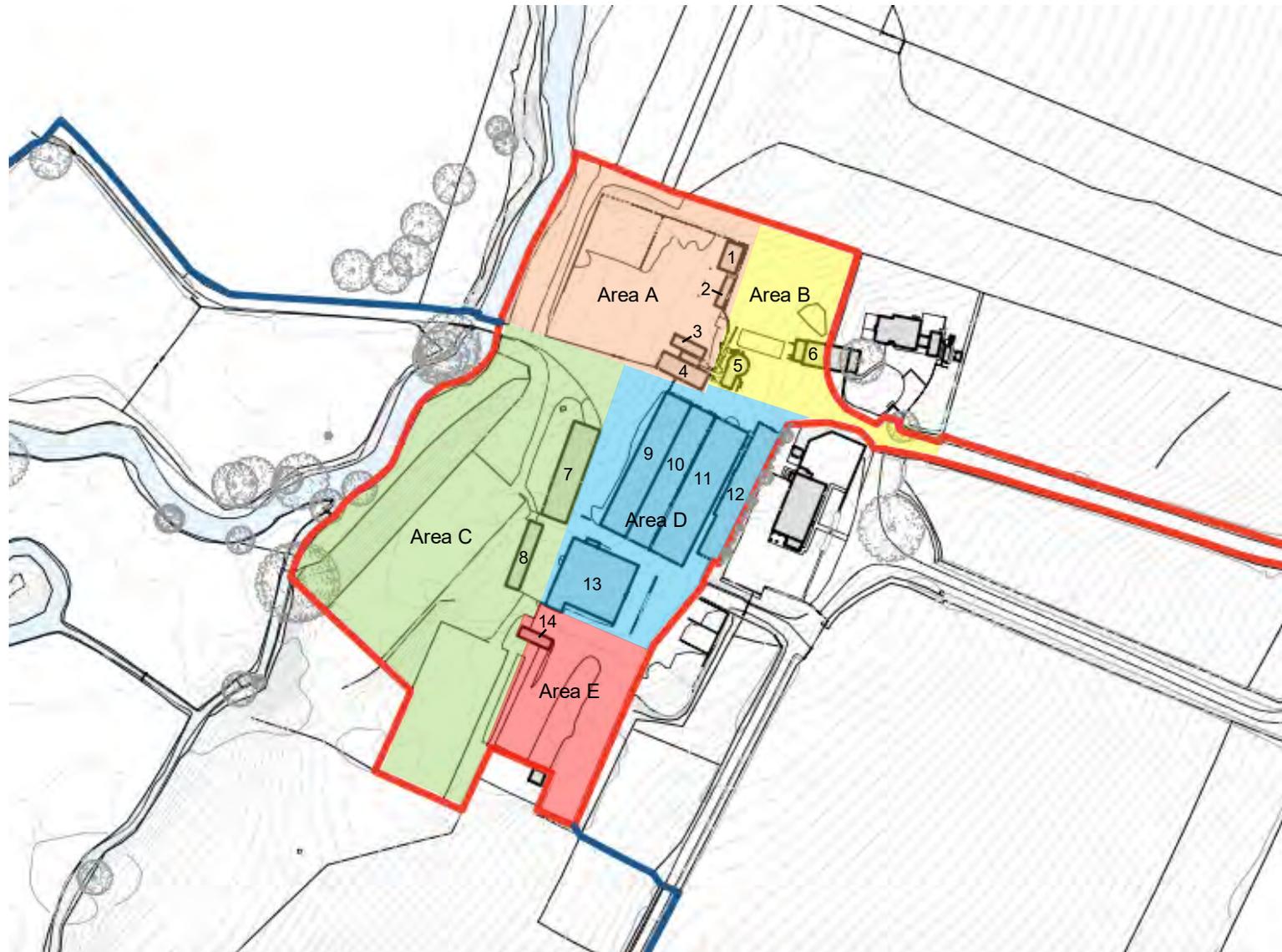
JOB NO: 3837

FIGURE TITLE: Conceptual Site Model

REV: 01

FIGURE NO: 04





SITE: Preston Farm, Shoreham Road, Sevenoaks, Kent, TN14 7UD

SCALE: NTS

JOB NO: 3837

FIGURE TITLE: Existing Site Layout Plan

REV: 01

FIGURE NO: 05



Appendix B

Site Photos

Area A



Photo 1 – View of Area A looking towards the north showing the tree surgeons' yard.



Photo 2 – View of the existing above ground level storage tank located immediately adjacent to the west of building No. 4.



Photo 3 – Use of the tree surgeons' yard for storage of felled timber.



Photo 4 – Use of the tree surgeons' yard for storage of vegetation chippings and vehicle parking.

Area B



Photo 5 – View across the southern part of Area B looking towards the access drive to the east.



Photo 6 – View across the northern part of Area B showing the large burning ground and the plinth immediately adjacent to the west of building No. 6 indicative of a former above ground fuel storage tank at this location.



Photo 7 – Converted oast which is occupied by a tree surgeon company and used for offices with vehicle parking.



Photo 8 – View across the southern end of Area B towards buildings 10, 11 and 12.



Photo 9 – Former fuel tank plinth with a manhole immediately beneath the former tanks position.



Photo 10 – Example of cement bonded asbestos sheeting debris to the ground adjacent to the building No. 6.



Photo 11 – View inside building No. 6.



Photo 12 – Potential evidence indicative of a vehicle inspection pit within building No. 6.

Area C



Photo 12 – View looking from the northern end of Area C in a southerly direction showing the large hay barn (building No. 7) and the sloping vegetated ground leading down to the river Darent.



Photo 13 – View looking to the north showing building No. 8 and one of the two sand schools.

Area D



Photo 14 – View inside building No. 10 indicating use of the barn for parked agricultural vehicles and equipment with some localised oil staining to the concrete ground slab.



Photo 15 – Storage of oil/ fuel drums within barn No. 10 with localised oil staining.



Photo 16 – Further evidence of cement bonded asbestos sheeting debris within Area D, adjacent to barns 9 – 12.



Photo 17 – View looking towards the south along the western side of Area D and indicating the use of this area for vehicle parking.



Photo 18 – View inside building No. 9 illustrating use for the storage of horse riding equipment.

Area E



Photo 19 – View of the north east corner of Area E where manure is stockpiled and leachate runoff was noted.



Photo 20 – Surface water catchpit at the north east corner of Area E which was observed to be overflowing.



Photo 21 – View looking from the north end of Area E towards the south.



Photo 22 – View of lorry parking in Area E.

Appendix C

Historical Maps

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

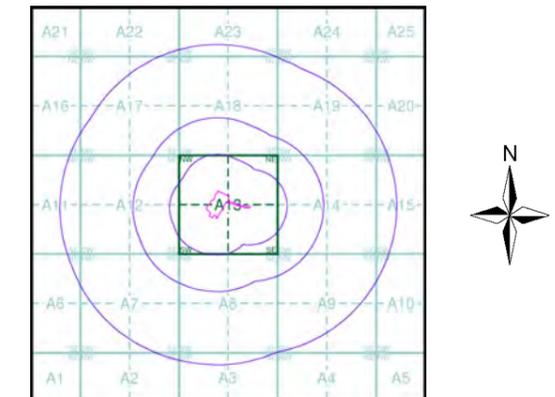
1:10,000 Raster Mapping

	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

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Kent	1:10,560	1870 - 1871	2
Kent	1:10,560	1897	3
Kent	1:10,560	1909 - 1910	4
Kent	1:10,560	1936 - 1952	5
Kent	1:10,560	1938	6
Ordnance Survey Plan	1:10,000	1961	7
Ordnance Survey Plan	1:10,000	1967	8
Ordnance Survey Plan	1:10,000	1989	9
10K Raster Mapping	1:10,000	1999	10
Street View	Variable		11

Historical Map - Slice A

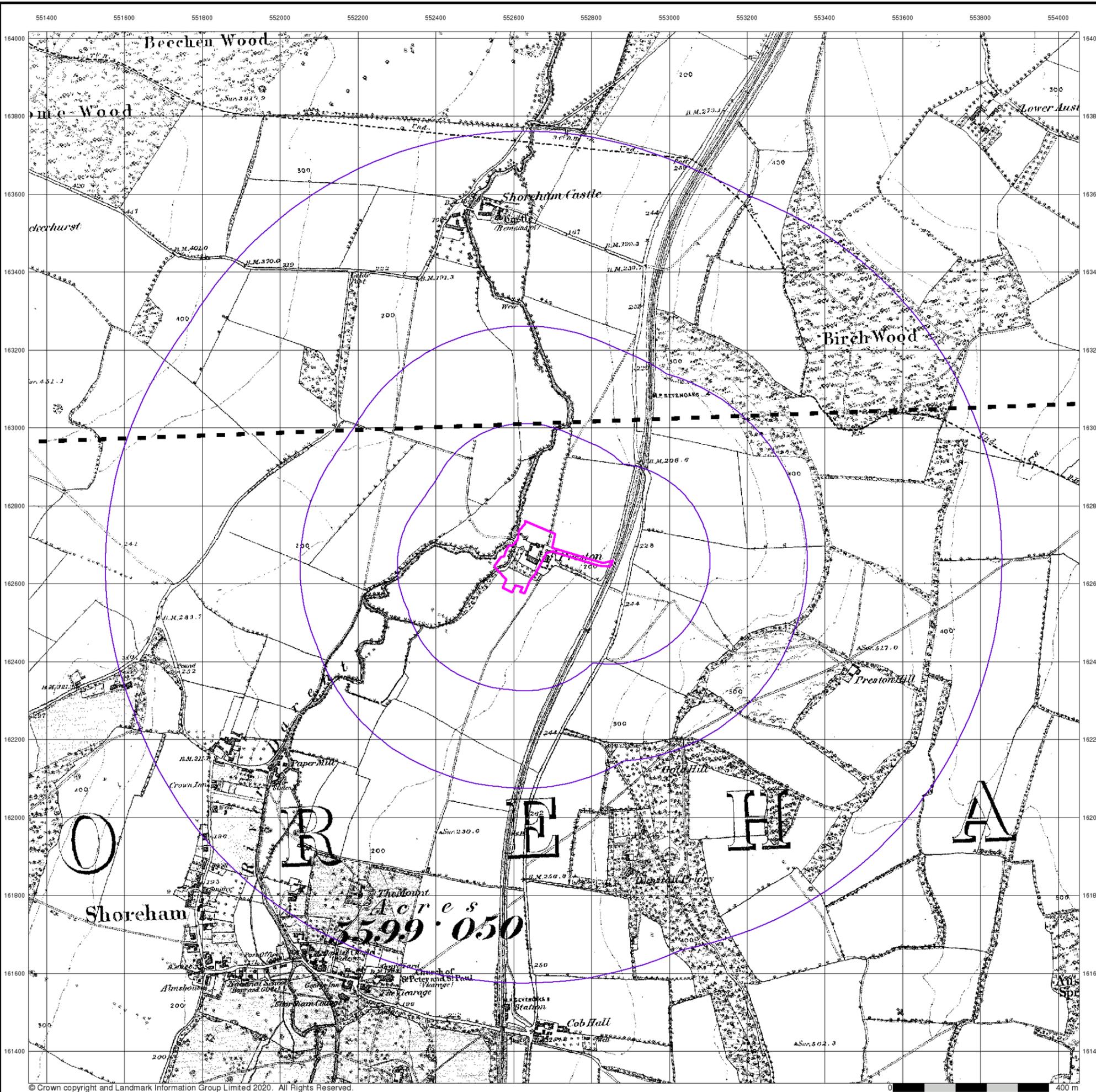


Order Details

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 Customer Ref: 3837
 National Grid Reference: 552690, 162660
 Slice: A
 Site Area (Ha): 1.67
 Search Buffer (m): 1000

Site Details

Preston Farm Stables, Preston Farm, Shoreham Road, Shoreham, SEVENOAKS, TN14 7UD



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Kent

Published 1870 - 1871

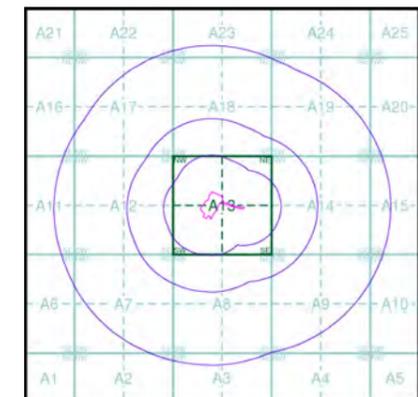
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The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps.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

01700	1870	1:10,560
02900	1871	1:10,560

Historical Map - Slice A



Order Details

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Site Details

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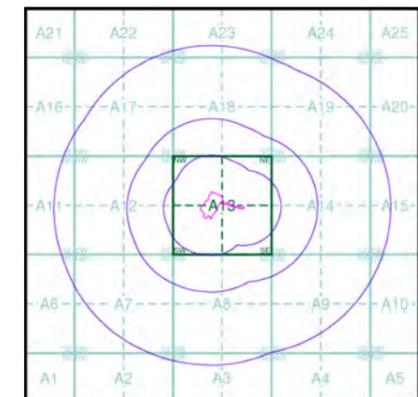
Kent
Published 1897
Source map scale - 1:10,560

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Map Name(s) and Date(s)

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029NW	1897	1:10,560

Historical Map - Slice A

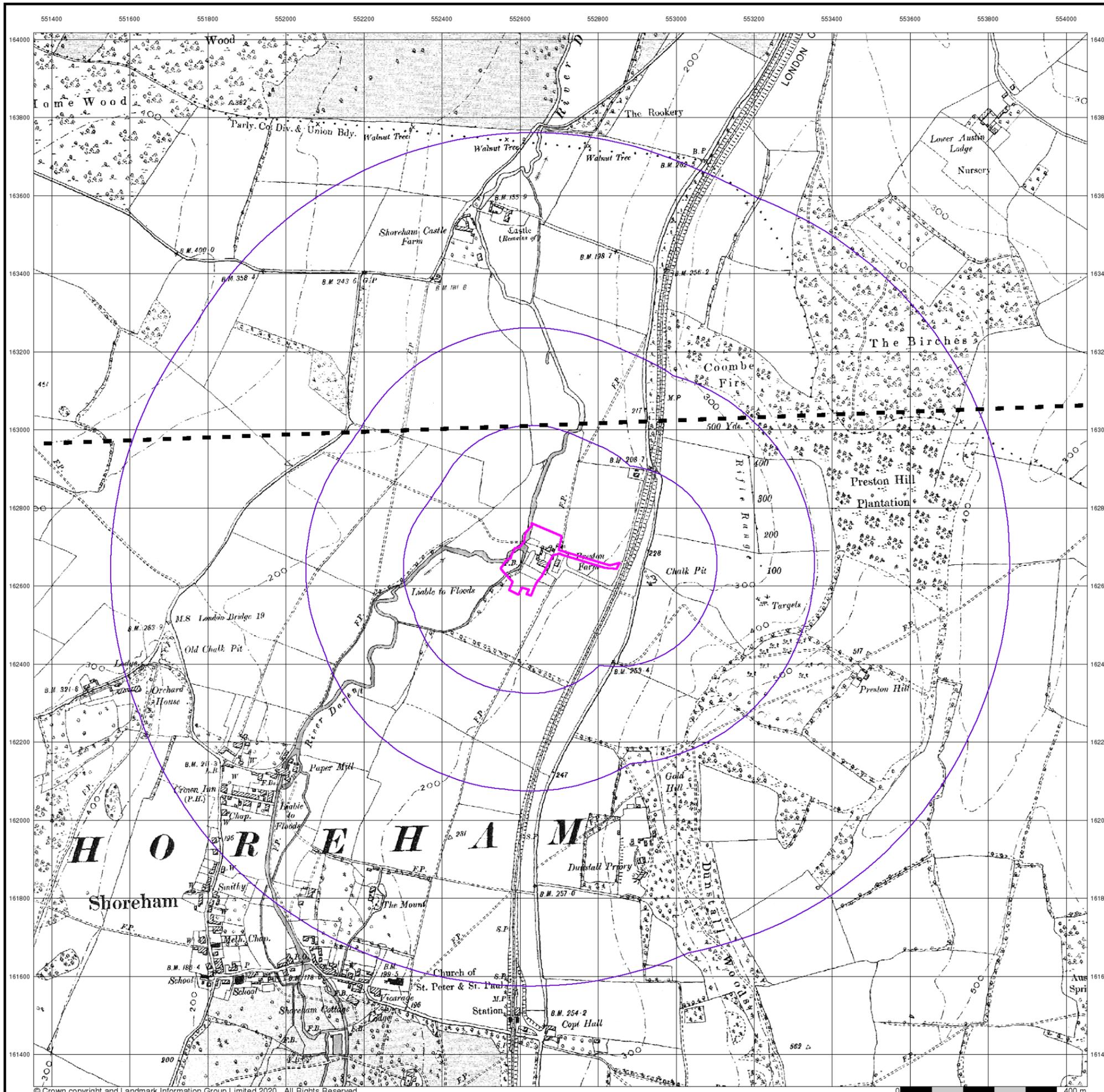


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 Slice: A
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 Search Buffer (m): 1000

Site Details

Preston Farm Stables, Preston Farm, Shoreham Road, Shoreham, SEVENOAKS, TN14 7UD



Kent

Published 1909 - 1910

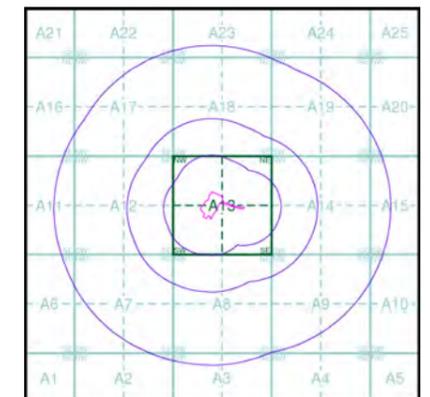
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The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps.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

017SW	1909	1:10,560
029NW	1910	1:10,560

Historical Map - Slice A

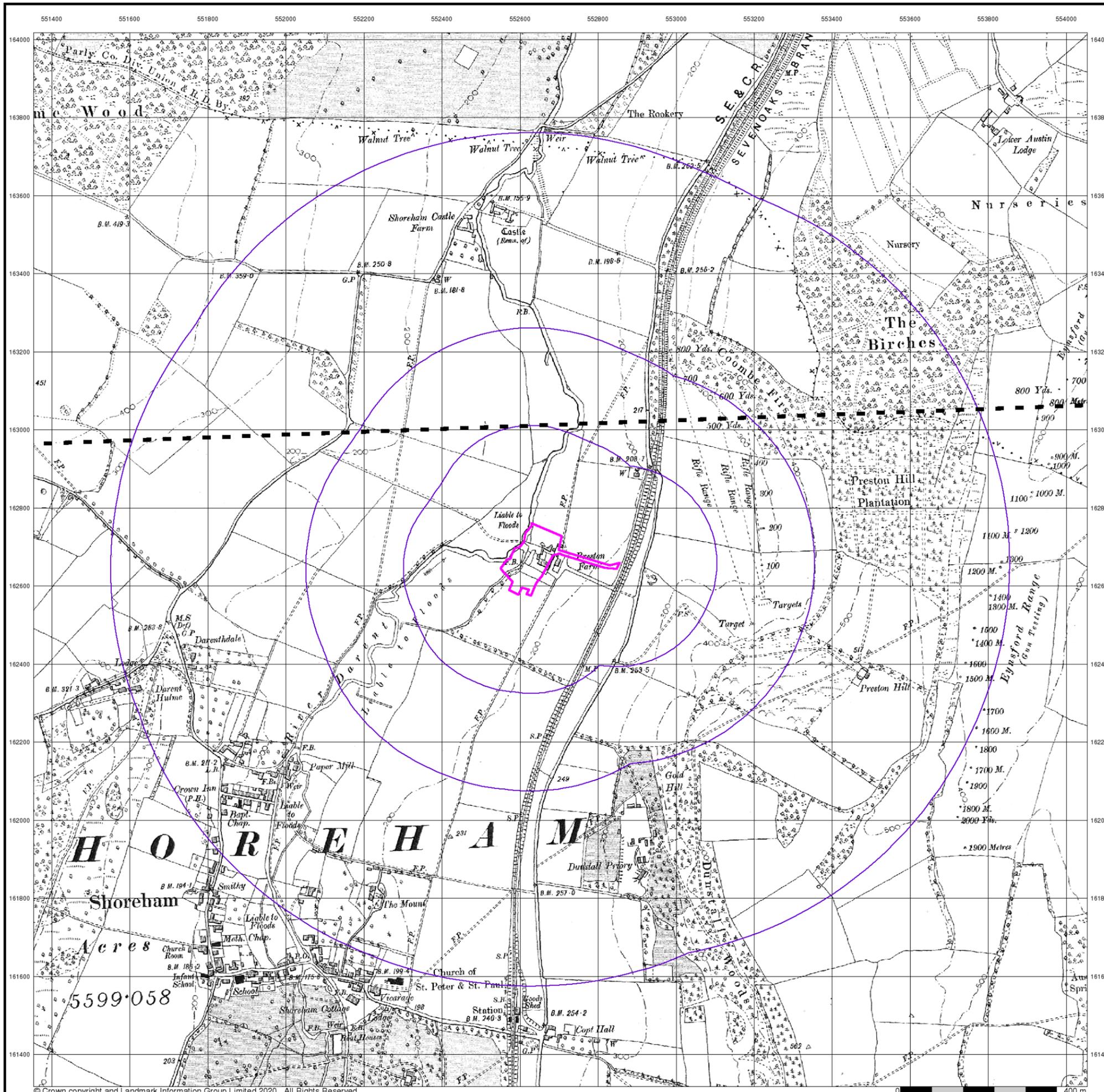


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Site Details

Preston Farm Stables, Preston Farm, Shoreham Road, Shoreham, SEVENOAKS, TN14 7UD



Kent

Published 1936 - 1952

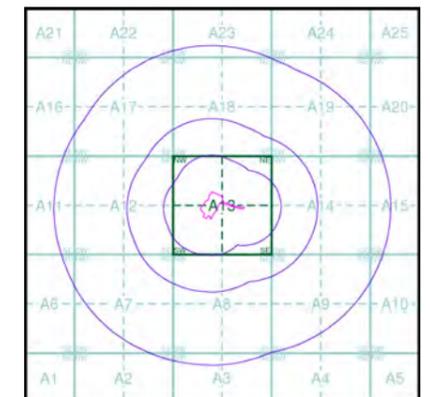
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Map Name(s) and Date(s)

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029NW	1936	1:10,560

Historical Map - Slice A

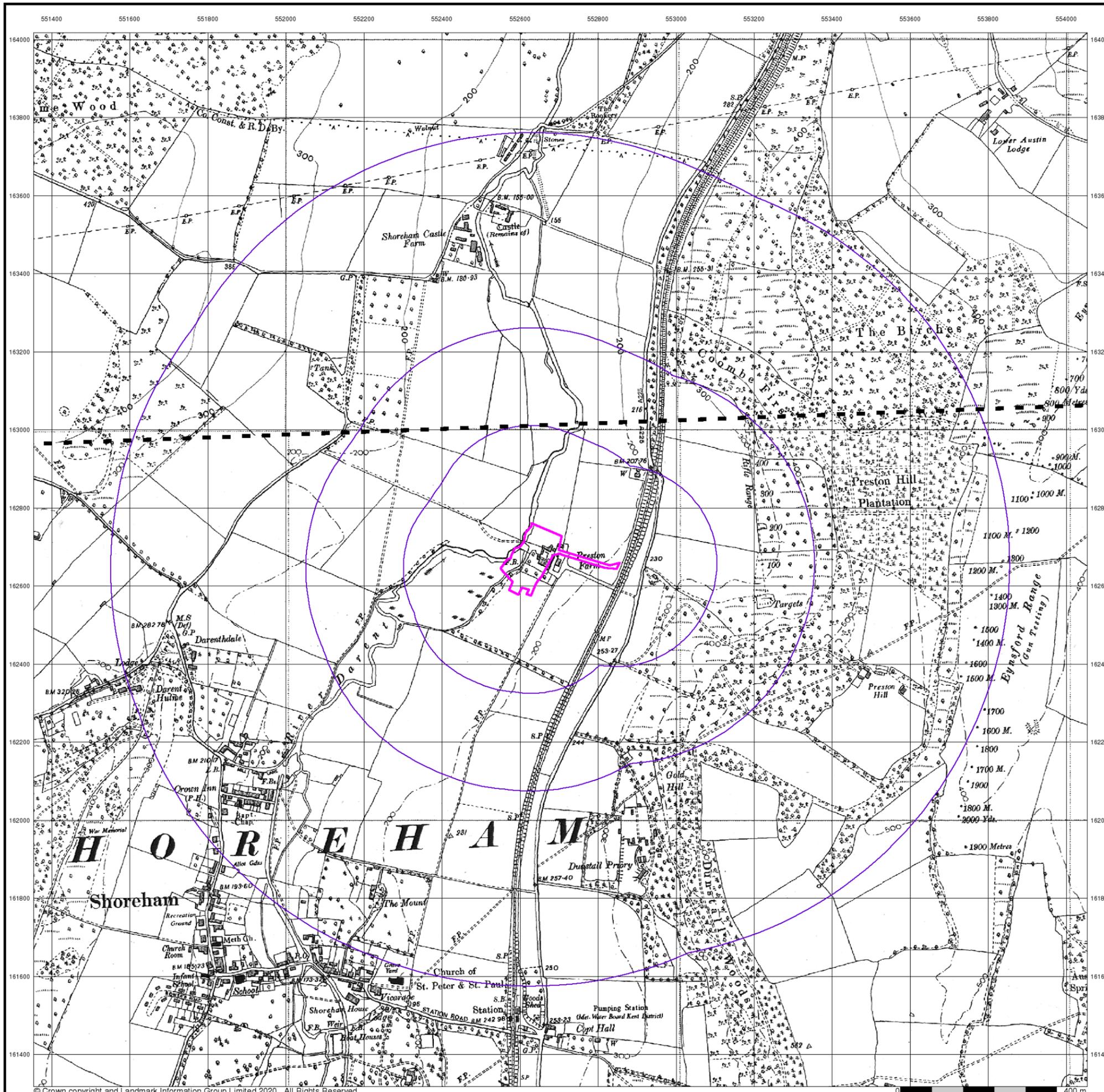


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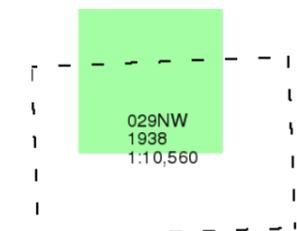
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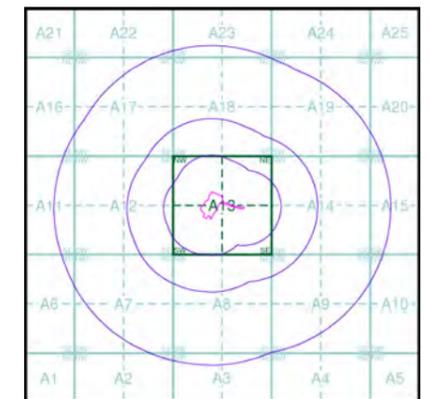
Kent
Published 1938
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A

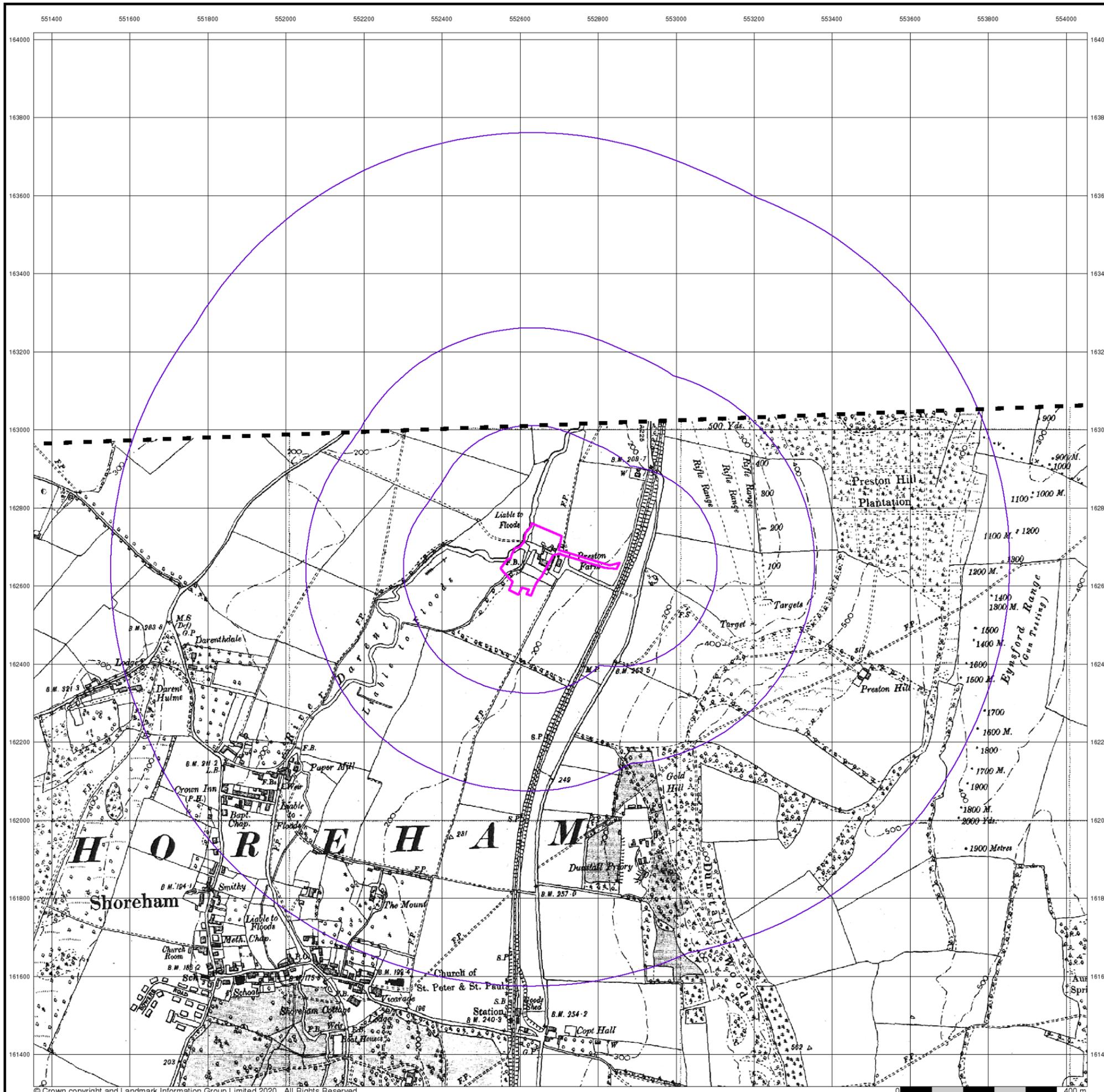


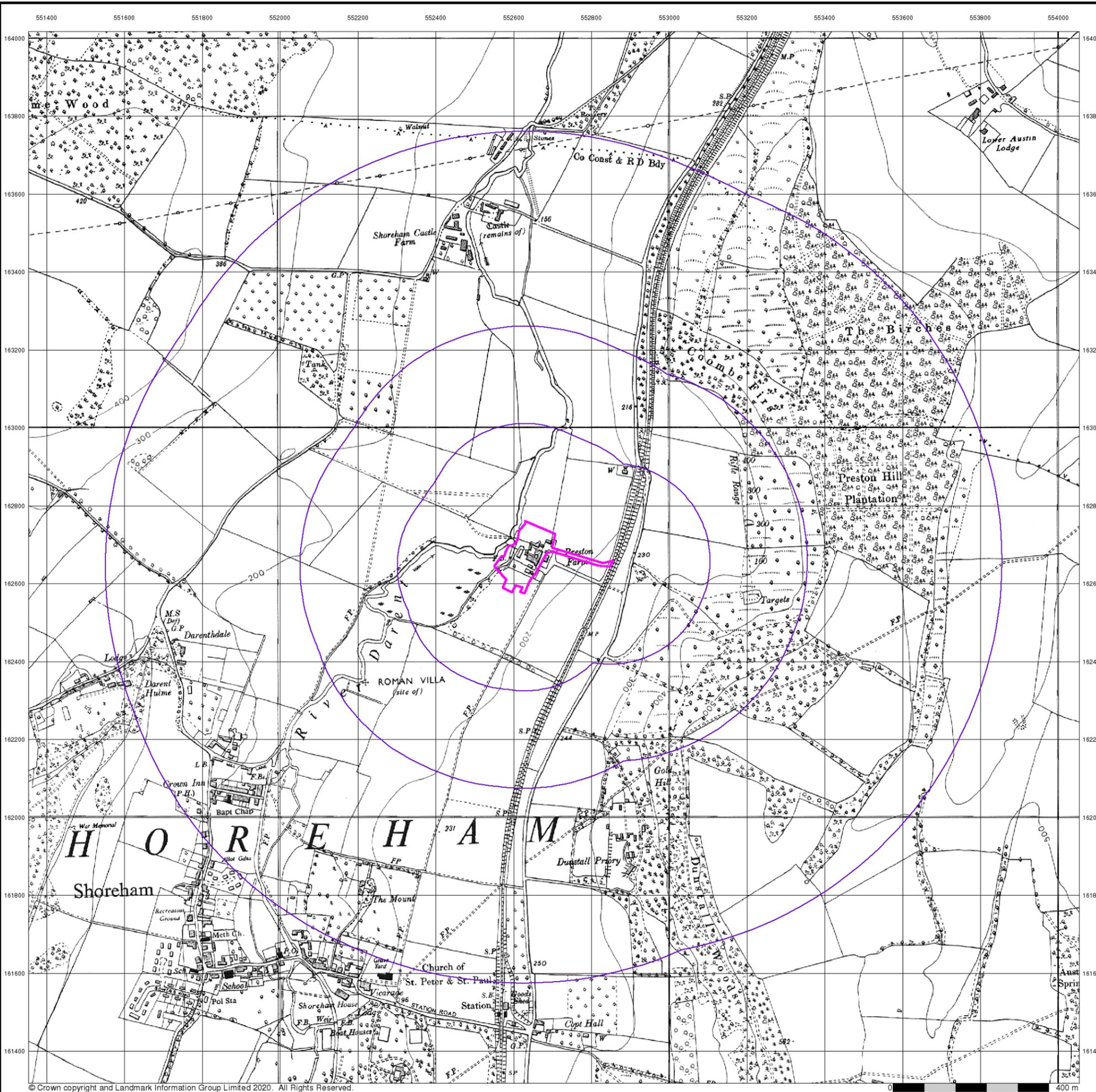
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 National Grid Reference: 552690, 162660
 Slice: A
 Site Area (Ha): 1.67
 Search Buffer (m): 1000

Site Details

Preston Farm Stables, Preston Farm, Shoreham Road, Shoreham, SEVENOAKS, TN14 7UD





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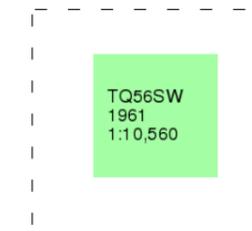
Ordnance Survey Plan

Published 1961

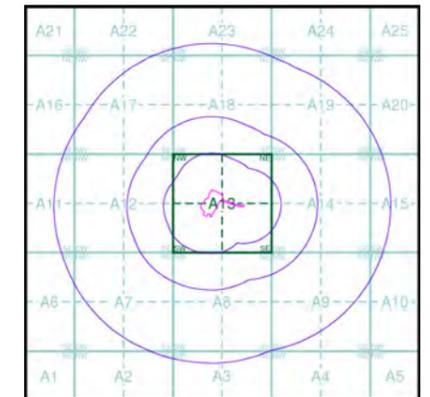
Source map scale - 1:10,000

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

Map Name(s) and Date(s)



Historical Map - Slice A

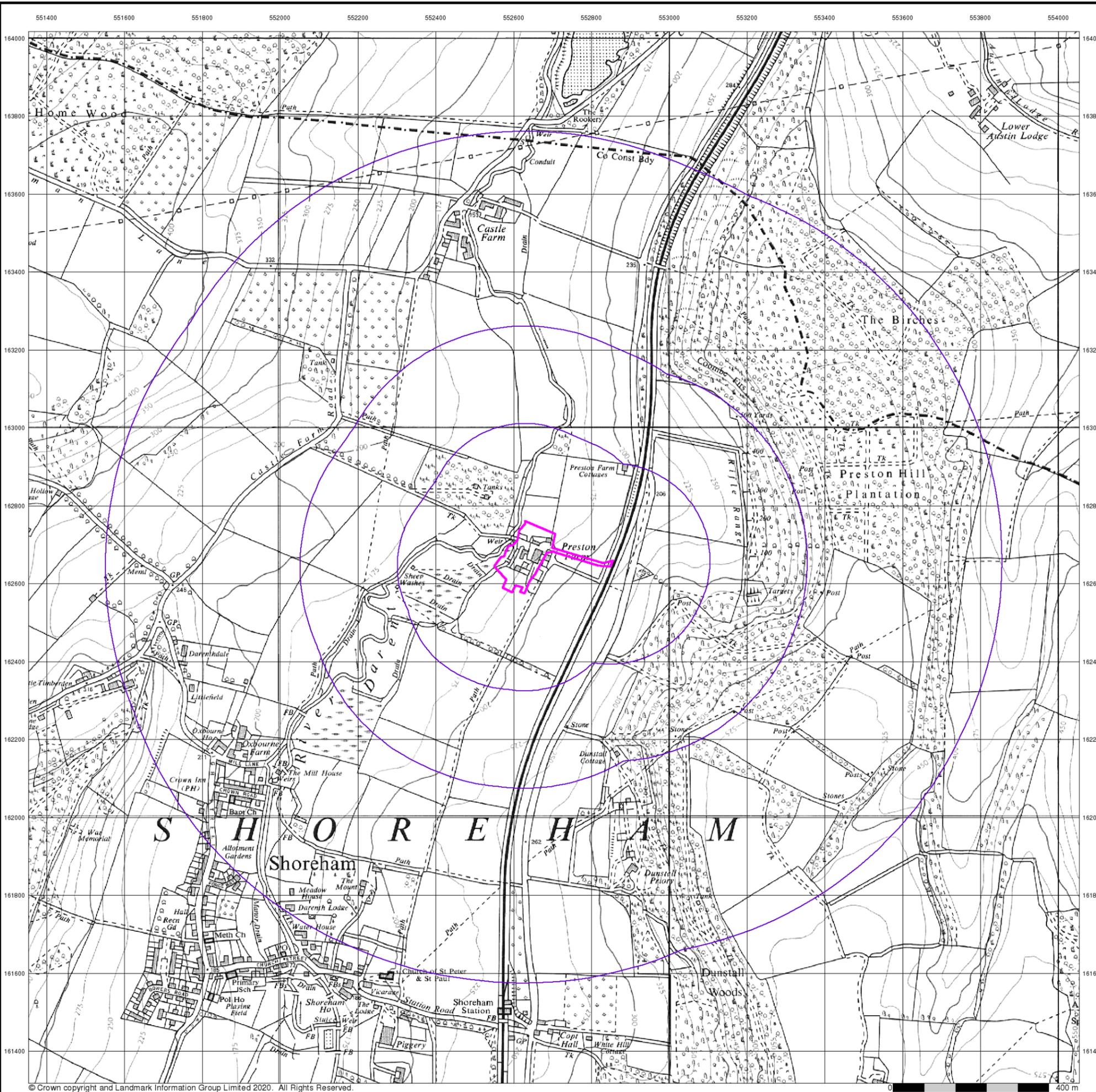


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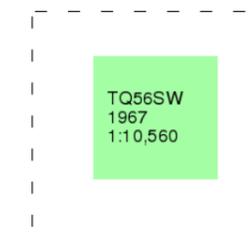
Ordnance Survey Plan

Published 1967

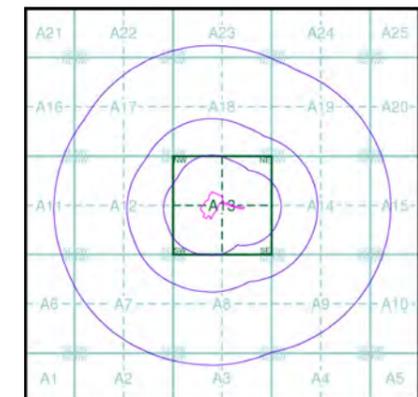
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The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps.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

Map Name(s) and Date(s)



Historical Map - Slice A

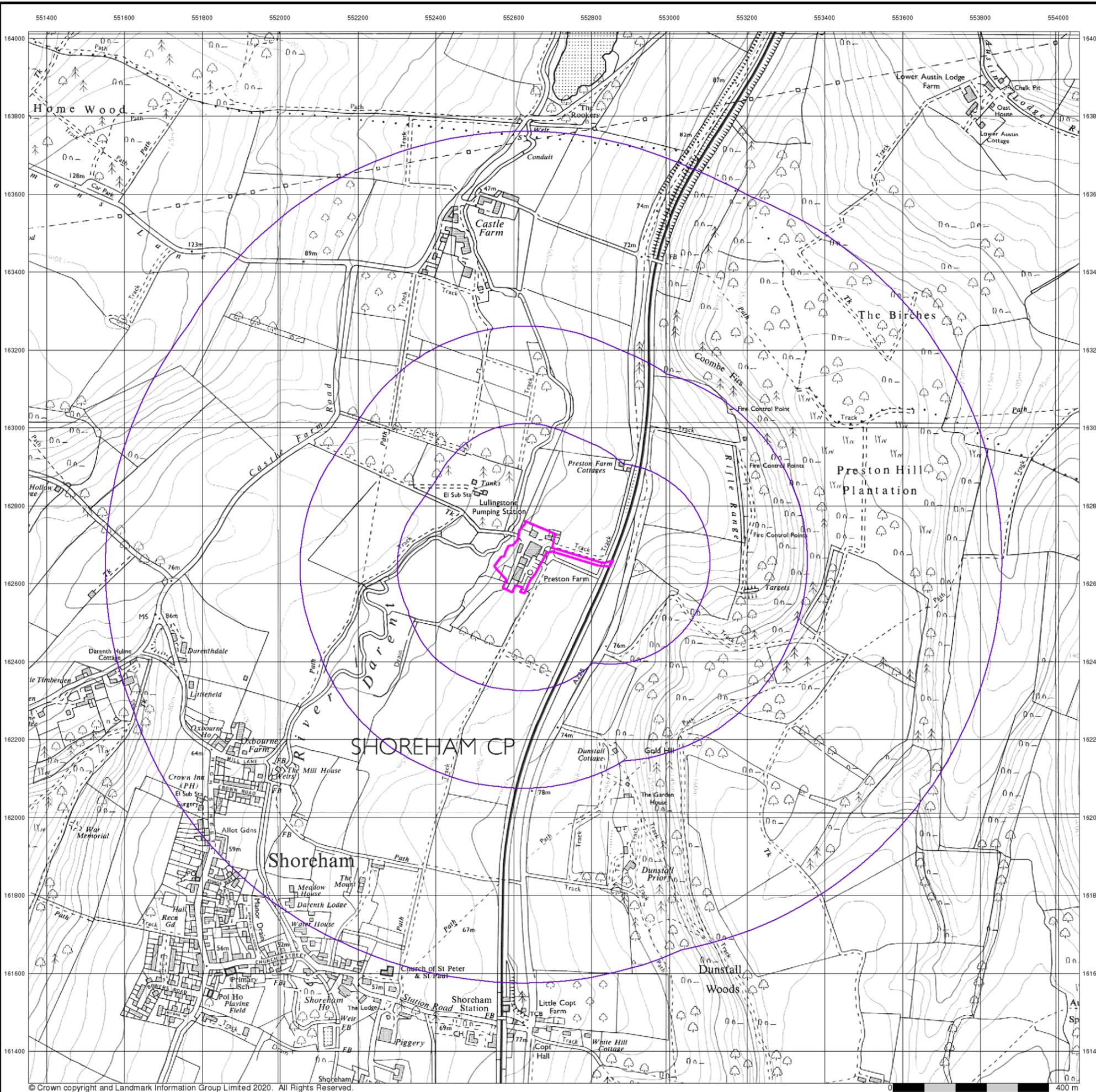


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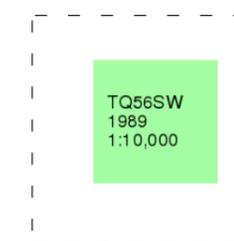
Ordnance Survey Plan

Published 1989

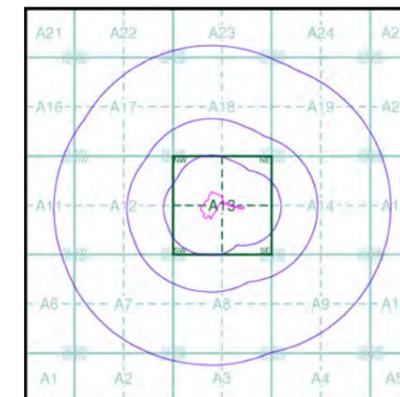
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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

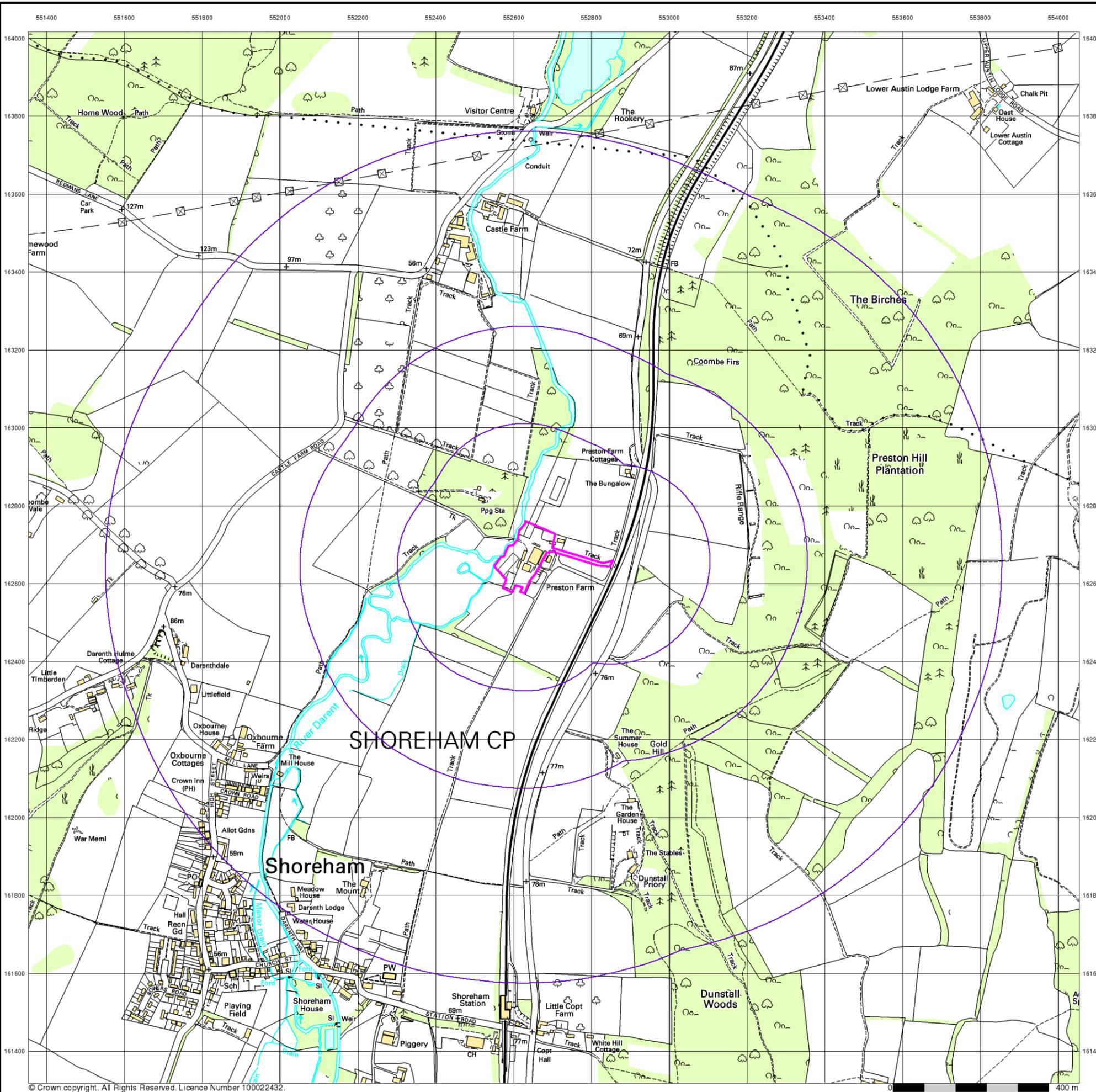
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Site Details

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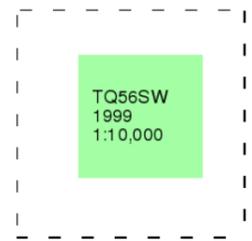
Tel: 0844 844 9952
 Fax: 0844 844 9951
 Web: www.envirocheck.co.uk



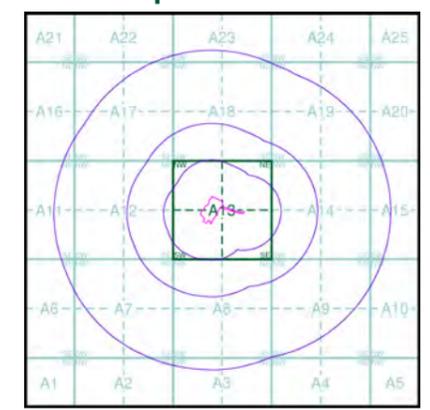
10k Raster Mapping
Published 1999
Source map scale - 1:10,000

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)



Historical Map - Slice A



Order Details
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Site Details
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Street View

Published 2020

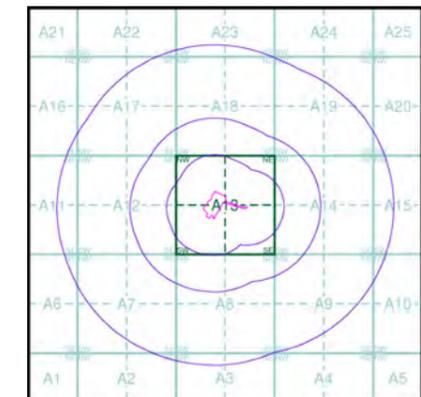
Source map scale - 1:10,000

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



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