APPENDIX ES8

ES8.1 Cultural Heritage Plates
ES8.2 Gazetter of Historical Archaeological Remains
ES8.3 Gazetter of Historical Buildings
ES8.4 Gazetter of Historical Landscapes
ES8.5 ASWYAS Geophysical Report (2007)

October 2012
Report No. 12514580441.500/A.0

ES8.1 Cultural Heritage Plates

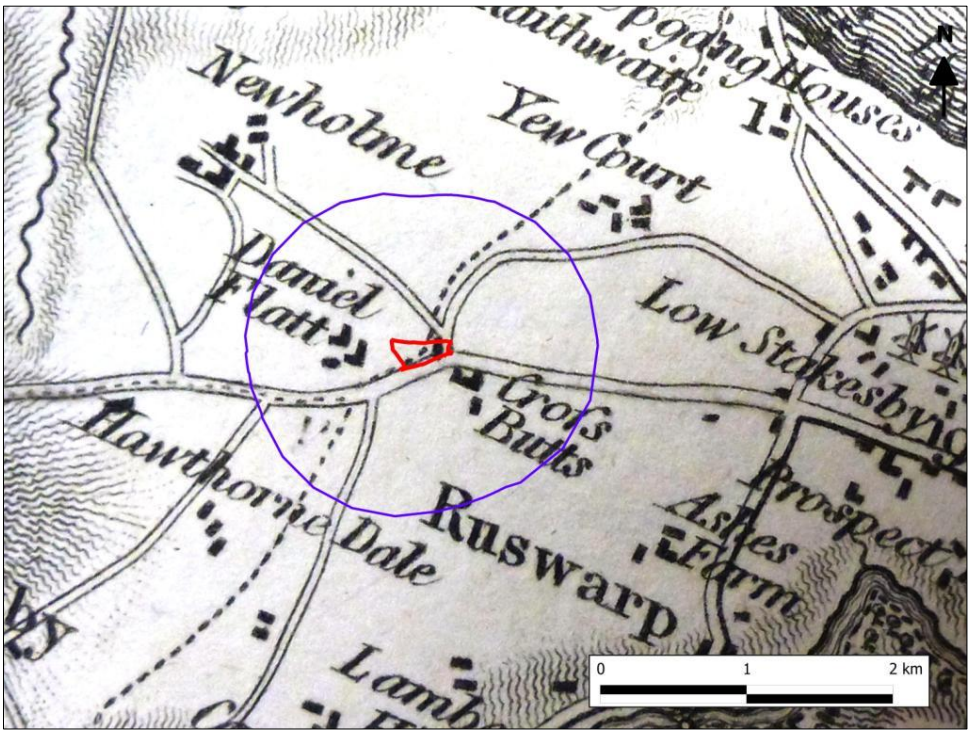


Plate 1

An extract from Greenwood's Map of Yorkshire, 1817

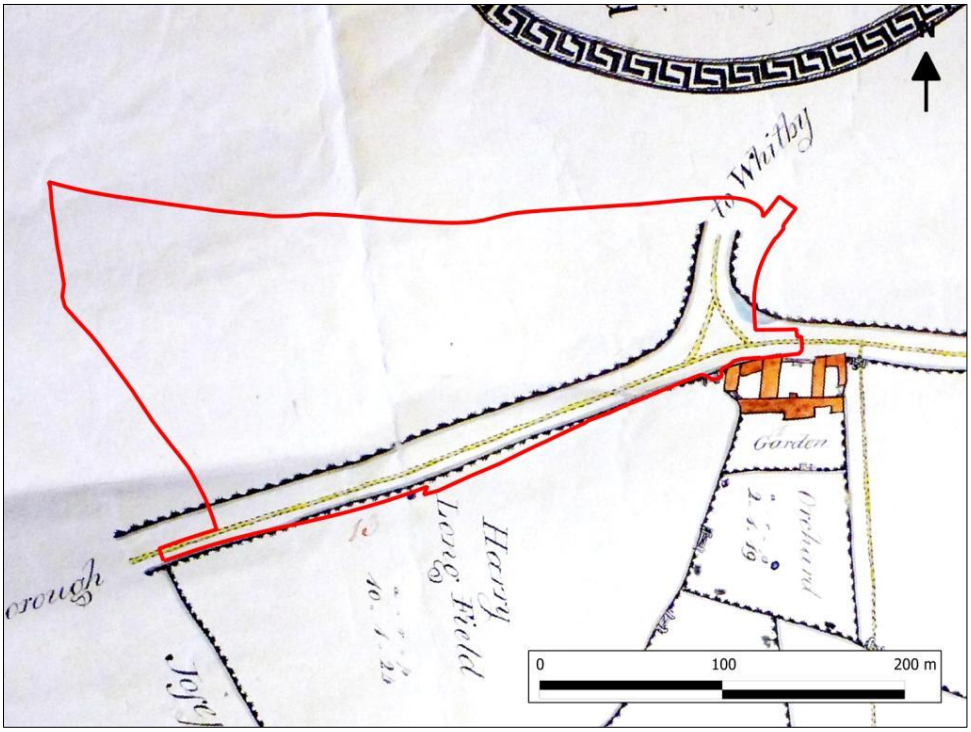


Plate 2

An extract from 'A Plan of an Estate situate at Cross Butts', 1823 (NYRO ZW[M] 1/74)

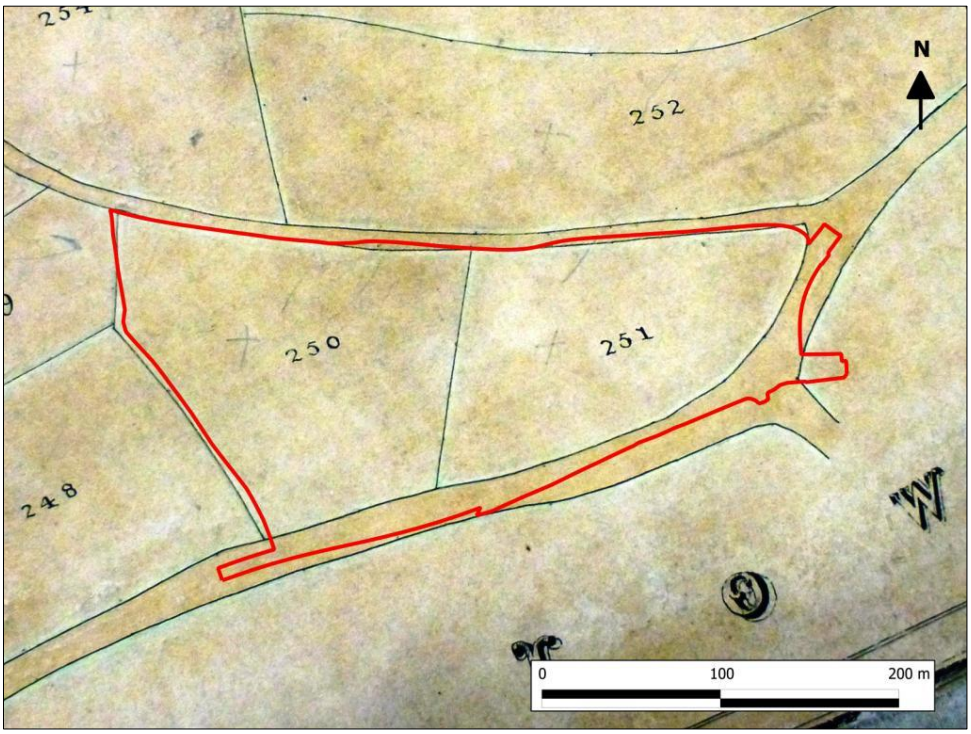


Plate 3

An extract from the Newholm cum Dunsley Tithe Map, 1845 (NYRO T)

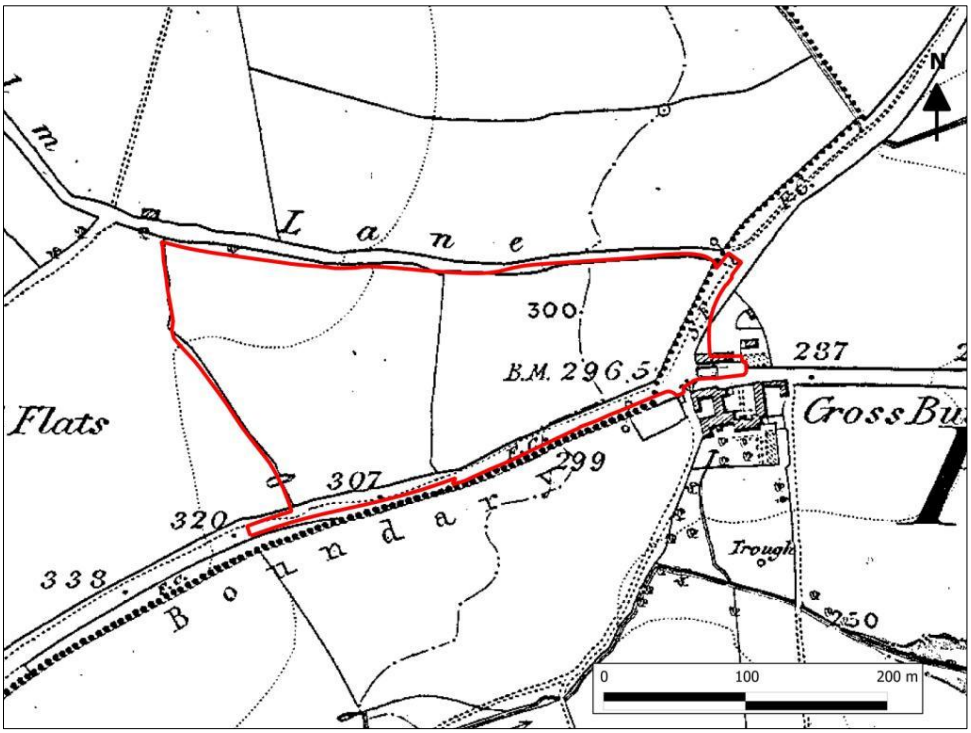


Plate 4

An extract from the Ordnance Survey 25 inch map, 1853

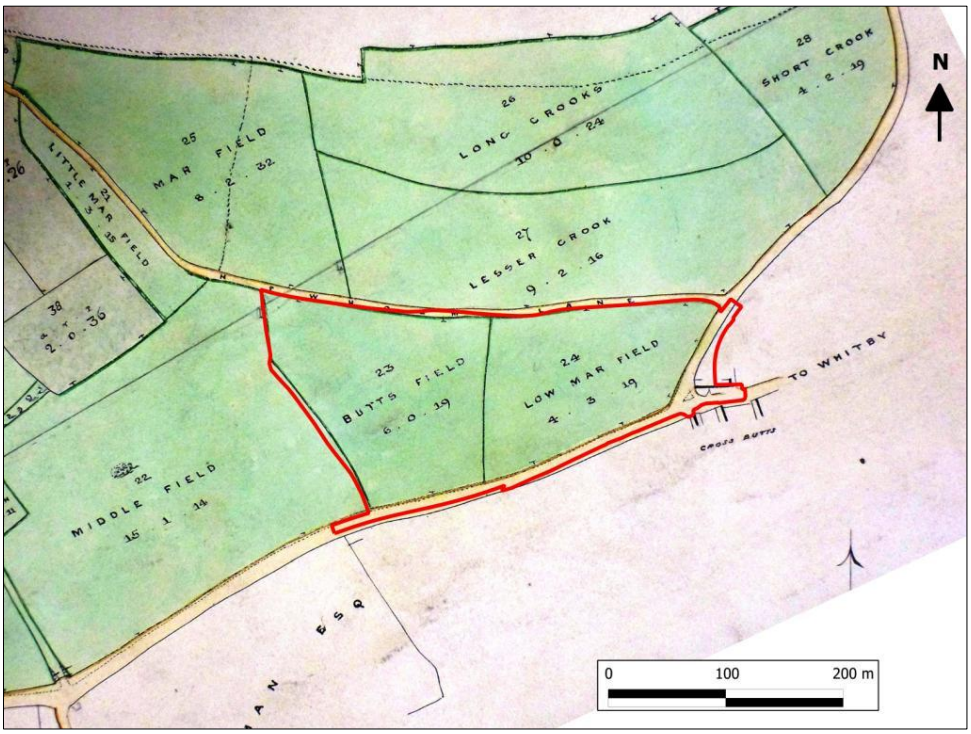


Plate 5

An extract from 'A Plan of a Farm Called Banniel Flat', 1863 (NYRO ZW[M] 1/68)

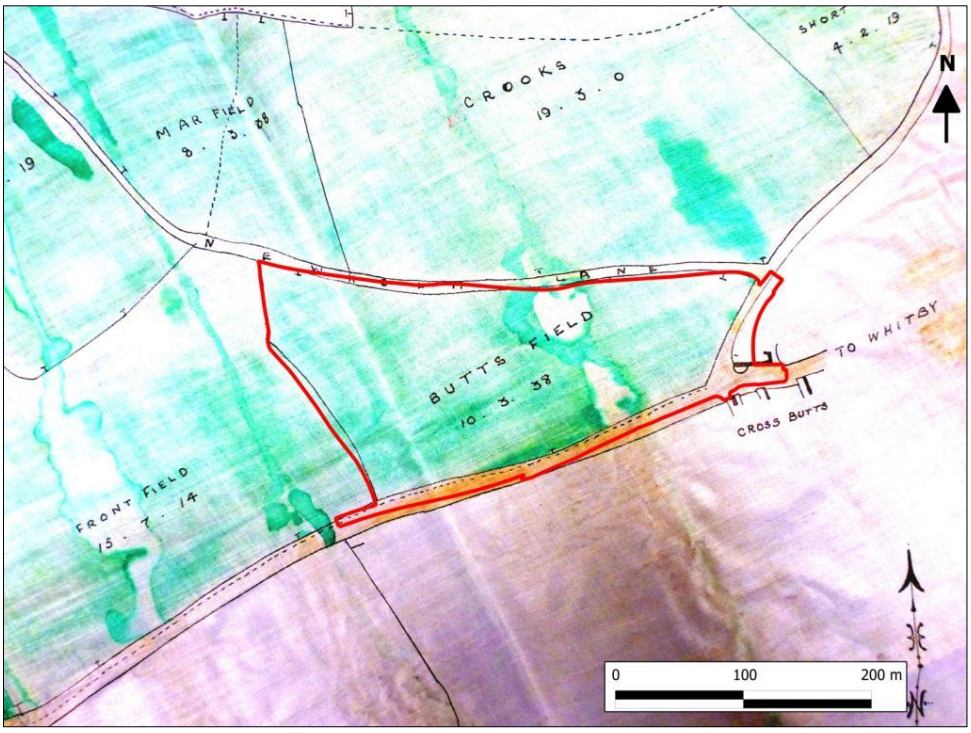


Plate 6

An extract from 'A Plan of a Farm Called Banniel Flat', n.d. (NYRO ZW[M] 1/69)

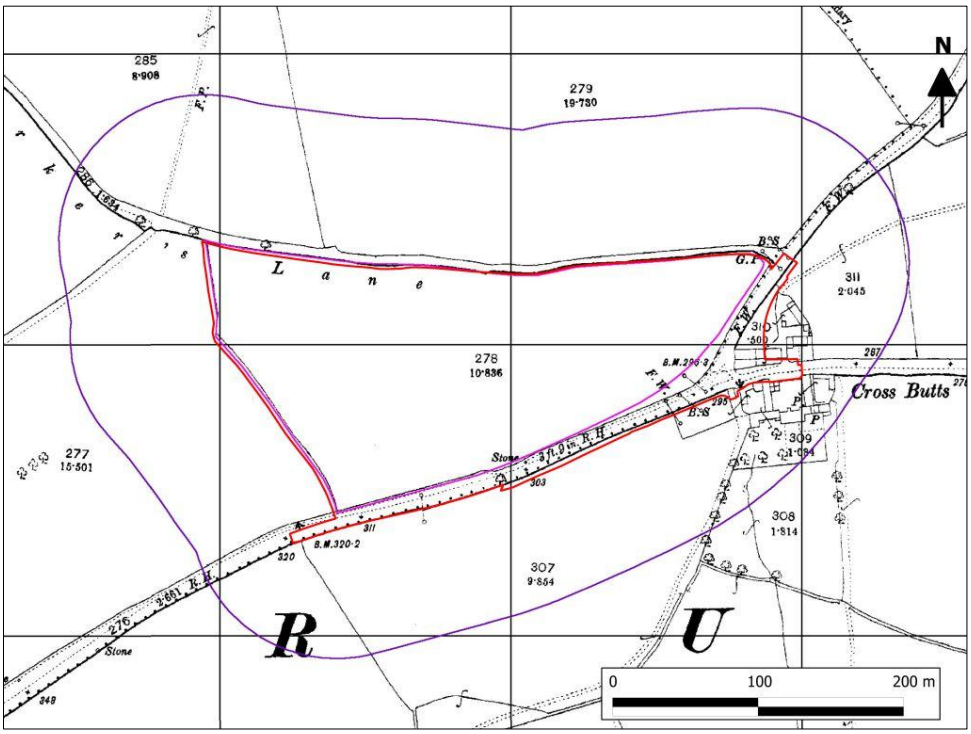


Plate 7

An extract from the Ordnance Survey 25 inch map, 1894

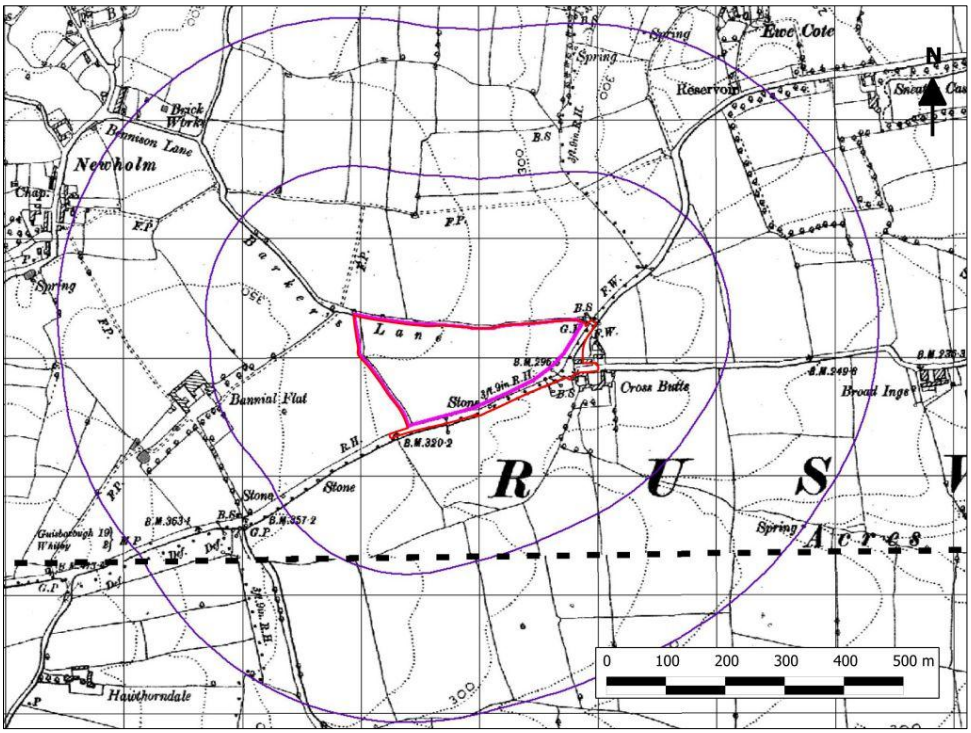


Plate 8

An extract from the Ordnance Survey 6 inch map, 1895

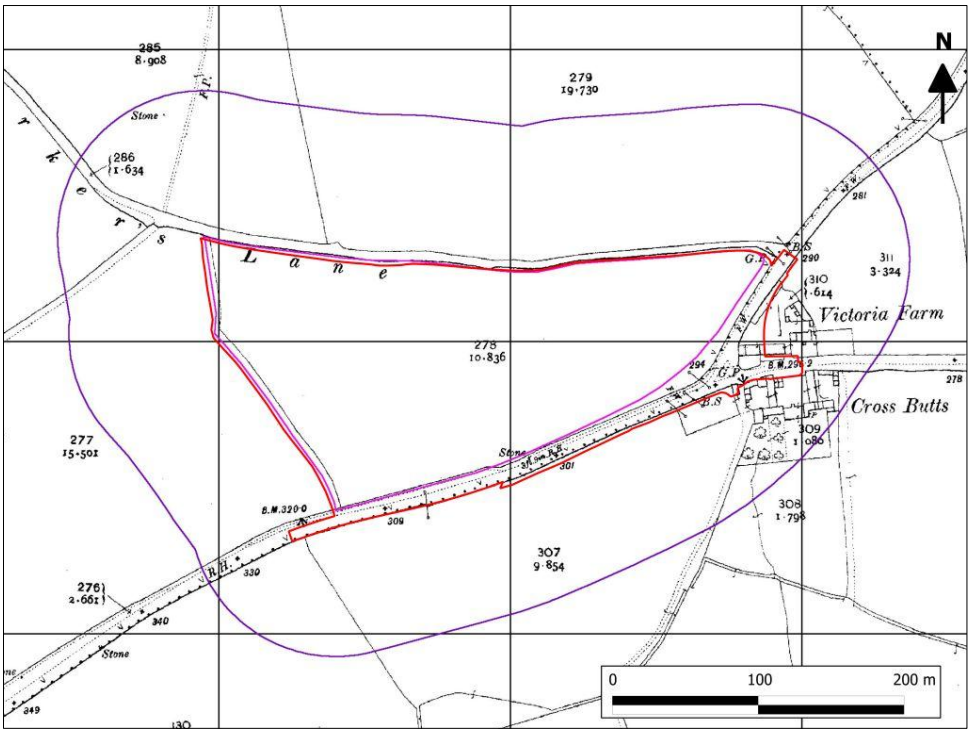


Plate 9

An extract from the Ordnance Survey 25 inch map, 1913

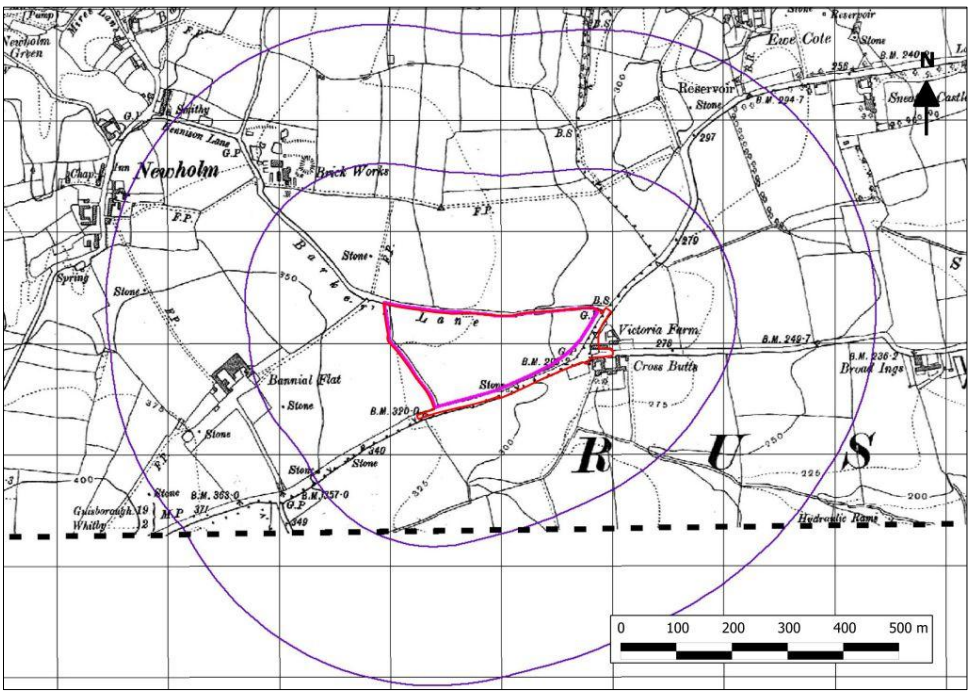


Plate 10

An extract from the Ordnance Survey 6 inch map, 1914

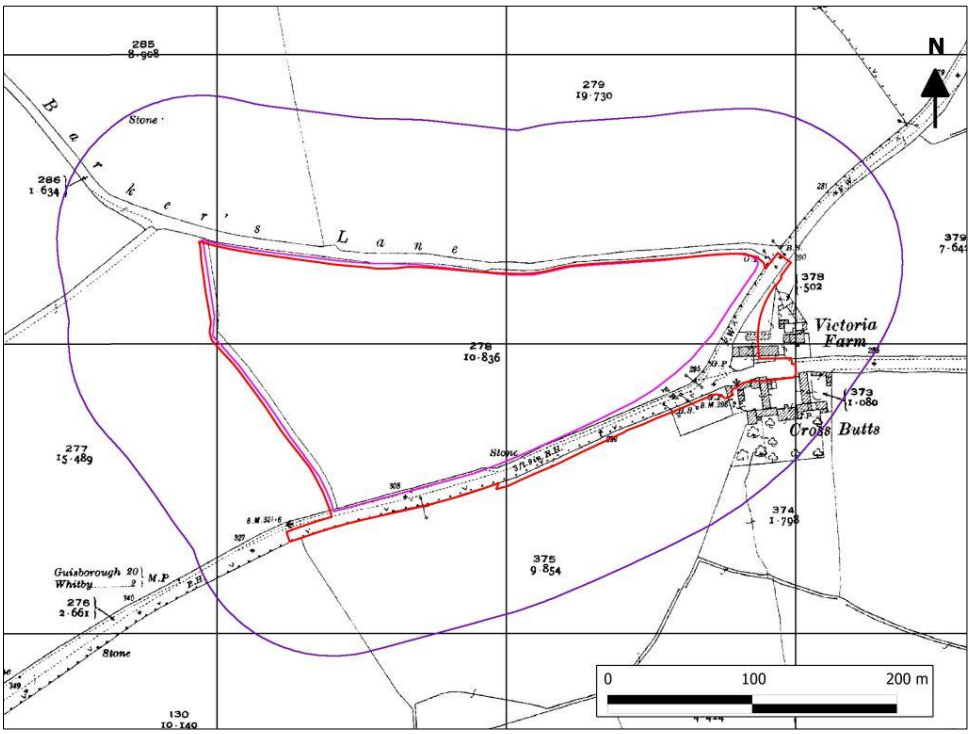


Plate 11

An extract from the Ordnance Survey 25 inch map, 1928

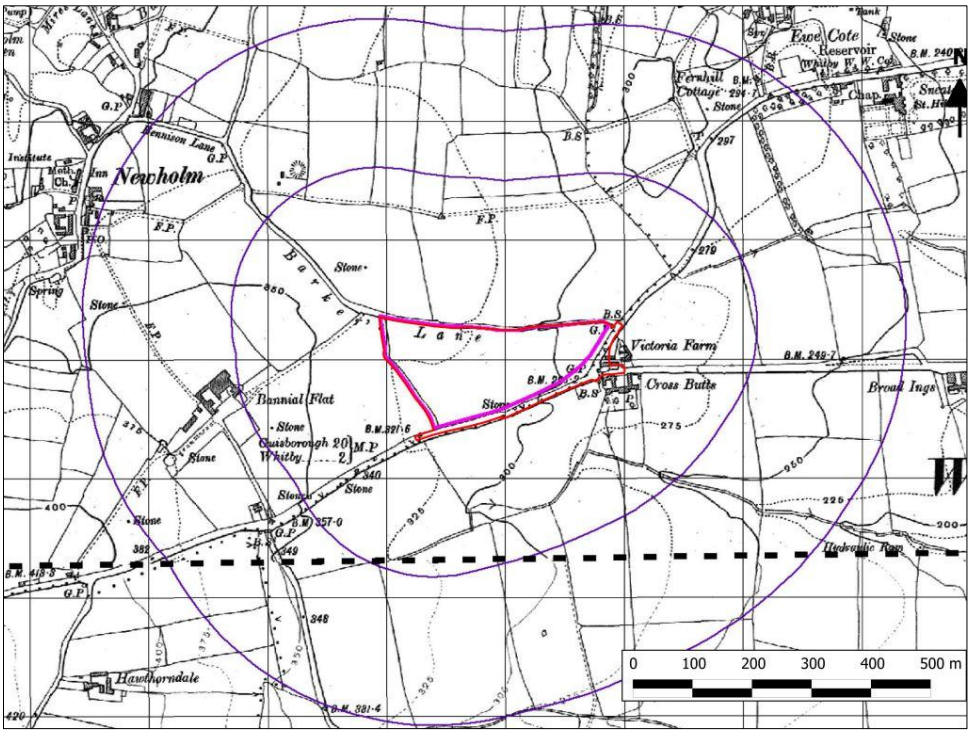


Plate 12

An extract from the Ordnance Survey 6 inch map, 1930

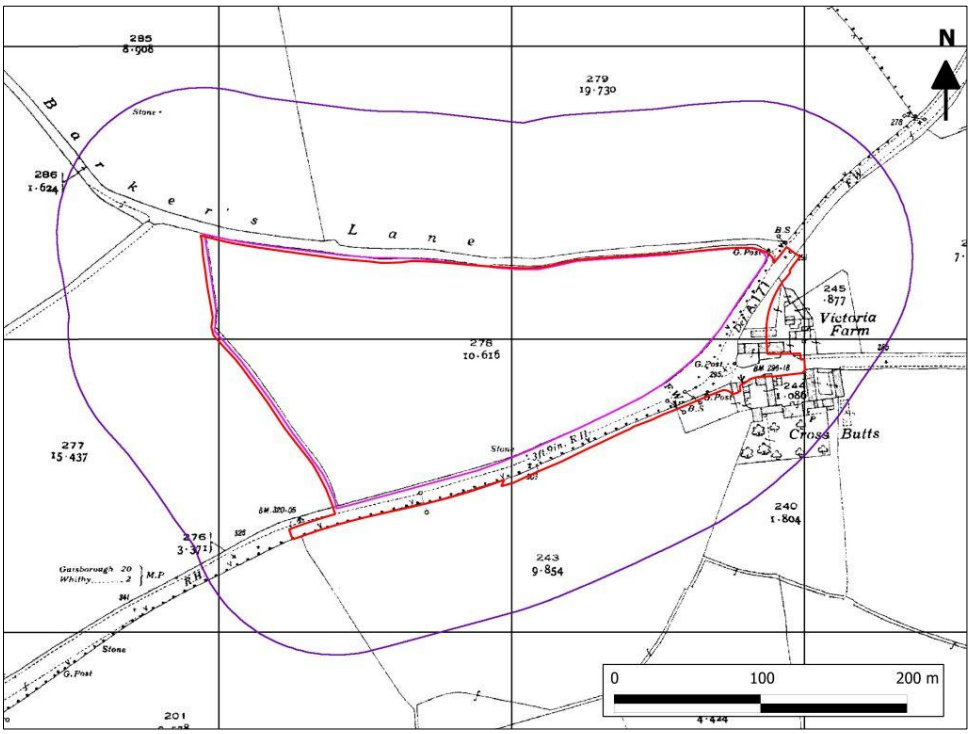


Plate 13

An extract from the Ordnance Survey 25 inch map, 1938

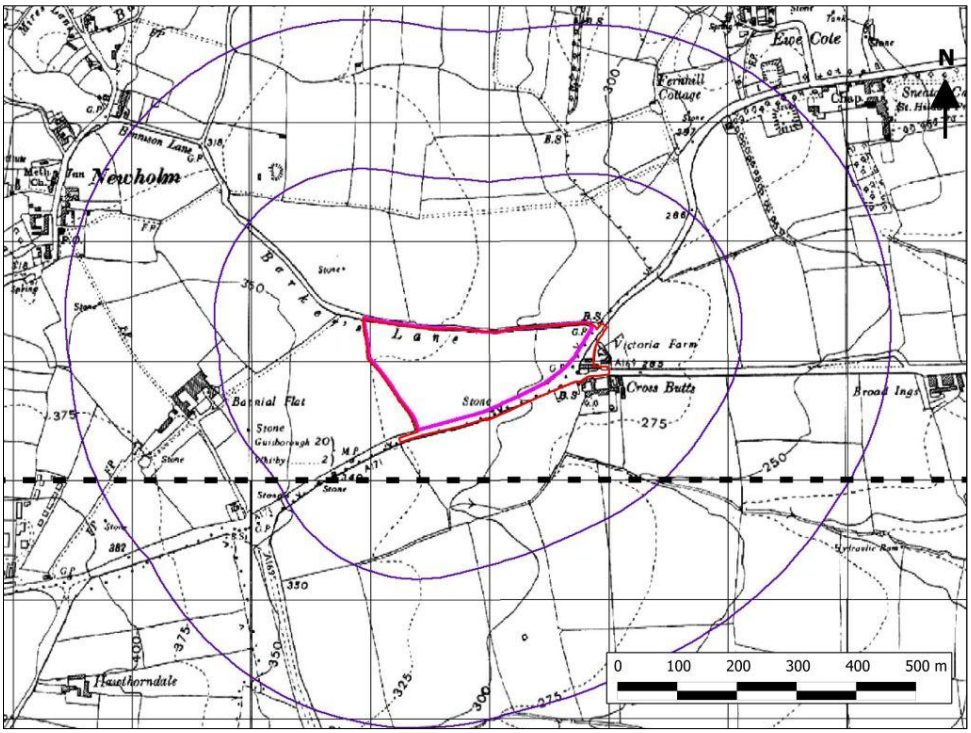


Plate 14

An extract from the Ordnance Survey 1:10 000 map, 1958

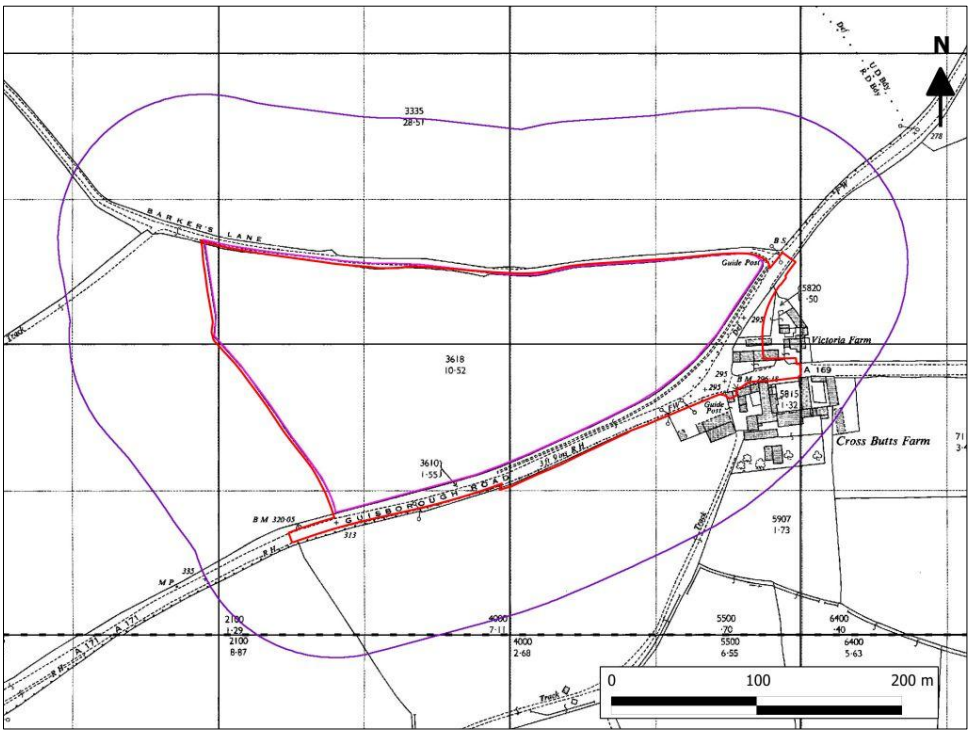


Plate 15

An extract from the Ordnance Survey 1:2 500 map, 1969

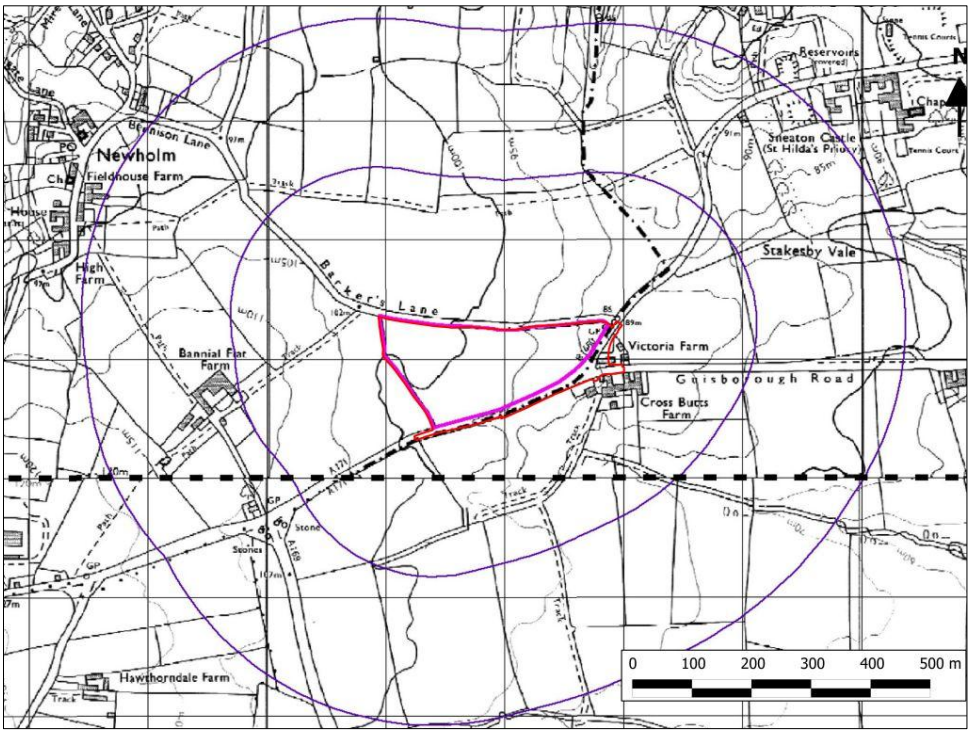


Plate 16

An extract from the Ordnance Survey 1:10 000 map, 1974-9

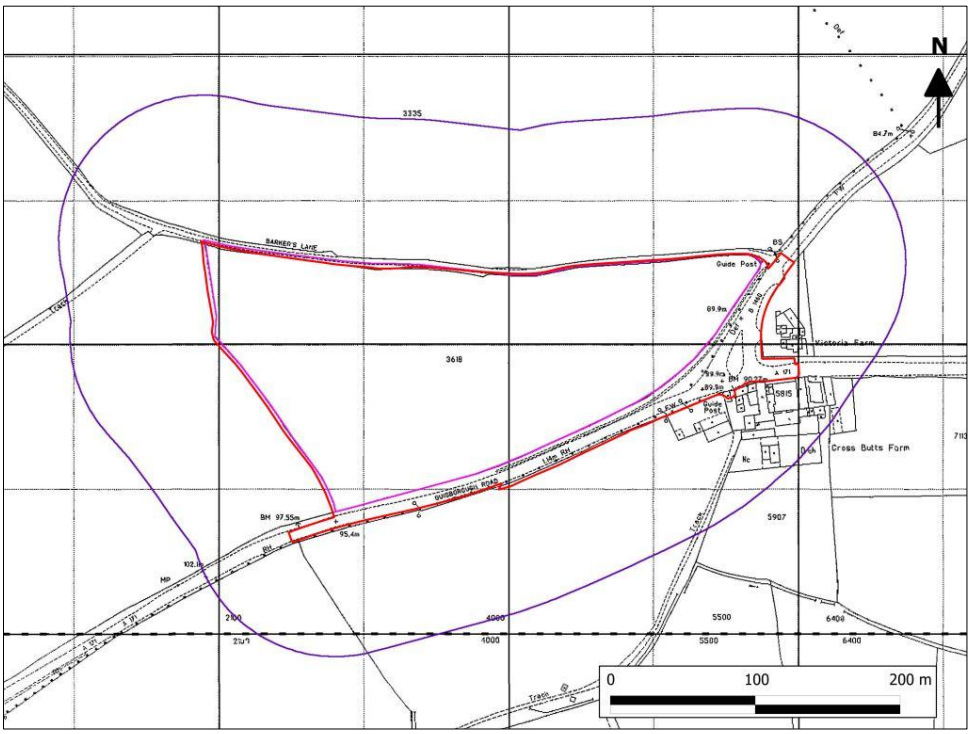


Plate 17

An extract from the Ordnance Survey 1:2 500 map, 1994

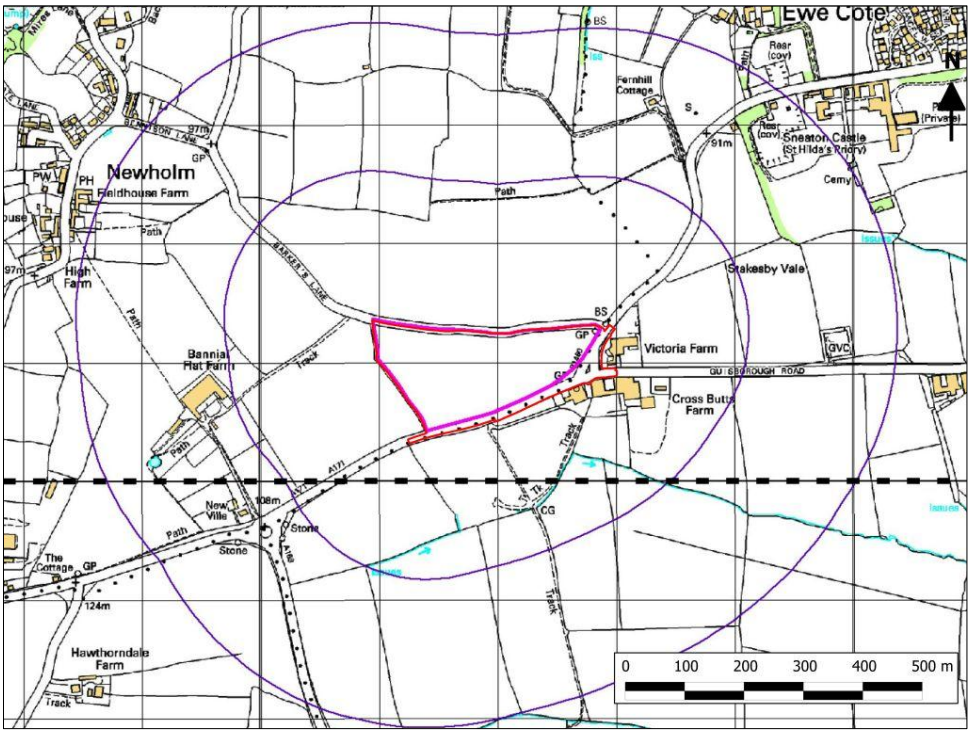


Plate 18

An extract from the Ordnance Survey 1:10 000 map, 2006

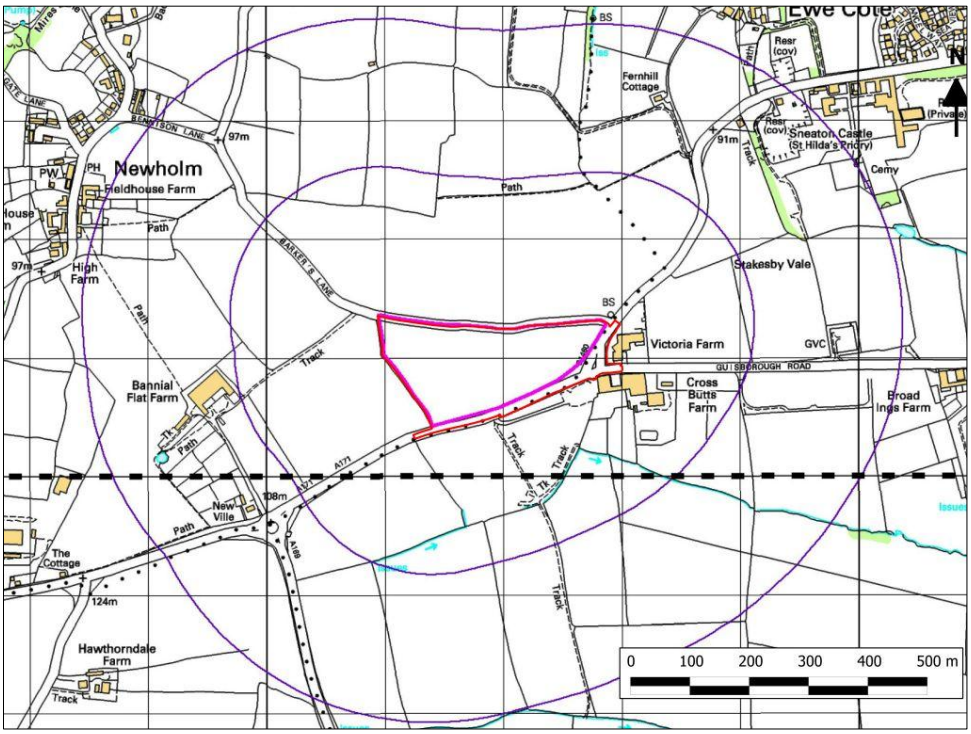
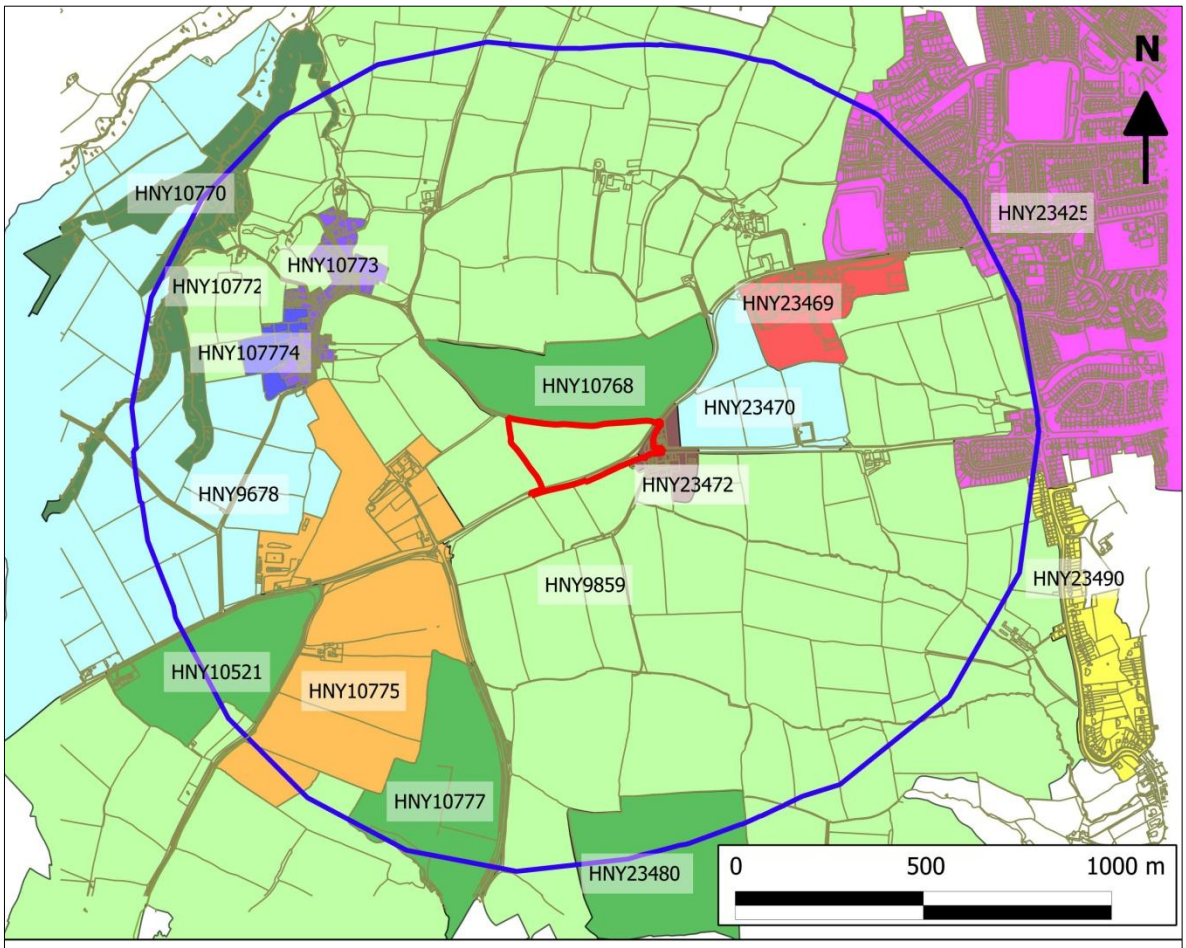


Plate 19

An extract from the Ordnance Survey 1:10 000 map, 2012

Plate 20

View to the southwest along boundary wall HB6



Legend

Proposed Development Area

1 km Study Area

HLC_region

- Enclosed Land: Crofts associated with settlement
- Enclosed Land: Piecemeal enclosure
- Enclosed Land: Unknown planned enclosure
- Enclosed Land: Large scale private enclosure
- Enclosed Land: Modern improved fields
- Settlement: Linear village
- Settlement: Elite residence
- Settlement: Farm complex
- settlement: Planned estate
- Settlement: Semi detached housing
- Woodland: Mixed plantation

Plate 20

An extract from the North Yorkshire Historic Landscape Characterisation

ES8.2 Gazetter of Historical Archaeological Remains

ID	NMR ID	NYMHER ID	NYHER ID	Description	Easting	Northing
AR1	1453287	N/A	N/A	**Ridge and furrow earthworks.** Discrete blocks of ridge and furrow earthworks in Newholm cum Dunsley parish identified by the North East Rapid Coastal Zone Assessment from an air photo dating to1946. These areas were at the southern extent of this survey; it is likely that the NMP of the North Yorks Moors, when available, will extend the mapping of this ridge and furrow across much of the study area.	N/A	N/A
AR2	N/A	5511	N/A	**19th century sandstone quarry.** A sandstone quarry annotated on 1st edition 6 inch series OS map 1853, surveyed but not annotated on 1st edition 25 inch series OS map 1894. A trace of this is visible on 2001 digital OS map.	486889	511076
AR3	1550455	N/A	N/A	**Post medieval quarry and trackway.** A post medieval quarry and associated trackway are visible as earthworks on air photographs. The features are extant on the latest 2009 vertical photography.	48747	51104
AR4	1550454	N/A	N/A	**Post medieval quarry and trackway.** A post medieval quarry and associated trackway are visible as earthworks on air photographs. The features are extant on the latest 2009 vertical photography.	48770	51097
AR5	N/A	N/A	N/A	**Stone (site of).** 'Stone' depicted on the OS 25 inch mapping from 1928 to 1958 inclusive in a field to the east of Ewe Cote Hall.	487911	510787
AR6	N/A	N/A	N/A	**Stone (site of).** 'Stone' depicted on the OS 25 inch mapping from 1928 to 1958 inclusive in a field to the east of Ewe Cote Hall.	488034	510746
AR7	N/A	N/A	N/A	**Stone (site of).** 'Stone' depicted on the OS 25 inch mapping from 1928 to 1958 inclusive in a field to the east of Fernhill Cottage.	487738	510621
AR8	N/A	N/A	N/A	**Well (site of).** A well is annotated on the 1854 OS 25 inch map, but is not shown on later maps.	486462	510760
AR9	N/A	N/A	N/A	**Well (site of).** A well is annotated on the OS 25 inch mapping from 1894 to 1958 inclusive.	486505	510692

ID	NMR ID	NYMHER ID	NYHER ID	Description	Easting	Northing
AR10	N/A	N/A	N/A	**Guidepost (site of).** A guide post annotated on the 25 inch OS mapping from 1928 to 1994 inclusive. This was also depicted on the 2006 1:10 000 raster mapping, but not on the 2012 edition.	486908	510555
AR11	497626 515175	4665	N/A	**Newholm village.** Recorded in Domesday but not in Lay Subsidy. The NMR notes an undated windmill and a post-medieval windmill associated with the village, but gives no further details or precise locations for either.	486700	510500
AR12	29479	758	N/A	**Medieval or later pottery sherds (findspot).** Medieval pottery found at Newholm Manor before March 1936. The pottery was originally described as Roman but re-examined and found to be Medieval. Medieval or later pottery sherds - several green glazed and some of peculiar white ware from the garden of Newholm Manor.	486800	510500
AR13	1550457	4663	N/A	**20th century brickworks (site of).** A 20th century brickworks, consisting of clay pits, is visible as earthworks and cropmarks on air photographs. The earthwork elements appear to be no longer extant on the latest 2009 vertical photography.	48700	51052
AR14	1550453	N/A	N/A	**Ridge and furrow.** Post medieval ridge and furrow, some of which is narrow, is visible as earthworks on air photographs in the parish of Newholm-cum-Dunsley around the settlement of Newholm. Most is extant on the latest 2009 vertical photography.	4865	5103
AR15	N/A	N/A	N/A	**Stone (site of).** 'Stone' depicted on the OS 25 inch mapping from 1913 to 1958 inclusive, on the west side of a footpath running in a north-westerly direction from Banniel Flat Farm.	487757	510294
AR16	N/A	5513	N/A	**Guidepost (site of).** A guide post at the junction of the roads to Dunsley and to Newholm. Annotation on 1st edition 6 inch series OS map 1853 and 1st edition 25 inch series OS map 1894, nothing visible on 2001 digital maps.	486416	509972

ID	NMR ID	NYMHER ID	NYHER ID	Description	Easting	Northing
AR17	N/A	5514	N/A	**Guidepost (site of).** A guide post annotated on 1st edition 6 inch series OS map 1853 and 1st edition 25 inch series OS map 1894, nothing visible on 2001 digital maps.	486429	509757
AR18	1549724	59462	N/A	**WWII military camp.** A Second World War military camp, probably a depot, is visible as earthworks, buildings and structures on air photographs. The site is recorded by the HER as Whitby Selly Hill, an Ordnance Depot from a DOB file. The current DOB database does not include the site, though the interpretation is reasonable. Elements are extant on the latest 2009 vertical photography (NMR entry). This site has the same composition and function SMR 59455 -Workshops, Stores, Explosive Magazine, Boiler House, Offices, Domestic Accommodation for senior personnel. AP shows that there were 21 Nissen Huts for OR accommodation, some of which may have been stores. The plan (in DoB file) which was drawn from oblique AP shows the layout of the Depot, showing the parade ground and probable HQ building (HER entry).	48658	50991
AR19	N/A	N/A	N/A	**Guidepost (site of).** A guide post annotated on 1st edition 6 inch series OS map 1853 and 1st edition 25 inch series OS map 1894, nothing visible on 2001 digital maps.	486686	509817
AR20	N/A	N/A	N/A	**Stone (site of).** 'Stone' depicted on the 1914, 1933 and 1958 6 inch mapping. Situated close to the route of a footpath, so probably erected as a guide stone.	486767	509930
AR21	N/A	N/A	N/A	**Stone (site of).** 'Stone' depicted on the 1914, 1933 and 1958 6 inch mapping. Situated close to the route of a footpath, so probably erected as a guide stone.	586857	510040
AR22	N/A	N/A	N/A	**Well Field (placename).** This field is named 'Well Field' on the Map of Banniel Flat Farm, 1863, indicating that this was formerly the location of a well. No well is depicted on the OS mapping at this location.	4869	5100

ID	NMR ID	NYMHER ID	NYHER ID	Description	Easting	Northing
AR23	N/A	N/A	MNY26010	**Aircraft crash site, Heinkel HE-111 at Bannial Flat Farm south-west of Whitby.** On the 3rd of February 1940 a Heinkel He-111, WerkNr 2323 and identification code 1H+FM, was shot down and crashed at Bannial Flat Farm, sliding over several fields before coming to a stop. Two crew were killed and one survived. This was the first German Aircraft to crash on English soil.	487000	509900
AR24	N/A	N/A	N/A	**Guidepost (site of).** A guide post annotated on 1st edition 6 inch series OS map 1853 and 1st edition 25 inch series OS map 1894. The precise location is difficult to ascertain as there are also two Boundary Stones depicted at the same location (see ?).	487000	509910
AR25	N/A	N/A	N/A	**Boundary Stones (site of).** 'B.S.s' (Boundary stones) annotated on the 1st edition 25 inch OS map and the 2nd edition 1895 6 inch map, apparently either side of Carr Hill Lane where it meets Guisborough Road (the modern A171). This junction has now been replaced by a roundabout, but two large hexagonal sones with pointed capstones are situated either side of this modern feature; these are likely to be the original boundary stones re-located, or replacements. One of these stones has a plaque commemorating the the shooting down of a Heinkel bomber at Banniel Flat Farm (see ?)	487000	509910
AR26	N/A	N/A	N/A	**Stone (site of).** 'Stone' depicted on the 1914, 1933 and 1958 6 inch mapping. Possibly erected as a guide stone, though it is not along the route of any known paths.	487007	510085
AR27	N/A	N/A	N/A	**Stone (site of).** 'Stone' depicted on the OS 25 inch mapping from 1894 to 1928 inclusive, on the north verge of the A171. Nothing is visible at this location today.	487067	509976
AR28	N/A	N/A	N/A	**Stone (site of).** 'Stone' depicted on the OS 25 inch mapping from 1894 to 1938 inclusive, on the south verge of the A171. Nothing is visible at this location today.	487121	509992
AR29	N/A	N/A	N/A	**Stone (site of).** 'Stone' depicted on the OS 25 inch mapping from 1913 to 1958 inclusive, to the west of the course of a footpath	487165	510355

ID	NMR ID	NYMHER ID	NYHER ID	Description	Easting	Northing
				running northwards from Barkers Lane.		
AR30	N/A	N/A	MNY25222	**Furrows and former field boundary (site of).** North to south oriented ridge and furrow and a former field boundary were identified by the geophysical survey carried out by ASWYAS in November 2006 to inform the original ES for the Whitby Park and Ride. The field boundary corresponds with that depicted on the tithe map of 1845 (Plate 3) and the map of Banniel Flat Farm of 1963 (Plate 5), but which was no longer extant by the time of the 1894 OS map (Plate7).	487314	510180
AR31	N/A	N/A	N/A	**Uncertain linear feature.** A discontinuous linear anomaly was identified by the geophysical survey carried out by ASWYAS in 2007 to inform the original ES for the Whitby Park and Ride. No further work was carried out on this feature and its origin is uncertain. Whilst it could be of geological origin, the presence of field systems of probable prehistoric date within the wider area (see AR36 and AR38), and archaeological origin should not be discounted.	487410	510200
AR32	N/A	N/A	N/A	**Stone (site of).** 'Stone' depicted on the OS 25 inch mapping from 1894 to 1938 inclusive on the north verge of the A171. Nothing is visible at this location today.	487415	510117
AR33	N/A	N/A	N/A	**Boundary Stone (site of).** 'B.S.' (Boundary stone) annotated on the OS 25 inch mapping from 1894 to 1938 inclusive, marking the Whitby Borough boundary.	487528	510159
AR34	N/A	N/A	N/A	**Guidepost (site of).** A guide post annotated on the 25 inch OS mapping from 1913 to 1995 inclusive.	487556	510181
AR35	N/A	N/A	N/A	**Guidepost (site of).** A guide post annotated on the 25 inch OS mapping from 1894 to 1995 inclusive. This was also depicted on the 2006 1:10 000 raster mapping, but not on the 2012 edition. Nothing is visible at this location today.	487576	510526

ID	NMR ID	NYMHER ID	NYHER ID	Description	Easting	Northing
AR36	N/A	AH	MNY8838	**Cropmarks of interrupted ditch system and linear feature of unknown date.** Identified from high level air photographs.	487440	509720
AR37	N/A	AI	MNY8839	**Cropmarks of post-mdieval ditch and field system.** Pre-enclosure field system identified from high level air photographs.	487880	509830
AR38	N/A	AJ	MNY8841 MNY8842	**Cropmark of ditched enclosures of unknown date.** A group of enclosures identified from high level air photographs. One of these enclosures may be a ring ditch.	487740	509270
AR39	1549926	N/A	N/A	**Ridge and furrow.** Post medieval ridge and furrow, some of which may be medieval in origin, and narrow ridge and furrow are visible as earthworks and cropmarks on air photographs in the parish of Whitby, west of Ruswarp. Elements are extant on the latest 2009 vertical photography.	487900	509301

ES8.3 Gazetter of Historical Buildings

No.	National Heritage List Entry no.	HER/NMR no.	Description	Eastings	Northings
LB1	1148878	MYO554	**Ye Olde Beehive Inn (Grade II).** Inn. Probably 17th century5 with alterations. Large coursed squared stone, whitewashed. Pantiled roof with stone copings and square kneelers. End brick chimneys. 1 storey and attic, 6 bays, very irregular. 3 dormers, early C20 casements with glazing bars, 2 breaking eaves. Ground floor: 2 early C19 sashes with glazing bars in wood architraves, 1 small fixed light, a boarded door and 3 small plain C20 casements, that on left in stone architrave with triple bay and having an old, small Yorkshire sash above.	486672	510513
LB2	1157287	MYO555	**Methodist Church (Grade II).** Chapel, early 19th century. Coursed squared stone. Pantiled roof with stone copings and square kneelers. I storey and basement. 2 blocked round-arched windows with interlacing glazing bars alternate with 2 flat-headed glazing-bar sashes (one replaced) in wood architraves. Flight of stone steps to boarded door with blocked fanlight in round-arched chamfered opening.	486669	510492
LB3	1148879	MYO646	**Manor Farmhouse (Grade II).** House, late 18th century. Ashlar. Roof renewed in curly clay tiles, stone copings and curved kneelers. End brick chimneys. 2 storeys, 3 windows, late C19 sashes with projecting cills. Central C20 boarded door under stone pedimented-hood on brackets. 1-storey right extension.	486659	510435
LB4	1180052	MYO2078	**Greystone Farmhouse (Grade II).** Farmhouse, early-mid 19th century. Coursed squared stone. Roof renewed in large modern pantiles. Stone copings and curved kneelers; corniced stone centre and end chimneys. Two storeys, 3 bays, wide proportions; and a l-storey end bay at right. Late C19 sashes with heavy lintels and projecting cills. Late C19 panelled door with oblong fanlight.	486978	510825
LB5	1148874		**Newholm Hall (Grade II).** House, late 18th century or early 19th century. Ashlar. Hipped Welsh slate roof with end brick chimneys. 2 storeys, 6 windows, sashes with glazing bars. Central prostyle Doric porch. Left extensions not of interest.	487527	510922
LB6	1148253		**Ewe Cote Cottage (Grade II).** 18th century. 2 storeys in stone. Pantile roof with stone kneelers. 3 casement windows on 1st floor. 3 windows on ground floor, 2 modern. 4 panel door and trellised porch of C19 date. One small sash window with glazing bars to right.	487823	510811

No.	National Heritage List Entry no.	HER/NMR no.	Description	Eastings	Northings
LB7	1148255		**Dovecote and Outbuildings to Ewe Cote Hall (Grade II).** Probably 18th century. Stone building. Pantile roof with stone kneelers. One sloped dormer. Arched entrance. 1 window in gable end and 3 vent holes.	487837	510807
LB8	1204669		**Stables to Ewe Cote Farm (Grade II).** Probably late 18th century origin. 1 storey. Stone. Pantile roof. Stone kneelers.	487850	510802
LB9	1204657		**Garden Wall to Ewe Cote Cottage (Grade II**). Probably late 18th century origin. 1 storey. Stone. Pantile roof. Stone kneelers. All the listed buildings in Guisborough Road, Ewe Cote form a group.	487850	510802
LB10	1316408		**Ewe Cote Hall Farmhouse (Grade II).** 18th century origin. 2 storeys and attics. Pantile roof. 2 gables to rear. Front has 4 semi-dormers and 4 windows on ground floor, modern. Modern 5-light window. Gable has 2 small windows on upper storey, 3 on 2 lower storeys.	487824	510781
LB11	1148254		**The Cottages (Grade II).** Row of 3 empty cottages, probably 18th century. Pantile roof with stone kneelers. 1 storey and attics. one dormer each. Stone. 3 windows, double-hung sashes with glazing bars. Plain doors.	487800	510778
LB12	1148250		**Smeaton Castle St. Hilda's Priory (Grade II).** Probably circa 1830. 2 storeys and basement in ashlar. Crenellated centre section with 5 sash windows, with taller 2-storey projecting crenellated towers at ends of front elevation. Centre has enclosed crenellated porch with 4-centred doorway and steps up with iron rails. Centre of crenellated parapet at top of house is stepped up over coved stone shield of arms. Towers with one sash window per storey with dripmoulds with croisee loops over, and machicolated battlements with small battlemented bartisans. Flat roofs throughout.	488052	510627
LB13	1148251		**Farm Buildings to Cross Butts (Grade II).** Front court of Cross Butts has a 17th century range of 1-storey farm buildings in stone with pantile roofs with 2 chamfered 1-storey farm buildings with 2 chamfered doorways on both sides. Capped gables to road elevation.	487877	510157
LB14	1204616		**Cross Butts (Grade II).** 17th century. 2 storeys in stone. Welsh slate roof with stone capped gables. Originally with 4 stone mullioned windows, but now with double-hung sashes with	487600	510151

No.	National Heritage List Entry no.	HER/NMR no.	Description	Eastings	Northings
			glazing bars. Projecting capped gabled stone porch with slightly stilted chamfered stone archway		
HB1	N/A	N/A	**Boundary Stone.** 'B.S.' (Boundary stone) annotated on all OS mapping from 1853 to 2012 inclusive, marking the ancient boundary of Whitby Borough.	487709	511060
HB2	N/A	N/A	**Boundary Stones (site of/extant).** 'B.S.s' (Boundary stones) annotated on the 1st edition 25 inch OS map and the 2nd edition 1895 6 inch map, either side of a lane running between Fern Hall and Ewe Cote. After 1930, only one B.S. was depicted on subsequent mapping.	487641	510910
HB3	N/A	N/A	**Boundary Stone.** 'B.S.' (Boundary stone) annotated on all OS mapping from 1853 to 2012 inclusive, marking the ancient boundary of Whitby Borough.	487550	510790
HB4	N/A	N/A	**Boundary Stone.** 'B.S.' (Boundary stone) annotated on all OS mapping from 1853 to 2012 inclusive, marking the ancient boundary of Whitby Borough.	487535	510582
HB5	N/A	N/A	**Boundary Stone.** 'B.S.' (Boundary stone) annotated on the OS 25 inch mapping from 1894 to 1995 inclusive, marking the Whitby Borough boundary. This is depicted on the 2012 1:10 000 raster mapping.	487584	510263
HB6	N/A	N/A	**Drystone wall.** A drystone wall of c.200 m length skirts the southern boundary to the main field of the PDA. This wall did not appear on the 1928 or earlier OS mapping, and was first depicted on the 1938 map (App. ES8.1, Plate 13). The wall is constructed of well tooled square and oblong limestone blocks with flat coping stones, standing to a height of c.1.6m (App S8.1, Plate 20).	457473	510152
HB7	N/A	N/A	**Milepost.** Milepost of triangular design with a bevelled top, one of three types designed by Mattison & Co. during the late 19th and early 20th centuries. Around 100 Mattison mileposts now survive in Yorkshire (Yorkshire Milestones.co.uk). It has 'NRYCC' on the bevel, with 'Guisborough 20' and 'Whitby 2' on the faces. 'M.P.' (milepost) is first depicted on the 25 inch OS mapping in 1928; it was not shown on the 1913 map so was presumably erected after this date.	487178	510037

No.	National Heritage List Entry no.	HER/NMR no.	Description	Eastings	Northings
HB8	N/A	N/A	**Boundary stone.** An identical sandstone pillar is located on the grass verge on the opposite side of the roundabout to HB7. It is considered likely that these are boundary stones depicted on earlier OS mapping at this junction (AR25) which were re-located when the roundabout was constructed.	487036	509922
HB9	N/A	N/A	**Commemorative plaque/boundary stone.** A plaque with the legend 'The first enemy aircraft to be shot down in England during the second World War fell 80 yds. opposite this tablet on 3rd February 1940.' is mounted on a sandstone pillar adjacent to the junction of the A169 and A171. This was erected in June 1945 by the North Riding County Council (Norman 1997), on a sandstone plinth. There is a matching sandstone pillar on the opposite side of the A169 (HB8), and it is possible that these are the two boundary stones marked on the earlier OS mapping at AR25, re-located when the new roundabout was constructed here.	486962	509895
HB10	N/A	528721	**Hawthorndale Farm, Aislaby.** A two storey, central entry, double-pile farmhouse built in the first half of the 19th century with a rear single storey kitchen wing. There is a single storey range in line with the kitchen wing and a cart-shed and barn at right angles.	4867	5096
HB11	N/A	N/A	**Trod, Aislabty Lane.** 'From the east end of the village [of Aislaby] some stretches of a paved footpath run alongside the modern Aislaby lane to join the A171 at Hawthorndale (Hayes 1998, 24). This is a section of Evans' 'Long Trod 15' which runs from Sleights in the south, through Newholm cum Dunsley and toward the coast at Raithwaite (Evans 2008, 46-7).	4864	5095

ES8.4 Gazetter of Historical Landscapes

HLCUID	Broad Type	HLC Type	Summary
HNY10521	Enclosed land	Modern improved fields	This is an area of modern improved fields consisting of one large field. It has regular external hedgerows, no internal boundaries, and fragmentary legibility with approximately 75% boundary loss since 1850.
HNY10768	Enclosed land	Modern improved fields	This is an area of modern improved fields consisting of one large field defined by semi-irregular external hedgerow boundaries and no internal boundaries. It has fragmentary legibility with original external boundaries.
HNY10770	Woodland	Mixed plantation	This is an area of mixed plantation which has been planted over both piecemeal and unknown planned enclosure. It has an erratic external boundary of an unrecorded type which is probably variable, and has fragmentary legibility.
HNY10772	Enclosed land	Piecemeal enclosure	This is an area of piecemeal enclosure consisting of small fields in an irregular pattern. It is defined by regular external and internal overgrown hedgerow boundaries and has significant legibility with approximately 35% boundary loss since 1850.
HNY10773	Settlement	Linear village	This is Newholm which is a linear village with low density housing, front and back gardens as private space and a pub for public space. It has partial legibility with some expansion since 1850.
HNY10774	Enclosed land	Crofts associated with settlement	An area of probable crofts associated with the settlement of Newholm. It consists of small semi-irregular fields defined by regular external and internal overgrown hedgerow boundaries, and has partial legibility with up to 30% boundary change since 1850.
HNY10775	Enclosed land	Large scale private enclosure	This is an area of probable private enclosure consisting of medium sized fields in a regular pattern. It is defined by regular external and straight internal hedgerow boundaries. It has partial legibility with up to 75% boundary loss since 1850.
HNY10777	Enclosed land	Modern improved fields	This is an area of modern improved fields consisting of one large field. It is defined by regular external hedgerows and no internal boundaries and has fragmentary legibility with up to 90% boundary loss since 1850.
HNY23425	Settlement	Planned estate	This is an area of modern expansion at Whitby consisting of low density housing in a cul de sac pattern. It has playing fields as public space, front and back gardens as private space and fragmentary legibility with a lot of change since 1850.
HNY23469	Settlement	Elite residence	This is Sneaton Castle which is an elite residence with partial legibility and some additional modern buildings. The house is reused as a hotel and conference centre and has extensive private grounds and

HLCUID	Broad Type	HLC Type	Summary
			car parking as public space.
HNY23470	Enclosed land	Unknown planned enclosure	This is an area of unknown planned enclosure consisting of medium sized fields in a regular pattern. It is defined by regular external and straight internal hedgerow boundaries and has significant legibility with less than 10% boundary loss since 1850.
HNY23472	Settlement	Farm complex	This is Cross Butts which is a farm complex consisting of low density housing with farmyards as private space, car parking as public space and partial legibility with some expansion since 1850.
HNY23480	Enclosed land	Modern improved fields	This is an area of modern improved fields consisting of one large field defined by regular external hedges and no internal boundaries. It has fragmentary legibility with up to 80% boundary loss since 1850.
HNY23490	Settlement	Semi detached housing	This is an area of semi-detached houses between Whitby and Ruswarp consisting of low density housing, with fragmentary legibility and only Ruswarp Lane existing as in 1850. It has no discernible public space and front and back gardens as private space.
HNY9678	Enclosed land	Unknown planned enclosure	This is an area of unknown planned enclosure consisting of medium sized fields in a regular pattern. It has erratic external and straight internal hedgerow boundaries and has significant legibility with up to 30% boundary loss since 1850.
HNY9698	Enclosed land	Piecemeal enclosure	This is an area of piecemeal enclosure consisting of medium sized fields in an irregular pattern. It has regular external and internal hedgerow boundaries and has partial legibility with up to 60% boundary loss since 1850.
HNY9859	Enclosed land	Piecemeal enclosure	This is an area of piecemeal enclosure consisting of medium sized fields in a semi-irregular pattern. It is defined by regular external and internal hedgerow boundaries and has significant legibility with up to 30% boundary loss since 1850.

ES8.5 ASWYAS Geophysical Report (2007)

ARCHAEOLOGICAL SERVICES WYAS

Whitby Park and Ride
Whitby
North Yorkshire

Geophysical Survey

November 2006

Report No. 1615

Golder Associates (UK) Ltd

Whitby Park and Ride

Whitby

North Yorkshire

Geophysical Survey

Contents

Summary

A geophysical (magnetometer) survey covering 4.2 hectares was carried out on land off the A 171 near Newholm, Whitby, where it is proposed to locate a Park and Ride facility. Linear anomalies indicative of ridge and furrow ploughing and trends indicative of more recent ploughing have been identified. Numerous anomalies interpreted as being due to variations in the drift geology have also been located. A degree of linearity exhibited by a series of discrete anomalies could be indicative of an anthropogenic cause but overall, on the basis of the magnetometer survey, the site is considered to have a low archaeological potential.

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Archaeological Services WYAS

PO Box 30, Nepshaw Lane South, Morley, Leeds LS27 0UG

1. Introduction and Archaeological Background

1.1 Archaeological Services WYAS was commissioned by Paul Wheelhouse of Golder Associates (UK) to undertake a geophysical (magnetometer) survey at the proposed site of a Park and Ride facility, south-east of Newholm to the west of Whitby (see Fig. 1).

1.2 The proposed site, centred at NZ 4872 5100, comprises a triangular block of agricultural land, approximately 4.2ha in extent, at the intersection of Barkers Lane to the north, the A 171 Guisborough Road to the south and the B 1460 to the east. Another pasture field to the west bounds the remainder of the site (see Fig. 2). The whole area is within the North York Moors National Park.

1.3 At the time of the fieldwork (between November 20th and 21st 2006) the field was under rough pasture. No problems were encountered during the survey.

1.4 Topographically, the site lies between 90m and 100m Above Ordnance Datum (AOD) being situated on ground that rises up to the moorland plateau west of the site. The site geology comprises Long Nab Member Mudstone and sandstone (Scalby Formation) overlain by reddish (glacial) till drift deposits. The soils are fine loamy over clayey soils with slowly permeable sub soils and slight seasonal waterlogging and are classified in the Flint association.

1.5 The archaeological potential of the site was assessed in the Cultural Heritage chapter of an Environmental Impact Assessment scoping study (Golder Associates 2006). The assessment concluded "*the area does have some potential for pre-medieval archaeological sites, in particular prehistoric settlements and field systems*". Although no archaeological sites were identified within the proposal area, cropmarks which are possibly indicative of prehistoric field systems have been recorded less than 0.5km from the site, to the south of Cross Butts Farm (Sites 6 and 7 - see Fig. 2). The westernmost site (6) possibly contained a ring ditch or burial mound. First edition Ordnance Survey mapping of 1853 (Sheet no. 32) shows the site divided in two by a north-south aligned field boundary.

2. Methodology and Presentation

2.1 Based on the identified archaeological potential of the site it was proposed (in the EIA) that a magnetometer survey should be carried out as a first stage mitigation measure; the general aim of the survey would be to obtain information that would contribute to a greater understanding of the archaeological potential of the site.

2.2 As the site was relatively small (4.2ha) it was proposed that detailed (recorded) magnetometer survey would be carried out over the whole of the area likely to be affected by the proposed scheme.

2.3 Detailed survey employs the use of a sample trigger to automatically take readings at predetermined points, typically at 0.25m intervals, on traverses 1m apart. These readings are stored in the memory of the instrument and are later downloaded to computer for processing and interpretation. Further details are given in Appendix 1. Detailed survey allows the visualisation of weaker anomalies that may not have been readily identifiable by magnetic scanning.

2.4 A Bartington Grad601 magnetic gradiometer was used during the survey with readings being taken at 0.25m intervals on zig-zag traverses 1m apart within 20m by 20m grids. The readings were stored in the memory of the instrument and later downloaded to computer for processing and interpretation using Geoplot 3 software.

2.5 The survey methodology, report and any recommendations comply with guidelines outlined by English Heritage (David 1995) and by the IFA (Gaffney, Gater and Ovenden 2002). All figures reproduced from Ordnance Survey mapping are done so with the permission of the controller of Her Majesty's Stationery Office (© Crown copyright).

2.6 A general site location plan, incorporating the 1:50000 Ordnance Survey mapping, is shown in Figure 1. Figure 2 shows the processed magnetometer data superimposed onto a map base at a scale of 1:4000. The processed (greyscale) and unprocessed (XY trace plot) data, together with accompanying interpretation diagram, are presented in Figures 3, 4 and 5 at a scale of 1:1000.

2.7 Technical information on the equipment used, data processing and magnetic survey methodology is given in Appendix 1. Appendix 2 details the survey location information and Appendix 3 describes the composition and location of the site archive.

3. Results

3.1 Several dipolar discrete anomalies are present across the site. These anomalies are indicative of ferrous objects or other magnetic material in the topsoil/subsoil and, although archaeological artefacts may cause them, they are more often caused by modern cultural debris that has been introduced into the topsoil often as a consequence of manuring or public access. Areas of magnetic disturbance at the site limits are caused by barbed wire in the hedge to the north of the site and by the proximity of a road sign in the case of the area of magnetic disturbance at the eastern site apex.

3.2 Several parallel linear trend anomalies have been identified in the data. The slightly curvilinear, S-shaped, striations indicative of ridge and furrow ploughing are clearly visible in the western half of the site, running north to south parallel with the former field boundary shown on the first edition Ordnance Survey mapping (see Fig. 5). These anomalies are due to the magnetic contrasts between infilled furrows and former ridges.

3.3 Other less visible linear trends have been noted aligned north-east to south-west, parallel with Guisborough Road. These trends reflect the direction of recent ploughing.

3.4 A large number of irregular anomalies comprising discrete areas of enhanced magnetic response have been identified across all parts of the site, with a particular concentration in a band across the centre of the site aligned east-west and another cluster towards the eastern corner. The erratic and essentially random nature of these anomalies would seem to point to a geological rather than an archaeological origin, although in some places the anomalies do seem to have a more anthropogenic appearance; one such linear arrangement of anomalies has been tentatively interpreted as potentially archaeological. However, a geological origin is considered equally likely.

4. Discussion and Conclusions

4.1 Evidence for ridge and furrow ploughing has been identified in the western half of the site. The limits of this former agricultural practice are defined by a north/south aligned field boundary shown on first edition mapping.

4.2 Strong geological responses have been identified throughout the site. It is thought that these anomalies are due to magnetic variations in the material comprising the till drift deposits.

4.3 Although a single (discontinuous) anomaly has been identified as potentially archaeological, on the basis of the magnetometer survey, the archaeological potential of the site is considered to be low.

The figures in this report have been produced following analysis of the data in 'raw' and processed formats and over a range of different display levels. All figures are presented to most suitably display and interpret the data from this site based on the experience and knowledge of Archaeological Services staff.

The results and subsequent interpretation of data from geophysical surveys should not be treated as an absolute representation of the underlying archaeological and non-archaeological remains. Confirmation of the presence or absence of archaeological remains can only be achieved by direct investigation of sub-surface deposits.

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Golder Associates (UK) Limited, 2006. *Report on: Environmental Impact Assessment, Scoping Study, Whitby Park & Ride Facility, North Yorkshire*

Acknowledgements

Project Management

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Fieldwork

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Report

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Graphics

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Figures

Appendices

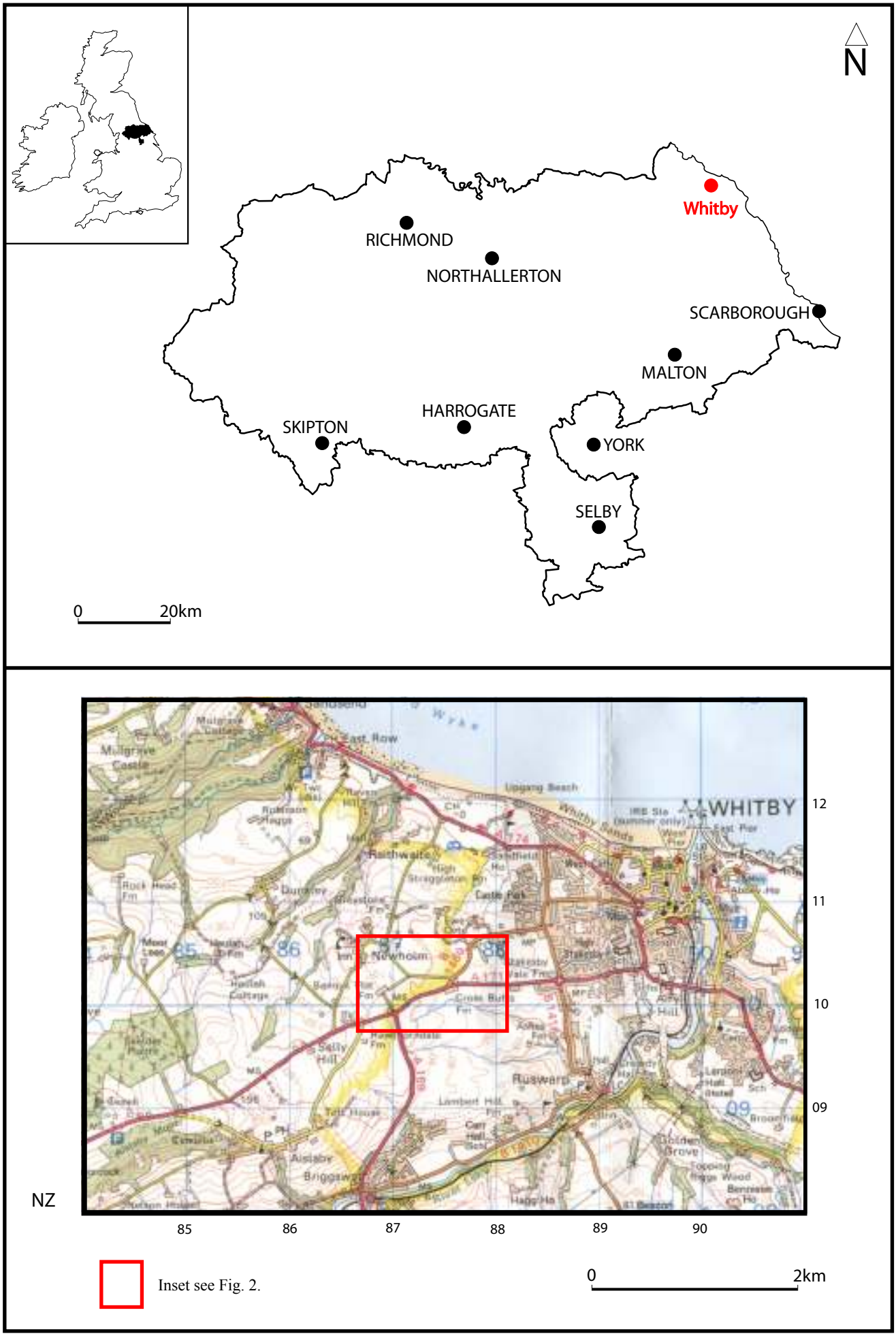

Fig. 1. Site location

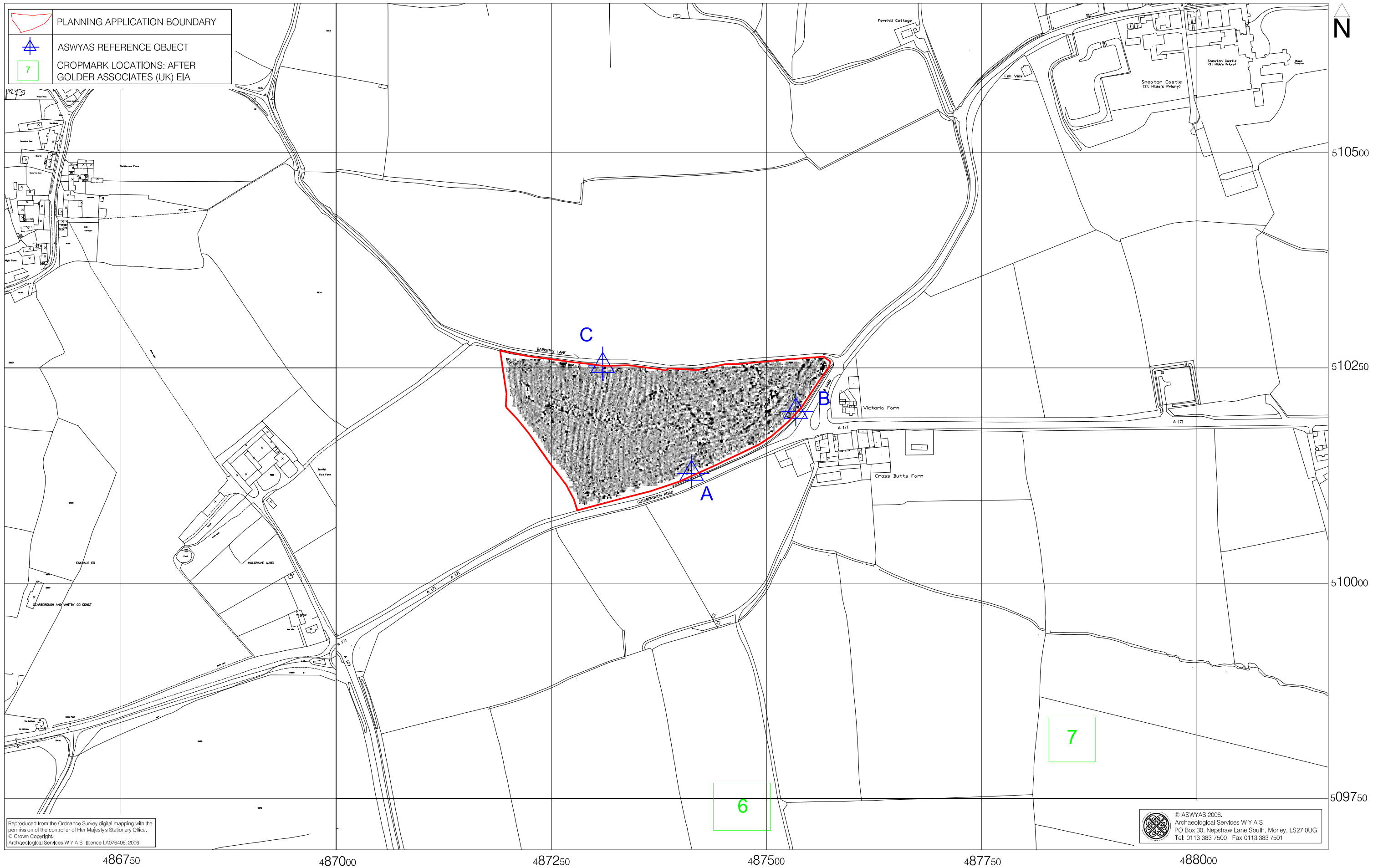

Fig. 2. Site location showing greyscale magnetometer data (1:4000 @ A3)

Fig. 3. Processed greyscale magnetometer data (1:1000 @ A3)

N

BARKER'S LANE

B 1460

GUISBOROUGH ROAD

23.60 nT/cm

5102 50

4872 50

4875 00

0 50m

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Tel: 0113 383 7500 Fax:0113 383 7501

Fig. 4. XY trace plot of unprocessed magnetometer data (1:1000 @ A3)

N

BARKER'S LANE

5102 50

B 1460

FORMER FIELD BOUNDARY

A 171

GUISBOROUGH ROAD

TYPE OF ANOMALY		INTERPRETATION
•	DIPOLAR ISOLATED	FERROUS MATERIAL
	AREA OF MAGNETIC DISTURBANCE	FERROUS MATERIAL
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY?/ GEOLOGY?
	MAGNETIC ENHANCEMENT	GEOLOGY
	LINEAR TREND	RIDGE AND FURROW
	LINEAR TREND	AGRICULTURE

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4872 50

4875 00

0 50m

Fig. 5. Interpretation of magnetometer data (1:1000 @ A3)

Appendix 1

Magnetic Survey: Technical Information

Magnetic Susceptibility and Soil Magnetism

Iron makes up about 6% of the Earth's crust and is mostly present in soils and rocks as minerals such as maghaemite and haemetite. These minerals have a weak, measurable magnetic property termed magnetic susceptibility. Human activities can redistribute these minerals and change (enhance) others into more magnetic forms so that by measuring the magnetic susceptibility of the topsoil, areas where human occupation or settlement has occurred can be identified by virtue of the attendant increase (enhancement) in magnetic susceptibility. If the enhanced material subsequently comes to fill features, such as ditches or pits, localised isolated and linear magnetic anomalies can result whose presence can be detected by a magnetometer (fluxgate gradiometer).

In general, it is the contrast between the magnetic susceptibility of deposits filling cut features, such as ditches or pits, and the magnetic susceptibility of topsoils, subsoils and rocks into which these features have been cut, which causes the most recognisable responses. This is primarily because there is a tendency for magnetic ferrous compounds to become concentrated in the topsoil, thereby making it more magnetic than the subsoil or the bedrock. Linear features cut into the subsoil or geology, such as ditches, that have been silted up or have been backfilled with topsoil will therefore usually produce a positive magnetic response relative to the background soil levels. Discrete feature, such as pits, can also be detected. Less magnetic material such as masonry or plastic service pipes that intrude into the topsoil may give a negative magnetic response relative to the background level.

The magnetic susceptibility of a soil can also be enhanced by the application of heat. This effect can lead to the detection of features such as hearths, kilns or areas of burning.

Types of Magnetic Anomaly

In the majority of instances anomalies are termed ***'positive'***. This means that they have a positive magnetic value relative to the magnetic background on any given site. However some features can manifest themselves as ***'negative'*** anomalies that, conversely, means that the response is negative relative to the mean magnetic background. Such negative anomalies are often very faint and are commonly caused by modern, non-ferrous, features such as plastic water pipes. Infilled natural features may also appear as negative anomalies on some geological substrates.

Where it is not possible to give a probable cause of an observed anomaly a '?' is appended.

It should be noted that anomalies interpreted as modern in origin might be caused by features that are present in the topsoil or upper layers of the subsoil. Removal of soil to an archaeological or natural layer can therefore remove the feature causing the anomaly.

The types of response mentioned above can be divided into five main categories that are used in the graphical interpretation of the magnetic data:

Isolated dipolar anomalies (iron spikes)

These responses are typically caused by ferrous material either on the surface or in the topsoil. They cause a rapid variation in the magnetic response giving a characteristic 'spiky' trace. Although ferrous archaeological artefacts could produce this type of response, unless there is supporting evidence for an archaeological interpretation, little emphasis is normally given to such anomalies, as modern ferrous objects are common on rural sites, often being present as a consequence of manuring.

Areas of magnetic disturbance

These responses can have several causes often being associated with burnt material, such as slag waste or brick rubble or other strongly magnetised/fired material. Ferrous structures such as pylons, mesh or barbed wire fencing and buried pipes can also cause the same disturbed response. A modern origin is usually assumed unless there is other supporting information.

Linear trend

This is usually a weak or broad linear anomaly of unknown cause or date. An agricultural origin, either ploughing or land drains is a common cause.

Areas of magnetic enhancement/positive isolated anomalies

Areas of enhanced response are characterised by a general increase in the magnetic background over a localised area whilst discrete anomalies are manifest by an increased response (sometimes only visible on an XY trace plot) on two or three successive traverses. In neither instance is there the intense dipolar response characteristic exhibited by an area of magnetic disturbance or of an 'iron spike' anomaly (see above). These anomalies can be caused by infilled discrete archaeological features such as pits or post-holes or by kilns. They can also be caused by pedological variations or by natural infilled features on certain geologies. Ferrous material in the subsoil can also give a similar response. It can often therefore be very difficult to establish an anthropogenic origin without intrusive investigation or other supporting information.

Linear and curvilinear anomalies

Such anomalies have a variety of origins. They may be caused by agricultural practice (recent ploughing trends, earlier ridge and furrow regimes or land drains), natural geomorphological features such as palaeochannels or by infilled archaeological ditches.

Methodology: Magnetic Susceptibility Survey

There are two methods of measuring the magnetic susceptibility of a soil sample. The first involves the measurement of a given volume of soil, which will include any air and moisture that lies within the sample, and is termed volume specific susceptibility. This method results in a bulk value that it not necessarily fully representative of the constituent components of the sample. The second technique overcomes this potential problem by taking into account both the volume and mass of a sample and is termed mass specific susceptibility. However, mass specific readings cannot be taken in the field where the bulk properties of a soil are usually unknown and so volume

specific readings must be taken. Whilst these values are not fully representative they do allow general comparisons across a site and give a broad indication of susceptibility changes. This is usually enough to assess the susceptibility of a site and evaluate whether enhancement has occurred.

Methodology: Gradiometer Survey

There are two main methods of using the fluxgate gradiometer for commercial evaluations. The first of these is referred to as ***magnetic scanning*** and requires the operator to visually identify anomalous responses on the instrument display panel whilst covering the site in widely spaced traverses, typically 10m apart. The instrument logger is not used and there is therefore no data collection. Once anomalous responses are identified they are marked in the field with bamboo canes and approximately located on a base plan. This method is usually employed as a means of selecting areas for detailed survey when only a percentage sample of the whole site is to be subject to detailed survey.

The disadvantages of magnetic scanning are that features that produce weak anomalies (less than 2nT) are unlikely to stand out from the magnetic background and so will be difficult to detect. The coarse sampling interval means that discrete features or linear features that are parallel or broadly oblique to the direction of traverse may not be detected. If linear features are suspected in a site then the traverse direction should be perpendicular (or as close as is possible within the physical constraints of the site) to the orientation of the suspected features. The possible drawbacks mentioned above mean that a 'negative' scanning result should be validated by undertaking an agreed sample detailed magnetic survey (see below).

The second method is referred to as ***detailed survey*** and employs the use of a sample trigger to automatically take readings at predetermined points, typically at 0.5m or 0.25m intervals, on zig-zag traverses 1m apart. These readings are stored in the memory of the instrument and are later dumped to computer for processing and interpretation. Detailed survey allows the visualisation of weaker anomalies that may not have been detected by magnetic scanning.

During this survey a Bartington Grad601 magnetic gradiometer was used taking readings on the 0.1nT range, at 0.25m intervals on zig-zag traverses 1m apart within 20m by 20m square grids. The instrument was checked for electronic and mechanical drift at a common point and calibrated as necessary. The drift from zero was not logged.

Data Processing and Presentation

The detailed gradiometer data has been presented in this report in XY trace and greyscale formats. In the former format the data shown is 'raw' with no processing other than grid biasing having been done. The data in the greyscale images has been interpolated and selectively filtered to remove the effects of drift in instrument calibration and other artificial data constructs and to maximise the clarity and interpretability of the archaeological anomalies.

An XY plot presents the data logged on each traverse as a single line with each successive traverse incremented on the Y-axis to produce a 'stacked' plot. A hidden line algorithm has been employed to block out lines behind major 'spikes' and the data has been clipped. The main advantage of this display option is that the full range of data can be viewed, dependent on the clip, so that the 'shape' of individual anomalies can be discerned and potentially archaeological anomalies differentiated from 'iron spikes'. Geoplot 3 software was used to create the XY trace plots.

Geoplot 3 software was used to interpolate the data so that 1600 readings were obtained for each 20m by 20m grid. The same program was used to produce the greyscale images. All greyscale plots are displayed using a linear incremental scale.

Appendix 2

Survey Location Information

The site grid was laid out using a Geodimeter 600s total station theodolite and tied in to the corners of buildings and other permanent landscape features and to temporary reference points (survey marker stakes) that were established and left in place following completion of the fieldwork for accurate geo-referencing. The locations of the temporary reference points are shown on Figure 2 and the Ordnance Survey grid co-ordinates tabulated below. The internal accuracy of the survey grid relative to these markers is better than 0.05m. The survey grids were then superimposed onto a map base provided by the client as a 'best fit' to produce the displayed block locations. Overall there was a good correlation between the local survey and the digital map base and it is estimated that the average 'best fit' error is better than ±1.5m. However, it should be noted that Ordnance Survey co-ordinates for 1:2500 map data have an error of ±1.9m at 95% confidence. This potential error must be considered if co-ordinates are measured off for relocation purposes.

Station	Easting	Northing
A	487413.0130	510127.2864
B	487534.0030	510199.2736
C	487309.6629	510252.4718

Archaeological Services WYAS cannot accept responsibility for errors of fact or opinion resulting from data supplied by a third party or for the removal of any of the survey reference points.

Appendix 3

Geophysical Archive

The geophysical archive comprises:-

- an archive disk containing compressed (WinZip 8) files of the raw data, report text (Word 2000), and graphics files (Adobe Illustrator, CorelDraw6 and AutoCAD 2000) files.
- a full copy of the report

  At present the archive is held by Archaeological Services WYAS although it is anticipated that it may eventually be lodged with the Archaeology Data Service (ADS). Brief details will also be forwarded for inclusion on the English Heritage Geophysical Survey Database after the contents of the report are deemed to be in the public domain (i.e. available for consultation in the relevant Sites and Monument Record Office).