



Historic England



Eden Patteril Caldew Transect Air Photo and Lidar Mapping and Interpretation

Alison Deegan

Discovery, Innovation and Science in the Historic Environment

Eden Petteril Caldew Transect Air Photo and Lidar Mapping Interpretation

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ISSN 2059-4453 (Online)

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SUMMARY

The Eden Petheril Caldew Transect Air Photo and Lidar Mapping and Interpretation Project (EPC) was funded by Historic England and undertaken by Alison Deegan between February 2015 and March 2017. Archaeological features dating from the Neolithic to the mid-20th century that were visible on air photos and/or lidar imagery as cropmarks, soilmarks and earthworks and, in certain cases, as structures were drawn as seen on maps and linked to text-based monument records. This work was undertaken according to the scope and standards of Historic England's National Mapping Programme.

This project produced detailed and accurate mapping and area of 317sq km. It generated records for 767 new National Record of the Historic Environment monuments and enhanced the content of a further 119 existing records.

The air photos and lidar imagery have revealed many new and potentially significant sites including: the upstanding remains of a possible Bronze Age cairn and enclosure on Cumrew Fell; possible Iron Age or Roman enclosures in High Stand Plantation; a possible Iron Age or Roman field system on Broad Field; earthworks that may be the remnants of a significant dwelling at Old Ellerton; a hitherto unknown mill-site near Stockdalewath and a World War 1 camp on Blackhall racecourse, Carlisle.

This project has consulted and consolidated a large body of evidence, through a well-established rigorous and methodical process, into a more accessible dataset and that can be readily disseminated and interrogated by a wide range of users.

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1. INTRODUCTION

1.1 Project Background

This report concerns the Eden-Petteril-Caldew Transect Air Photo and Lidar Mapping and Interpretation Project.

The EPC project was funded by Historic England and undertaken by Alison Deegan between February 2015 and March 2017. This work was completed to the standards of Historic England's National Mapping Programme (NMP).

NMP standard projects are generating a comprehensive record of the archaeology that is visible on air photographs for large areas of England. As of December 2016 50 per cent of the country had been covered by NMP standard projects.

1.2 Geographical Background

The project area, covering 317sq km, is entirely contained within the county of Cumbria and is outside of the Lake District National Park (Fig 1). It constitutes a substantial transect across three river valleys: the Eden, Petteril and Caldew and the land between them. All three rivers flow northwards and converge at Carlisle before meandering north-westward as the River Eden and into the Solway Firth.

The project area encompasses parts of three Natural England Natural Character Areas: NCA 6 Solway Basin, NCA 9 Eden Valley and NCA 10 North Pennines (Fig 2). It also clips the western edge the North Pennines Area of Outstanding Natural Beauty (AONB) (Fig 1).

The low and rounded landscape of the Eden Valley NCA counterpoises the rugged and wild uplands of the North Pennine Fells NCA to the east and Lazonby Fell to the south (Fig 3). The valley owes much of its character to the last glaciation with its distinctive landscapes of drumlins and eskers (Natural England 2013a and 2013b).

The Solway Basin NCA is described as a lowland plain of predominantly pastoral character (Natural England 2015). However the NCA profile also notes the increase of arable cultivation on the low hills and this gradual change can be seen within the project area, particularly between Dalston and Carlisle. In the context of historic environment management, conversion to arable cultivation presents opportunities and threat: opportunities to identify previously buried archaeological remains as cropmarks or soilmarks and the threat that ploughing may bring to both upstanding earthworks and sub-surface deposits.

As a whole the project area is rural in character but the northern edge does intersect the southern side of Carlisle. Carlisle has been identified as

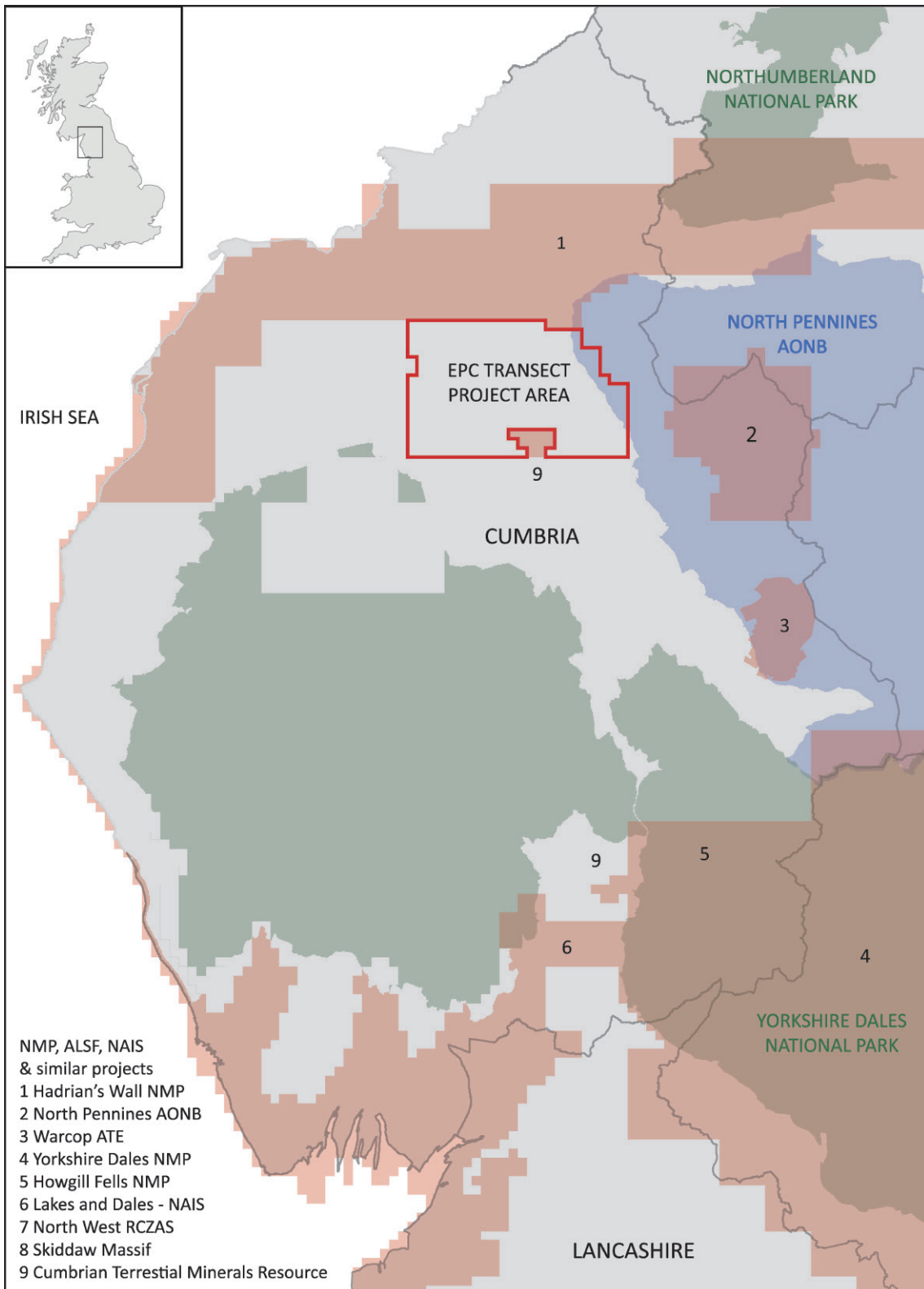


Figure 1 Location of the Eden Petteril Caldew Transect Air Photo and Lidar Mapping Project

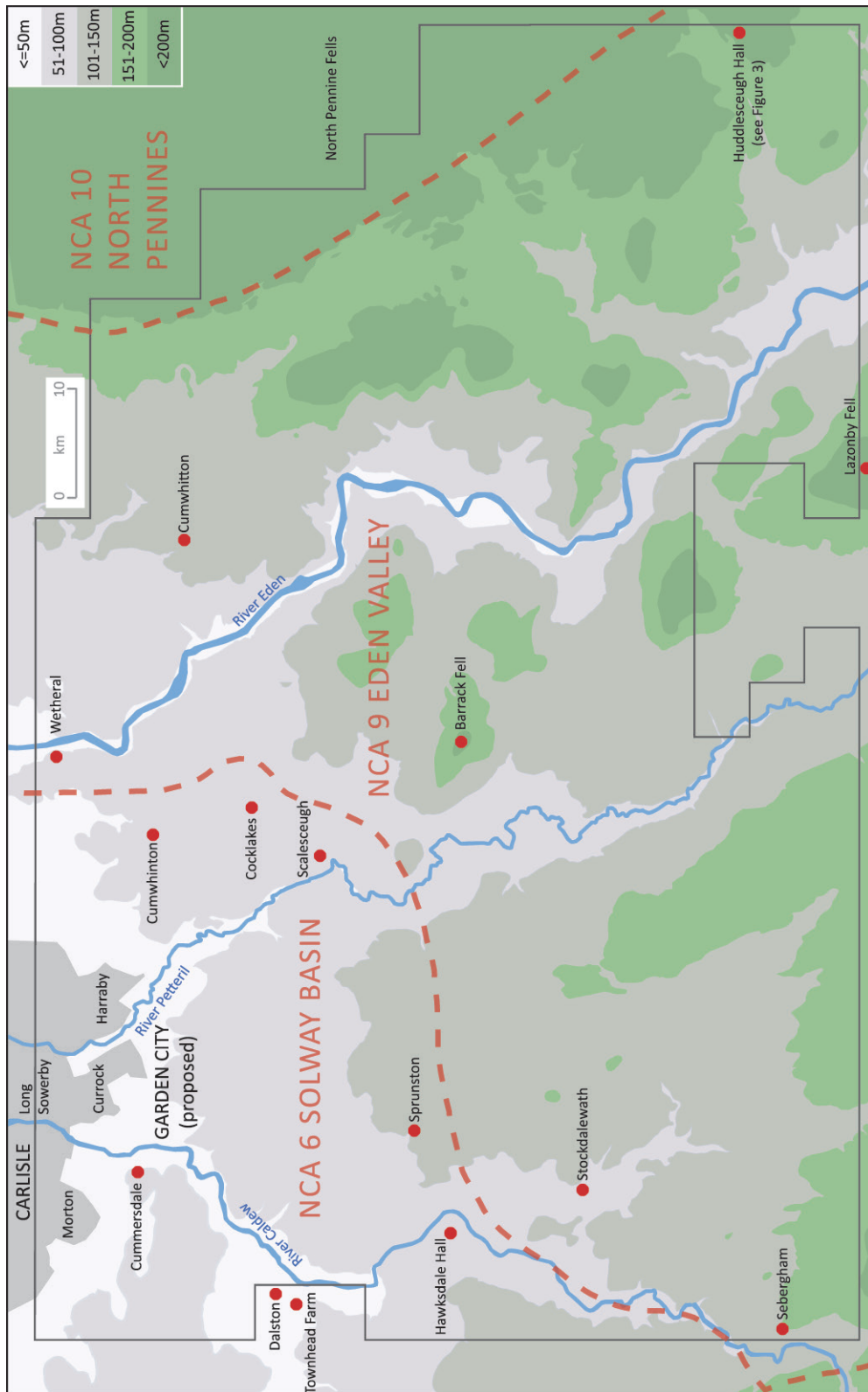


Figure 2 Simplified topography of the EPC Transect, National Character Areas and key place names. (Height Data- <@Obiuesky Internationalai/Getmapping PLC.)

a potential growth point, which brings to the historic environment the challenges presented by development and expansion. The areas of Currock and Long Sowerby in Carlisle were developed in the late 19th and early 20th centuries but Morton and Harraby were still open fields until the mid to late 20th century. With the recent awarding of the Garden Village status to St Cuthberts (Carlisle South) there will be considerable change in this area in the near future including significant infrastructure projects and housing development.

Woodland and forestry are well represented in the EPC Transect with a good distribution of Ancient and Semi-Natural Woodland lining the small rivers and becks, and several large plantations on the broad plateaux.



Figure 3 Viewing looking west across Huddlesceugh Hall towards Lazonby Fell. (28575_027 24-JUL-2014 © Historic England Archive)

1.3 Geology and soils

Carboniferous Coal Measures and Yoredale group limestones with sandstone dominate the area west of the River Petteril and south of the village of Sprunston. The eastern edge of the project area clips the Carboniferous Limestone massif that forms the fells of the Northern Pennines. Triassic Sandstones swathe from Carlisle east and then southward to the south-eastern corner of the project area. These are overlain by Permian Mudstone and Sandstones in the area between the Petterial and Eden and east of the Eden, south of Cumwhinton (Geology of Britain Viewer).

Of minor note is the presence of the Armathwaite-Cleveland Dyke running north-west to south-east across the project area. This is expressed as a long narrow (less than 40m wide) outcrop of Basaltic-andesite that was formed

approximately 56 to 66 million years ago and which runs south-east from Mull over a distance of more than 430km. This igneous rock, being harder and more durable, can be seen standing proud of the surrounding sandstones on the lidar visualisations.

Though the bedrock defines the broad topography of the area the soils and landscape are ameliorated by glacial, post-glacial and riverine deposits. These soften the landscape with tills, sands and gravels and are occasionally punctuated by later peat accumulations such as Wragmire Moss, Tarn Wadling and Cumwhitton Moss. East of the River Eden the glacial and post-glacial deposits are thinner or absent leaving the bedrock exposed, particularly along the margins of the limestone fells.

The three rivers, the Caldew, Petteril and Eden each flow north, the Caldew and Petteril joining the latter at Carlisle. These rivers and their tributaries have brought narrow swathes of alluvium, sands and gravels that broaden into wider river valleys as they passage north.

West of the River Petteril the soils are slightly acid loams and clays with impeded drainage but with some freer draining soils along the River Caldew. Across the Eden Petteril interfluvium and east of the Eden the soils are generally freer draining though still acidic and quite sandy in places (Soilscape).

Although the River Caldew is flanked by well-drained soils, the valley is narrow and wooded so the cropmarks are sparse and discrete. Conversely the slower-draining soils to the east and west of the Caldew are not devoid of cropmarks. Recent aerial reconnaissance has recorded extensive and detailed cropmarks in fields to the south and east of Sebergham and to the west of Brisco. At Sebergham small patches of glacial-fluvial sand and gravel provide the conditions that are favourable conditions for cropmark formation, at Brisco it may simply be the shallowness of the soils and tills over the sandstone bedrock that encourages differential crop growth and ripening. Beyond these areas linear cropmarks are not infrequent, in some places they resolve into recognisable field systems such as those north of Dalston and on Broad Field (*see* Fig 10). These have mostly been recorded from older specialist reconnaissance or vertical photography, which suggests that continued reconnaissance in this area may yield be productive.

Cropmarks are more frequent east of the Petteril, again a few from recent reconnaissance but for many the only sources are older oblique air photos and the historical vertical sorties.

Earthwork survival is sporadic across the EPC Transect area and it is reliant on the persistence of pasture or moorland or by the presence of woodland. Broadly speaking there appears to be a dearth of surviving earthworks, other than post medieval and later extractions sites, on the Eden-Petteril interfluvium and east of the Eden around Cumwhitton. There is better earthwork survival in parkland around Hawksdale Hall, around Sebergham, and where the

land rises towards the North Pennine Fells east of the River Eden. However, the lidar data has been a fundamental source for the accurate assessment of earthwork survival, not only in woodland but in open ground too. As this data set was not complete for the project area at the time of mapping it is quite likely that surviving earthworks are under-recorded in those areas that were without lidar coverage at the time of the survey (see Section 1.5).

1.4 Overview of previous archaeological investigations in the area

In 1789 Hayman Rooke reported to the Lord Bishop of Carlisle on a number of antiquities he had investigated in the county of Cumberland, some of which lie within this project's area. Although his reports were accompanied with drawings and plans in some cases it has been difficult to reconcile these with locations given in later sources (see Section 3.2 and 3.4).

In the early to mid-20th century several specific sites and landscapes drew the attention of the archaeologists: the Broomrigg prehistoric stone circles and cairns, Miss K Hodgson (1935, 1950 and 1952); the Barrack Fell Roman fortlet, Collingwood (1931); Wreay Hall Roman signal station and Park House Roman fort and the tilery at Scalesceugh, Bellhouse (1953 and 1954).

In the 1970s Bellhouse and Richardson returned to the Roman tilery at Scalesceugh, which had first been identified in 1915-16 (1971, 1973). In the 1980s, Higham and Jones undertook trenching at one of the sites investigated by Rooke: Castlesteads near Stockdalewath, and a neighbouring enclosure (1971, 1973 and Higham 1981)

Professor Barry Jones undertook work at Cummersdale Roman Fort in 1995, having identified the site from the air earlier in the season (Burnham *et al* 1996, 405). However by the 1990s, in the face of development and planning policy guidance, the impetus for archaeological investigations was moving from research towards mitigation. Most evaluations and excavations from then on have been undertaken ahead of truncation or destruction. These investigations have been undertaken by numerous archaeological units and organisations. The method of investigation has also developed to incorporate formal processes for desk top research, walkover surveys, geophysical prospection, trial trenching and evaluation as well as open area excavation.

Urban Carlisle and its immediate periphery have, unsurprisingly, seen the bulk of such work, prompted by infrastructure schemes such as the Northern Relief Road (for example Oxford Archaeology North 2011), developments across several land parcels near Morton on the south-west side of the city (for example Oxford Archaeology North 2002) and around Garlands Hospital on the south-east side (for example Neighbour and Johnson 2005).

Smaller towns and villages within the project area have received less attention, though there are exceptions such as the investigations at Dalston

Hall, Cocklakes in Wetheral, and the important discoveries at Townhead Farm (Martin 2010, Giecco *et al* 2001 and Robinson and Town 2015).

One of the more spectacular finds in the rural project area came from a chance discovery of a Viking brooch by metal detectorist at Cumwhitton. This led to the detailed excavation and subsequent analysis of a small Viking-age cemetery (Paterson *et al* 2014).

1.5 Method Summary

In general this project recorded archaeological features dating from the Neolithic to the mid-20th century that were visible on the aerial imagery as cropmarks, soilmarks, earthworks and in some cases as structures. The archaeological scope broadly mirrors the NMP Sphere of Interest (Winton 2016, Section 5). The main aspects that are pertinent to this particular project and any divergence from it are summarised in Appendix 1.

This project utilised print and digital air photos and lidar data together with existing monument records and historical Ordnance Survey maps. Three collections of air photographs were consulted for this project and the holdings for these are summarised in Table 1.

Collection Name	Quantity consulted	
	Oblique air photos	Vertical air photos
Historic England Archive. The Historic England Archive, The Engine House, Fire Fly Avenue, Swindon SN2 2EH Loan numbers: 90481 – 904844	772 specialist 85 military obliques Also frames from unaccessioned HE films: 28457, 28458 and 28460	2840
Cambridge University Committee for Aerial Photography (CUCAP) University of Cambridge, Air Photograph Library, Sir William Hardy Building, Tennis Court Road, Cambridge CB2 1QB	122 (but see below)	20
Cumbria HER County Hall, Kendal, Cumbria, LA9 4RQ	474 (of which 104 were duplicated in HEA or CUCAP loans)	88 (of which 67 were duplicated in HEA loan)

Table 1 Air photo collections and summary of material consulted (includes duplicates between collections)

In July 2016 the CUCAP collection was closed to external users. Previous to that prints had been made available on loan to this project in blocks of 100 photos. At the point of closure approximately two-thirds of the air photos covering the project area had been examined. A small number of the remaining third are duplicated in the HEA or CHER collections. The areas for which the CUCAP photos have not been examined are those lying within map sheets NY44NE, NY54SE, NY55SE, NY54NE, NY44SE and NY54SW.

The vertical air photographs were taken by the Royal Air Force, Meridian Air Maps Ltd and Ordnance Survey for military, civil engineering and cartographic purposes rather than to record archaeological sites. However many of these images do show earthwork features and some cropmarks and they cover all parts of the project area on several occasions from the mid-1940s to the 1990s. Although all areas had some vertical coverage this was notably sparser in the south-east of the project compared to the area south of Carlisle.

The oblique air photographs are fairly numerous but as Figure 4 shows there are large areas where specialist photography is absent. The more recent and so better quality photographs are concentrated in a handful of locations.

Geo-referenced 25cm resolution colour digital air photos were supplied to this project via the Aerial Photography for Great Britain agreement. This data was supplied 1km² tiles and the coverage was captured on various dates in 2009.

Environment Agency lidar data was available at 1m resolution for approximately 28 per cent of the overall project area and at 2m resolution for a further 40 per cent (Fig 4). This data was processed as 16 direction hill-shade visualisations with no vertical exaggeration. If it were felt that it could enhance the interpretation, additional models with some vertical exaggeration or single-direction views were generated. Processing was undertaken using the Relief Visualisation Toolbox V. 1.1.

The print air photographs were examined under magnification and stereoscopically where possible. Photographs selected for transcription (rectification and mapping) were then scanned at 400 dpi, and output as uncompressed TIFF format images (.TIF).

Scanned images and digital obliques were rectified using the specialist software AERIAL5.36. Control information was mostly derived from the Ordnance Survey Mastermap™ 1:2500 scale vector maps, which were also used as a background for mapping. Accuracy for the Ordnance Survey raster 1:2500 maps is in the range of ±2m and acceptable tolerance for rectification of photographs is generally ±2.5m.

The rectified air photographs and digital imagery, including the lidar visualisations were then collated in the GIS (MAPINFO Professional 12.0-16.0) where the archaeological features were

digitised into a mapping layer. Ditched, banked and structural features were depicted with detailed polygons that depicted their width and shape. Earthwork slopes were depicted with a T-hachure convention indicating the top of and the direction of slope. Ridge and furrow was mapped with an outline to indicate the extent of the land or block and annotated with a single arrow to show the direction of the plough furrows.

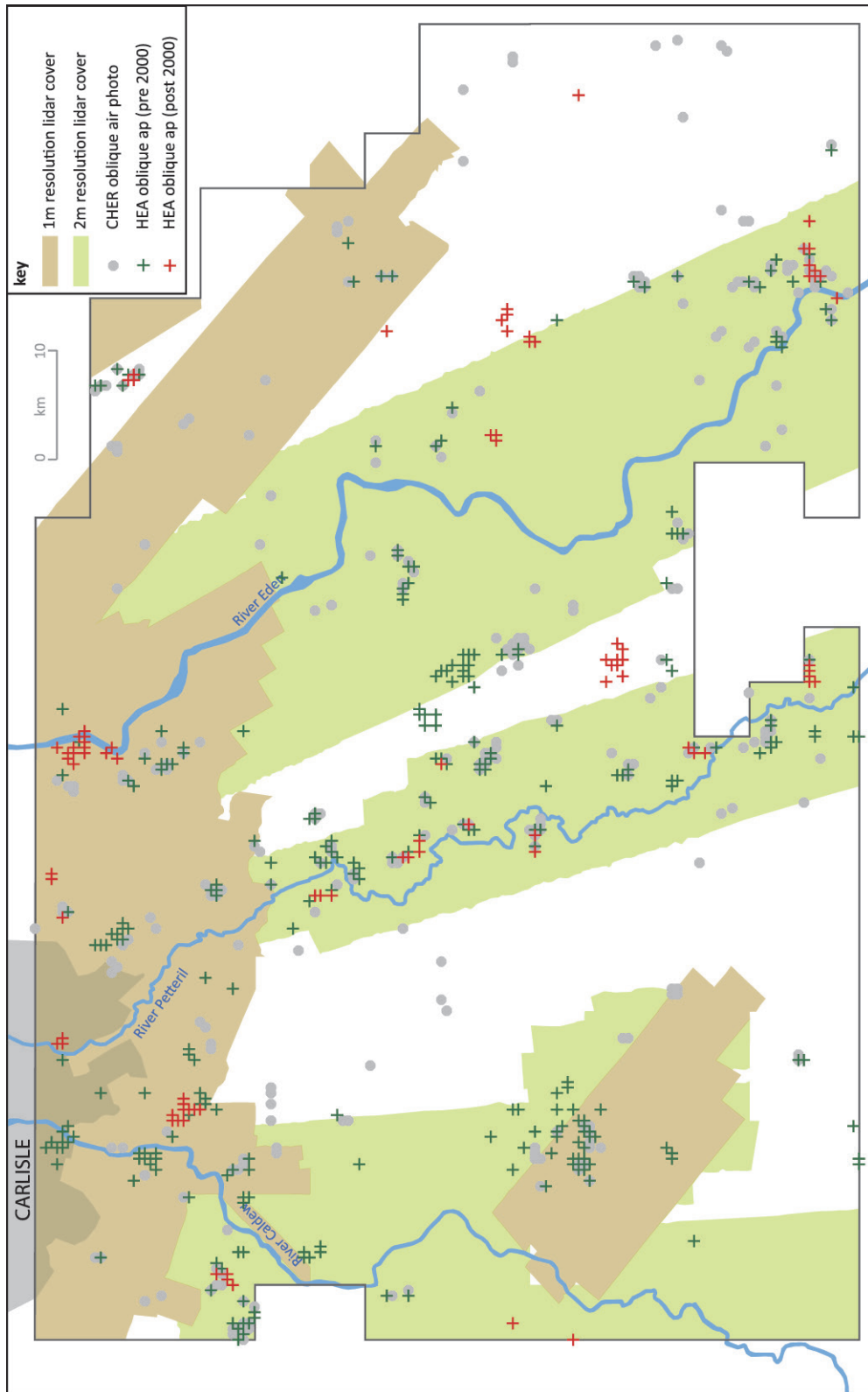


Figure 4 Extent of 1m and 2m Environment Agency lidar data consulted during the project and the distribution of CHER and HEA oblique air photos

There are two strands to the project's recording strategy: the creation of new or the enhancement of existing monument records in the NRHE and the addition of object data within the GIS. The NRHE monument records created or enhanced by this project record the location, the monument types present and their dating, the latest condition, a free text description of the monument or monument group, the source of record information (that is photograph, lidar tile and any bibliographic or cartographic references) and administrative details such as concordance with SMR/HER records, record authorship, and links to NRHE event records and archives. The content of the GIS object data is listed in Appendix 2 and enables the management and interrogation of the map data.

During the lifetime of the project the air photos, mapping and recording for sample areas were examined and checked by the Historic England Project Assurance Officers to ensure the product met the NMP standard.

2. PROJECT REVIEW

This is a review of the aims and objectives defined in the original project design (Deegan 2014, 5-7). Some of the strategies have been superseded during the lifetime of this project.

This project was driven by the following specific aims and objectives, which were linked to the relevant the English Heritage Research Agenda 2005-2010 theme and sub-theme:

Aim	To generate baseline archaeological information to inform national heritage management strategies, county-level heritage management strategies and contribute to SHINE (Selected Heritage Inventory for Natural England). [Theme A1]
Objectives	To systematically examine existing air photographs in accessible collections in tandem with lidar-derived images
	To accurately map the location and plan-form of archaeological monuments that are visible as crop marks, soilmarks and/or earthworks on these sources in a GIS environment
	To record hitherto unknown or unrecognised monuments and to review, corroborate and refine existing records in the NRHE
Outcome	GIS data (digital mapping) and textual monument records has been generated for 317km ² of land in the county of Cumbria.
Aim	To provide a basic statement of monument condition [Theme D1]
Objectives	To utilise the latest available photographs and the lidar-derived images to evaluate the latest known condition of each monument
	To analyse and report on broad patterns of survival in relation to soils, geology and past and present landuse
Outcome	The most recently observed condition of each monument has been recorded in the GIS spatial data and is summarised in the NRHE records. This will allow both an overview and a fine grain analysis of monument condition
Aim	To heighten the awareness of the NMP, this form of remote sensing and this project amongst a broad audience [Theme C2]
Objective	To generate a web presence to signpost this project
Outcome	A webpage has been created to signpost the existence of this project data, to demonstrate the diversity of the remote sensing imagery that contributed to this project and to highlight some of the project's findings

Other outcomes

- By production of an NMP-type dataset this project may contribute to Activity 4G2 Ploughzone Archaeology. There is potential to study the spatial distribution of ploughzone evidence against the project mapping data and have one inform interpretations of the other.
- This project has addressed a key recommendation in the NMP Strategy, that being 'Encourage NMP projects in those areas most likely to see major new house building and infrastructure schemes', by providing NMP coverage for the area of the potential Growth Point at Carlisle (Horne 2009, 20)

- The 2007 North-West Archaeological Regional Research Framework identified a dearth of systematic air photo mapping in the wider North-West Region (Brennand ed 2007, 23). This project has contributed to Initiative 1.29 'The region needs an assessment of the current aerial photograph archive and a programme of systematic mapping and interpretation'

3. PROJECT RESULTS

3.1 Overview

This project generated 767 new NRHE monument records and enhanced or amended 119 existing monument records. Of all the records created in the NRHE by this project 756 were not concorded with an existing HER suggesting that these will be new to the HER.

In the following discussion of some the project's result all references to NRHE monument records are given in brackets for example (23599) and references to Cumbria HER monument records are prefixed with CHER.

3.2 Prehistoric monuments and burials

Taking the distribution of stone tools and monuments that are recorded in the NRHE and CHER as an indicator, Neolithic and Bronze Age activity appears to have been widespread across most parts of the project area (Fig 5). Although there are several finds and monuments recorded west of the Petteril and east of the Eden they are rather sparse on the Petteril-Eden interfluvium. Most of the finds are axe or arrowheads, many were recovered in the mid-20th century or earlier and the precise location of these findspots is not recorded.

The types of monuments pertaining to this period that were already in the archaeological records are flat burials and cremations, sometimes associated with a small cist; earthen mounds or stonework cairns, known or assumed to have marked burials; and megalithic structures, either single stones or arrangements of stone.

Flat burials and cremations were recovered at Garlands Hospital in 1861 (CHER414) and at Kirkoswald in 1970 (12447) as a result of groundworks and an urn and cist were disturbed by ploughing on the overlooking Broomrigg Plantation (12381). Although the latter is described as having been recovered when a field was first ploughed in 1947, no mound was noted at the site in the description. Unsurprisingly burials such as this were not identified on the air photos or lidar visualisations.

There are a small number of cairns, barrows and associated monuments west of the Petteril and east of the Eden, so reflecting the slightly higher distribution of finds in these areas.

Of the cairns or barrows previously recorded west of the Petteril none were identified on the air photos. In 1789 Rooke described his investigations at 'Stonerise-camp' and of the enclosed stone settings and burials that he found there (1789b 224) (Fig 6). The modern monument records place this site at Stone Raise, north of Sprunston (CHER 722, 11341). Rooke clearly states that 'Stonerise-camp' was on a large area of common land known as Broad Field.

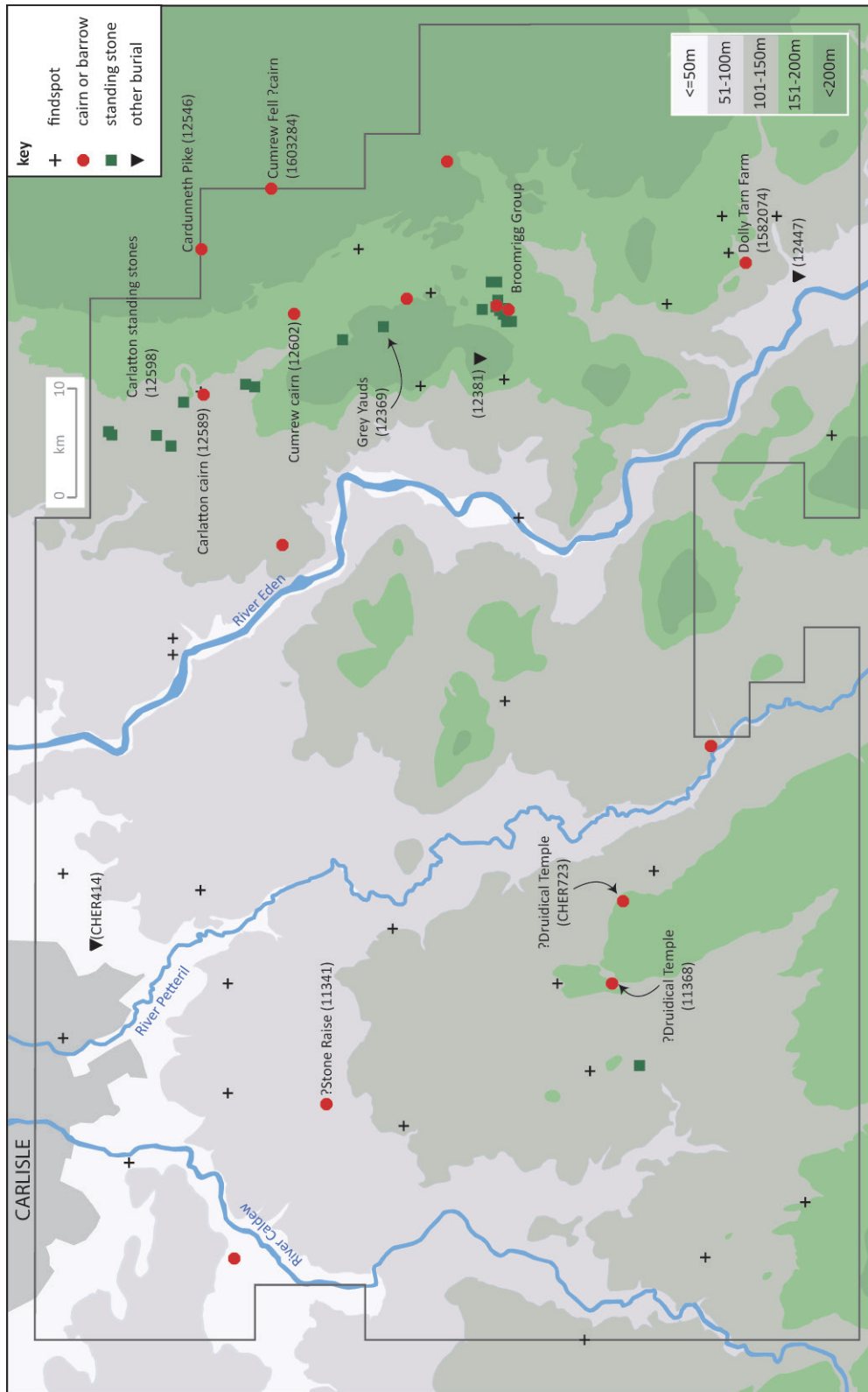


Figure 5 Distribution of known and possible Neolithic and Bronze Age monuments and other sites mentioned in the text, derived from the NRHE and CHER. (Height Data – ©Bluesky International/Getmapping PLC.)

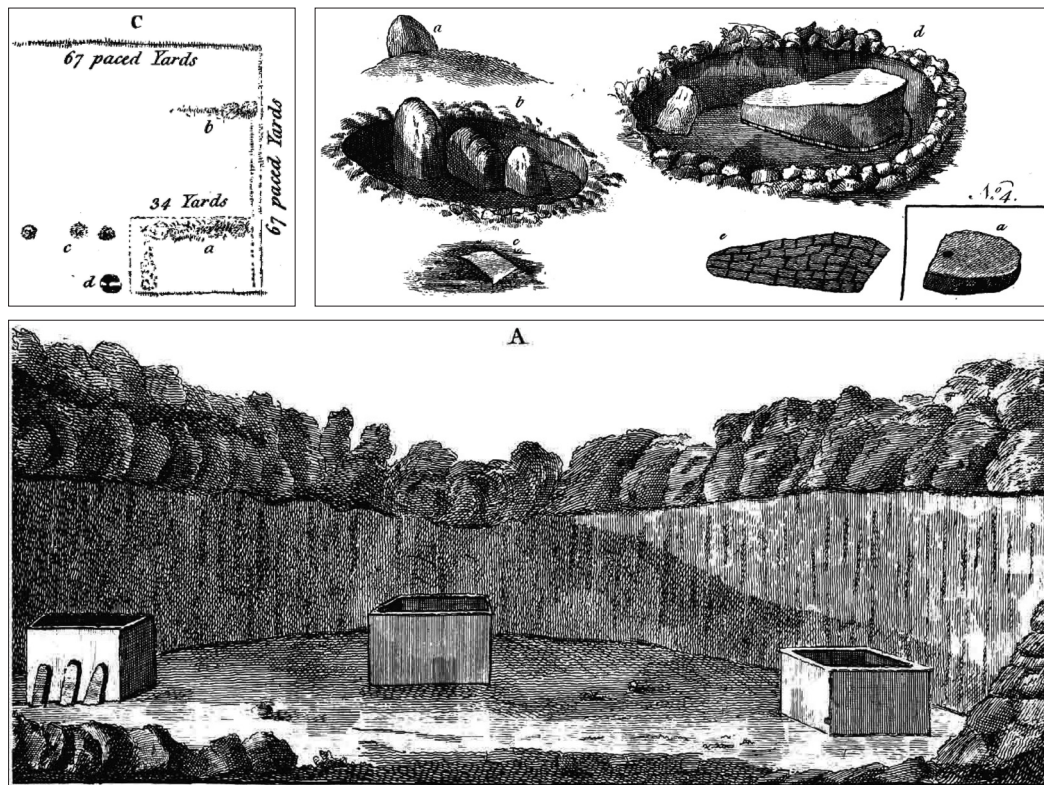


Figure 6 Hayman Rooke's plans of a Druidical Temple (bottom) and burials at Stoneraise (top) (Rooke 1789a and 1789b)

However Donald's map of 1770-71 map suggests that the area of Stone Raise, which it does not name, lies outside of the common. Rooke also asserts that it was within half a mile of enclosures at Castlesteads and Whitestones (1789a, 223) (see Fig 10). However there is a distance of 4.6km (2.8 miles) between the Sprunston Stone Raise and the Castlesteads enclosure (10515). Stoneraise is not a unique placename in Cumberland and there are two other examples: a Stone Raise cottage, 11km to the north east of Castlesteads at High Stand Plantation and another Stone Raise tumulus (12196) near Great Salkeld, 17km away.

Rooke's texts present a second mystery with his 'Druidical Temple'. He describes an impressive monument, a flat topped mound some 63ft (c 20m) across, with possible stone settings, beneath which he found a number of stone chests (1789b, 106) (Fig 6). The monument records put this site either at Broadfield House (CHER723) or a little to the west on Broad Field (11368, see Figs 5 and 10) but there is nothing visible at either location on the air photos or lidar imagery. Again Rooke's own positioning of his 'Druidical Temple' in relation to other places is at odds with these purported locations (1789a, 105-106). He describes it as near High Head Castle, at 'the S.W. end of Broad Field' and within 1 mile of the Castlesteads enclosures. He also puts it in the middle of a field that had been enclosed for about 60 years. Donald's 1770-71 map shows two areas of enclosed land at the south-west end of Broad Field: the strip of land that runs along the River Ive and a smaller parcel between the Bassen Beck and the High Head Castle gatehouse (see Fig 10). This project

recorded two slight mounds in this area (1599797), close to the remains of 'Low House' (see 1599793). The presence of the 'low' placename, meaning 'rounded hill' may indicate one or both these mounds have some antiquity. These may be worth considering as candidates for the post-excavation remains of Rooke's 'Druidical Temple'.

Between the River Eden and the fells to the east there are a small number of cairns or barrows (Fig 5). The monument near Cumrew (12602) can be seen as a slight mound at the junction of the field walls. Several monuments including two small cairns (12393 and 12390) were investigated by Miss Hodgson in the early 20th century on the Broomrigg Plantation. Although some of the Broomrigg monuments can be seen on recent air photos where their presence has interrupted the otherwise dense tree planting, smaller features such as these cairns remain hidden. Although the tree cover was sparser on the earliest air photos these were of too small scale to identify many of the smaller monuments. Unfortunately there was no lidar coverage of this archaeologically significant landscape. By contrast the barrow at Carlatton (12589) is clearly visible on a number of air photos and the lidar imagery. Rather telling though, this monument is thought to have been enlarged by the addition of stone cleared from the surrounding field, which would have further protected it from the threat of plough damage or removal.

The most striking distribution on Figure 5 is the line of megalithic monuments that run between Carlatton and Broomrigg on the east side of the River Eden. This chain of standing stones, small stone circles and other stone settings runs parallel to the edge of the fells, overlooking the broad trench of lower ground that runs between the two. Locally the Broomrigg group are clustered around the head of the unnamed beck above Far Shields. As noted above some of the Broomrigg stone monuments are visible on the air photos (for example Broomrigg C, a small stone circle 12375). Amongst the Broomrigg monuments Miss K Hodgson recorded a ditched enclosure measuring 167x163ft (c 50m diameter) 'possibly the fence around a circular plantation' (1935, 78). This she places approximately 700ft (213m) east of the field wall between Broomrigg and Wallmoor Plantations and 500ft (150m) east of the small stone circle Broomrigg D. She also describes it as surrounding the top of a small rise, although the contour data gives not indication of a rise at this location. There is nothing of note at this spot on the air photos, even though there was no tree cover here on the earliest images. Intriguingly though the historical air photos do show faint traces of the eastern edge of a possible sub-circular enclosure some 48m in diameter approximately 250m north of this location (1606475). This feature encircles a small knoll and lies approximately 150m of the wall. This may be Broomrigg E, but as Hodgson suggested, it may not be of great antiquity. Unfortunately both locations have now been heavily disturbed by the tree planting and verification of this suggestion would probably require intrusive investigations.

Grey Yawds sits below the summit of Lawson Hill, with a view towards Newbiggin (12369). 'Grey Yawds' was described by Nicolson and Burn in the

late 18th century as a near exact circle of about 88 ‘pretty large sparry stones’ and a single larger stone standing a little to the north- west (1777, 495). In the late 19th century Rome Hall was reporting that ‘their number is now much reduced’ and that ‘the stones have been broken up and used for the adjoining field- walls’ (1883, 468). Ground photographs of the remains Grey Yauds stone appear to confirm this with a number of large irregular grey boulders protruding beneath the smaller more regular walling stones (http://www.themodernantiquarian.com/site/1709/grey_yauds.html). The single stone can be seen on the air photos towards the north-west corner of an otherwise small and featureless field.

The Carlattan standing stones are widely dispersed over the hummocky post-glacial landscape that lies between Cairn Beck and the foot of the fells (12598). They were described as group of six stones by Mrs K Hodgson in 1935, but only one of these (the example located at NY5251 5280) was identified on the air photos and only one another has been observed on the ground in more recent times.

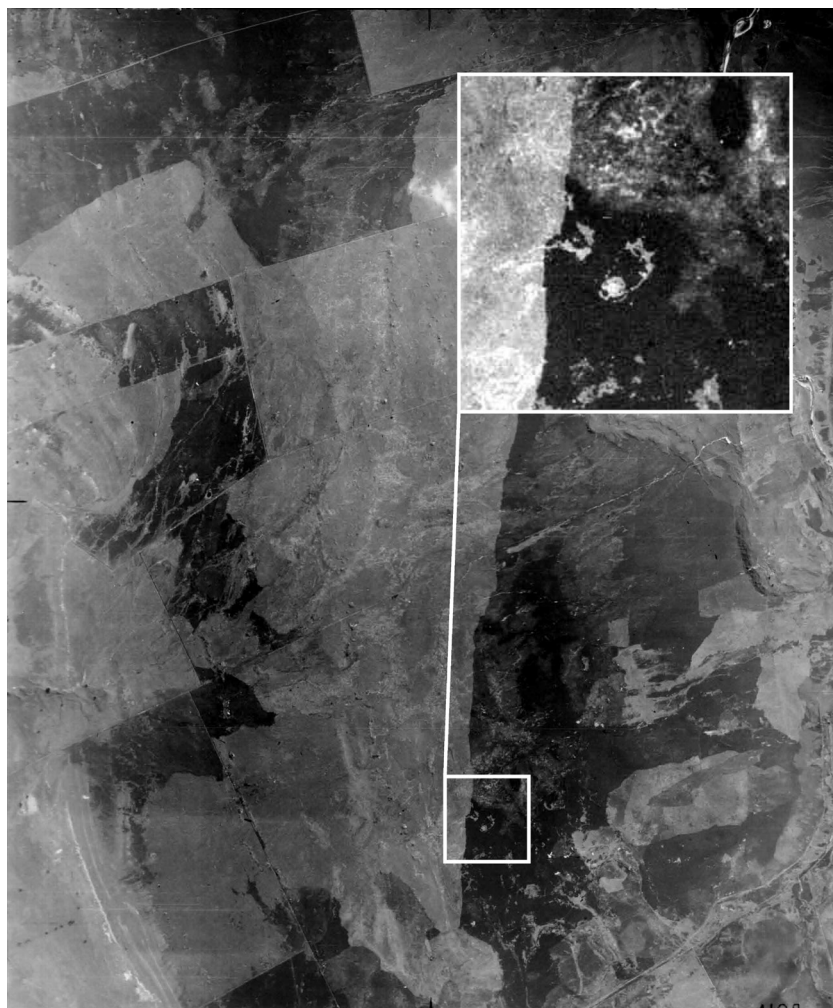
Given the mixed results in identifying the known sites from the air photos and lidar imagery it is encouraging to report that some new sites have been recorded by this project.

Perhaps most surprising, given the relative dearth of cropmarked ring ditches in this project’s area, is a double ring ditch at Dolly Tarn Farm, near Kirkoswald (1582074) (Fig 7). This feature was discovered during a specialist reconnaissance flight in 2013. Although there are gaps in both circuits it is not clear if these represent real breaks in the ditch or just hiatus in the cropmarks.

Figure 7 Double-ditched ring ditch at Dolly Tarn Farm, near Kirkoswald.
(28457_014 22-JUL-2013
© Historic England
Archive)



Figure 8 Cairn-like feature on Cumrew Fell.
(RAF/541/A/439/3046
RP 29-JUN-1948
Historic England RAF
Photography)



It lies on a tongue of sand and gravel that runs north-west to south-east towards Townend Beck and to the north of the site the glacial deposits survive as a long low mound, now obscured by trees. This relationship echoes the location of a Bronze Age Food Vessel in a similar prominence less than 1.5km to the north-west (1608346). An extraction pit was opened into the low ridge of sands and gravels in the late 20th century and the urn was recovered in 1961 (Fell and Hogg 1962). Locally elevated spots such as these may have been foci for activity in the Bronze Age.

The edge of the fells present a very different landscape and environment from the rest of the project area. Cardunneth Pike (12546) on Cumrew Fell, consist of one large cairn and several small stone mounds. Sitting at 450m they have a commanding view westward across the lower hummocky land at Cumwhitton and toward the River Eden. Cardunneth Pike was described, albeit briefly by Rome Hall in the late 19th century (1883, 469).

Approximately 1.7km to the south-east of Cardunneth Pike this project recorded an intriguing accumulation of stones. It appears to comprise a mound of stones approximately 12m in diameter that sits within an oval, stone-built enclosure, although it is not clear which is the earlier. The mound may be topped with one or two 19th or 20th century shooting butts. This monument is visible on air photos that were taken in 1948 and onwards (1603284, Fig 8). The historical Ordnance Survey maps, usually fairly comprehensive in their recording of such monuments, depicted nothing at this location (1861 Six inch map). More recent editions of the OS maps do label 'cairns' here but neither the CHER or NRHE record any monument at this location. Although this location is remote, a rough access road was laid across the moor sometime in the late 1990s, early 2000s and this road runs directly beside these remains. These features warrant further investigation.

3.3 Prehistoric and Romano-British enclosures and field systems.

This project recorded over 70 enclosures of possible prehistoric or Romano-British date and possible field systems in more than 30 locations (Fig 9). Approximately one quarter of these enclosures had not been previously recorded in either the NRHE or the CHER. Where there were existing records for the field systems, in most cases then this project extended the known extent of those field systems.

Recent specialist archaeological reconnaissance has made a significant impact in certain areas. For example the landscape of enclosures, trackways and fields at Castle Carrock was mapped largely from colour air photos taken in 2010 and 2013, supplemented with a few other sources (1029653). More often, however, these field systems were pieced together from a wide range of images, and without the benefit of recent specialist reconnaissance photos. In some instances the lidar visualisations provided unique and additional information.

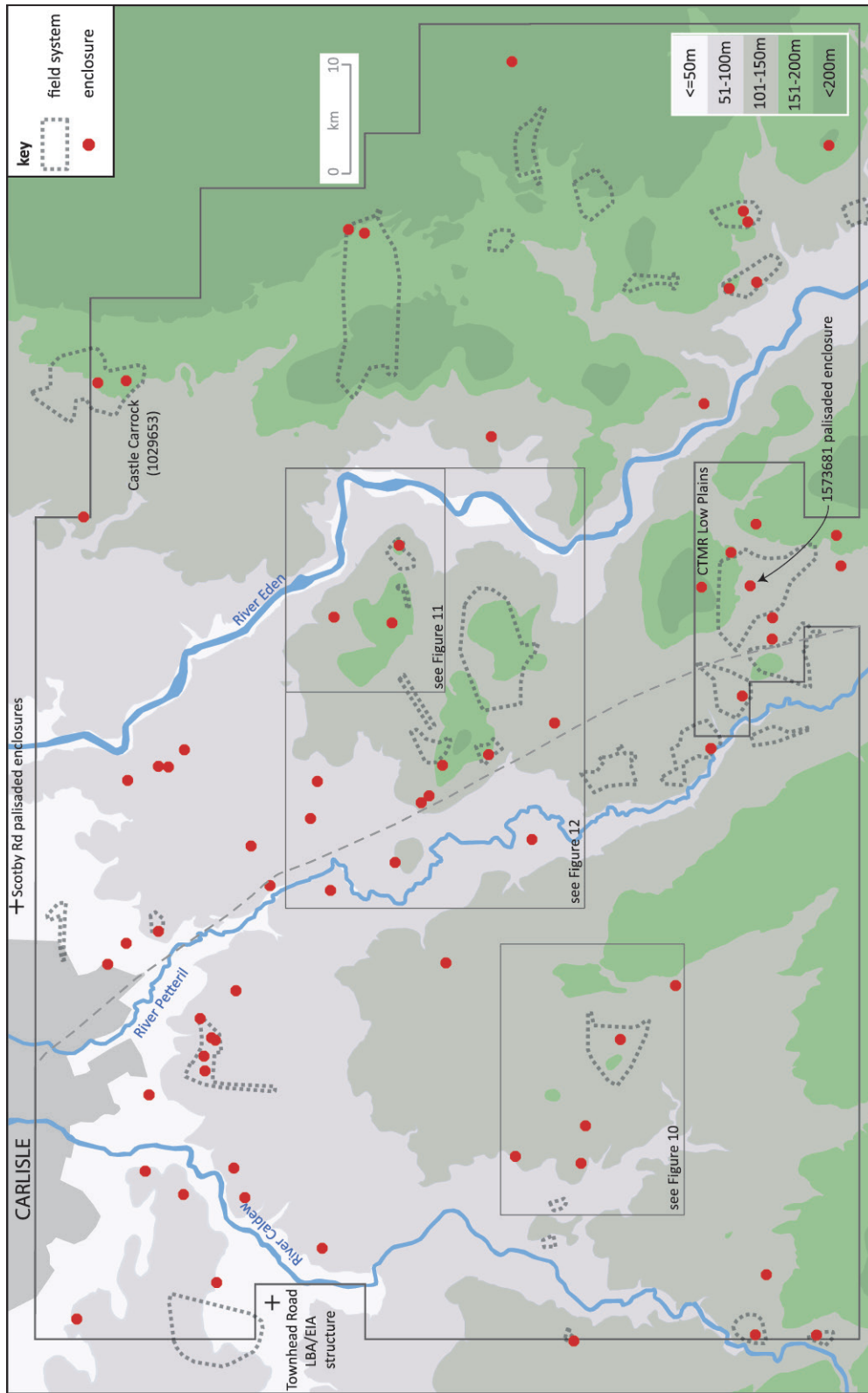


Figure 9 Distribution of known and possible Iron Age and Roman period enclosures and field systems recorded by this project and the CTMR project and other sites named in the text. (Height Data - ©Biuesky International/Getmapping PLC.)

The majority of the enclosures are visible as cropmarks or soilmarks. However, in some cases sites in pasture are shown by the lidar visualisations to survive as very shallow earthworks. Better earthwork survival of enclosures is usually limited to areas of persistent woodland, though this brings its own implications for damage. Similarly most of the field systems are pieced together from the evidence of cropmarks and soilmarks but some earthworks do survive where linear features run into current or recent woodland in Sowerby Wood near Dalston (10802), King Harry's Plantation (1606441) and in Priory Wood (1601475) (See Fig 12 for latter)

There are several possible enclosures where the evidence was too ephemeral or partial to attribute a date with any confidence. There are also a large number of discrete ditches that have not been given dates for the same reason.

Figure 9 shows that the greatest concentrations of enclosures are in the immediate Carlisle hinterland and on the Petteril-Eden interfluvium, particularly along its western flanks. However this distribution is undoubtedly biased by the complex interaction of factors of such the soils, geology and recent and current landuse as well as the history of specialist reconnaissance in this area.

The discussion below will consider the character and distribution of enclosures and fields in three areas of the project: the Castlesteads landscape, the High plantation landscape and around this the wider Barrock Fell landscape.

3.4 The Castlesteads landscape

This area was part of Broad Field, as depicted on Donald's map of 1770-71. Broad Field was described by Rooke as 'an uncultivated common on Englewood foreft', when he travelled through Cumberland later that century (1789a, 223).

Rooke identified three significant archaeological sites in this area: 'Castlesteads', 'White-stones' and 'Stoneraise'. But, as discussed in Section 3.2, the location of Stoneraise is uncertain. The location of Whitestones is also unspecified except that Rooke's puts it within half a mile of Castlesteads (1789a, 223). The NRHE locates Whitestones south of Stockdalewath and on the west bank of the River Roe. It does not seem likely, however, that Rooke would have omitted to mention that these enclosures were on opposite sides of the river.

Fortunately the location of Castlesteads is not doubted, it lies east of Stockdalewath and overlooks the River Roe and Bassenbeck (10515). Rooke stated 'The construction of the camp is singular: it is inclosed with a double ditch and *vallum*; in the centre are little banks of earth and undressed stones.' and he initially concurred with earlier assessments that the Castlesteads earthworks were the remains of a Roman camp. When he investigated the remains of the stone built structures within the enclosure he concluded that it

was more likely to be an ‘ancient Briton’s house’ (1789b, 110). Sometime after Rooke’s visit, possibly when the land was enclosed in the early 19th century, the ditches were deliberately filled with clay soil (Higham 1981, 1). From the mid-1970s Higham and Jones and CUCAP photographed Castlesteads from the air as a cropmarks and/or soilmarks on several occasions. The enclosure straddles no fewer than seven small hedged fields with different crops so it has rarely been revealed in its entirety. Some of the ditches are visible as very shallow earthworks on the lidar visualisations, perhaps indicating that the clay soil infill was incomplete or has settled slightly over time. There is no traces of the *vallum* described by Rooke on either the air photos or the lidar imagery.

The combined evidence from the air photos and lidar imagery reveals an outer enclosure, rectilinear in plan but with well-rounded corners with an internal area of approximately 2.5ha. Short ditches extending south and westward away from this enclosure may be the remains of field boundaries or paddocks. A trackway runs from the north-west corner of this enclosure down towards the River Roe. Within this enclosure, and slightly off-centre to it, is a smaller rectilinear enclosure with an east facing entrance that is marked with a wear hollow that extends to the outer enclosure. This inner enclosure covers approximately 0.5ha.

Higham and Jones excavated part of this site in the late 1970s and concluded that the outer enclosure was pre-Roman in origin but the inner enclosure and its internal structures were of Roman date (Higham 1981 2-4).

Castlesteads is one of a number of enclosures and linear boundaries that defy the rather slow draining soils in this area to produce cropmarks. It is possible that the deliberate ditch infilling noted above contributes to its visibility and similar circumstances may be at play at other Broad Field sites.

Less than 680m to the east of Castlesteads the cropmarks and shallow earthworks of the corner of a possible enclosure are visible on air photos and lidar imagery (10560). Small trenches excavated within this enclosure by Higham and Jones identified some evidence of hearths but unfortunately did not intersect the enclosure ditch (Higham 1981, 2). Given its proximity to Castlesteads this must surely be a candidate for Rooke’s Whitestones enclosure. Furthermore, returning to the discussion in Section 3.2, Rooke placed Stoneraise half a mile north-west of Whitestones as well half a mile from Castlesteads. Rather intriguingly this would locate Stoneraise in the vicinity of the small quarry pit (1597435) near Dobcross Hall.

Further to the north there is an unusual linear feature that meanders north-east to south-west between Red Gill and Grass Beck. This feature shows as variously as cropmarks and soilmarks and the lidar imagery indicates it survives as shallow earthworks in some parts too (1597437). It is up to 30m wide and towards its south-western end it appears to cut a series of artificial terraces. It is visible over a distance of more than 1km and for most of its

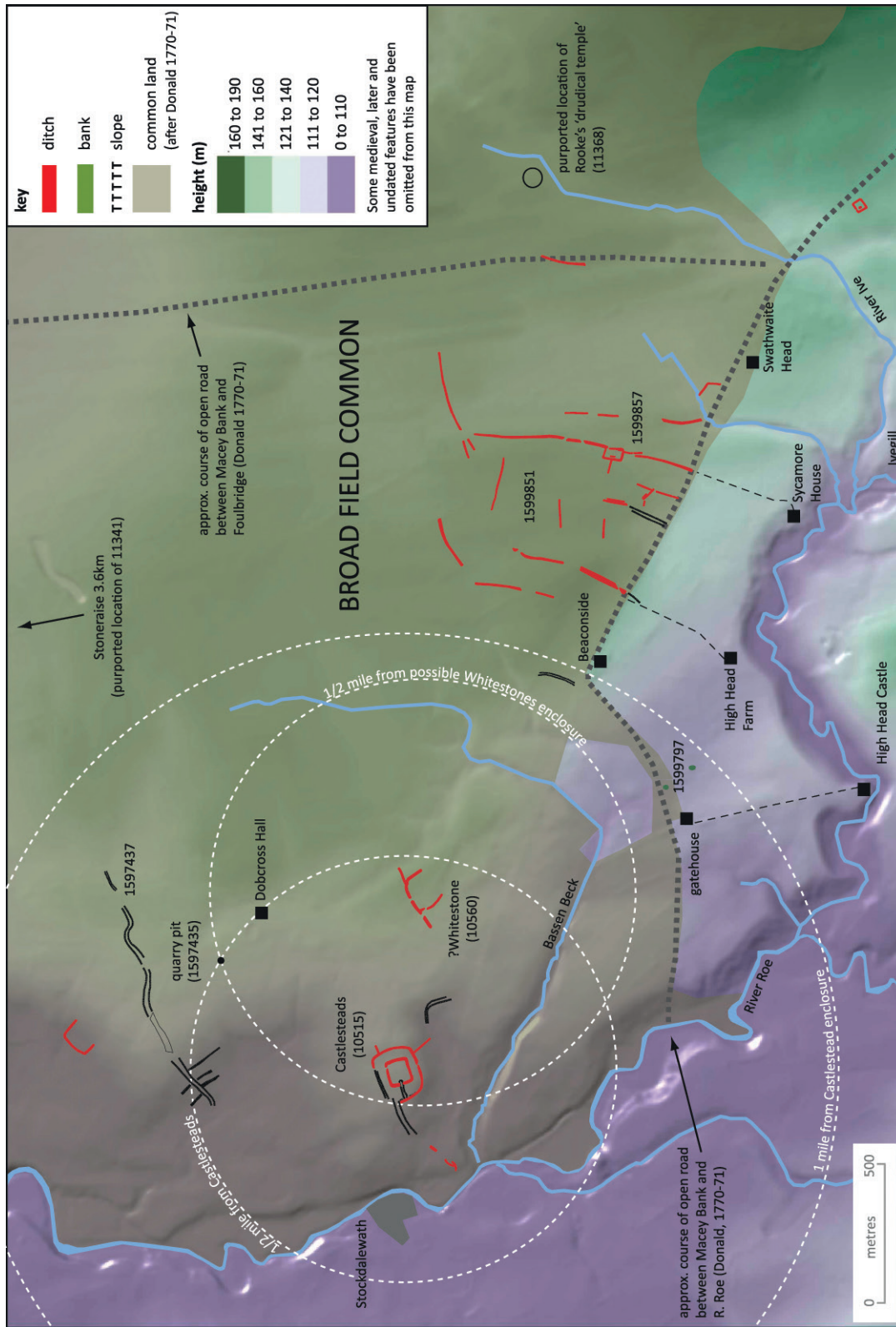


Figure 10 Selective extract of AP and lidar mapping for the Castlesteads enclosure and environs. (Height Data- ©Bluesky International/Getmapping PLC.)

length it falls slowly to the south-east, no more than 50cm in every 10m. However at its northern extremity it falls to the north-east. Interestingly this feature also appears to mark the interface between the Yoredale Group rocks to the south and the Pennine Lower Coal Measures to the north. However, this doesn't necessarily preclude it being a feature of potential archaeological significance and relevant to this discussion.

South-east of Castlesteads there is a series of gently curving north to south-west aligned long linear boundaries (1599851). This shows mostly as cropmarks but some stretches are visible as earthworks on the lidar visualisations. These ditches are on a completely different orientation to the current field system, which was probably laid out in the early 19th century. These ditches appear to be the remains of a field system, an interpretation lent some weight by the presence of a rectilinear enclosure adjacent to one of the boundaries (1599857). Ditched rectilinear enclosures of this type are often attributed to Iron Age or Roman period. The long ditches run near perpendicular towards the deep valley cut by the River Ive. However most of the cropmarks and earthworks stop abruptly at the modern road that runs between Swathwaite Head and Beaconside and which then continues on to Stockdalewath. This section of the road is likely to follow the course of the open road that ran along the edge of Broad Field. (Donald's map of 1770-71). From Beaconside the 18th century road took a more south-westerly direction and led to High Bridge on the River Roe. A cropmarked ditch recorded between Beaconside and the gatehouse may be the remains of this road (1599793, not shown on Fig 10).

Intriguingly several of the long boundaries are in direct alignment with extant boundaries or trackways that lead down to properties on the river, in particular to High Head Farm and Sycamore House. Donald's map implies that this strip of land between Broad Field and the River Ive was already enclosed by the 1770s and it was also occupied by a number of farms and cottages, both along the edge of the common and along the banks of the river. Furthermore Donald's map shows an open road running across Broad Field between Macey Bank and Foulbridge, which has no modern counterpart, and this road runs parallel to the general trend of the long linear ditches. If these are the remains of an Iron Age or Roman period field system then it seems possible that their layout may have perpetuated into the medieval period and later.

3.5 High Stand Plantation

Moving north-east this project has produced some interesting results within Highstand Plantation and the surrounding fields (see Fig 11). This area lies on the eastern edge of the ancient Inglewood Forest, which was enclosed in the early 19th century. Three low hills, two collectively known as High Stand and a third at Hallsteads Wood form the backbone of this small area. They are between 150m and 170m in height and looking east they have views across the steeped-sided Eden valley and to the high fells beyond. To the west they

are outflanked by the dramatic profile of Barrock Fell, with its summit at 223m.

A productive tree plantation, operated by the Forestry Commission and extending over approximately 250ha, covers much of High Stand hills. This now contains a mix of broadleaf and coniferous species (Forestry Commission England 2010, 4). The third hill is divided into blocky fields and a small wood lines its steeper southern flank. Greenwoods map of 1823 and subsequent Ordnance Survey maps indicate that High Stand Plantation and Hallstead Woods have both been in place continually since at least the 1820s, though the nature and density of tree cover has varied over time.

Beyond these woods most of this area is now under pasture or crop and it is sparsely populated. However in the late 19th and early 20th century there was significant industrial activity in the area north of the plantation, around Knothill. Water-fill pits and earthwork spoil heaps of the former Boaterby and High Stand Quarries and elements of the Knothill Plaster and Cement Works still survive and are now significant wildlife foci in this environment (1595559 and 1601500). The pits and works were all linked to the main line by a mineral railway, though little of this now survives.

There are three significant enclosures and associated features in this area. Although there is an absence of objective dating evidence it is suggested that these constitute part of a pattern of Iron Age and/or Roman period activity.

The Hallstead Wood enclosure and fields were discovered by aerial reconnaissance and had been documented prior to this project (928122). The major part of the site has been levelled and was first observed and photographed as cropmarks in 1969. Subsequent photography captured this ancient landscape with uncommon detail, for this area. At its core is a polygon enclosure of approximately 0.5ha, which encircles the hill top. It may have sat within a less regularly-shaped enclosure, which so far has only been seen around the northern side. The polygonal enclosure opens out westward via a causewayed entrance into a possible drove road or herding area some 30m wide and 150m long. Leading off of this are trackways heading south-westward through Hallsteads Wood and into the modern field beyond and also north-westward towards High Stand plantation. The drove road is flanked by a series of small, irregular fields or paddocks and there are suggestions of larger fields beyond.

The hill on which Hallsteads Wood sits comprises Penrith Sandstone overlain with till, the soils are freely draining and slightly acidic (Geology of Britain Viewer and Soilscape). The till is apparently absent in the wood so it may be relatively thin on the hilltop so creating conditions that are more conducive to the formation of cropmarks than where the till is deeper. The southern half of the enclosure is obscured by trees on conventional air photos but the lidar visualisations have revealed low earthworks that are likely to be the remains of its southern and eastern ditches. A broad ditch running east to

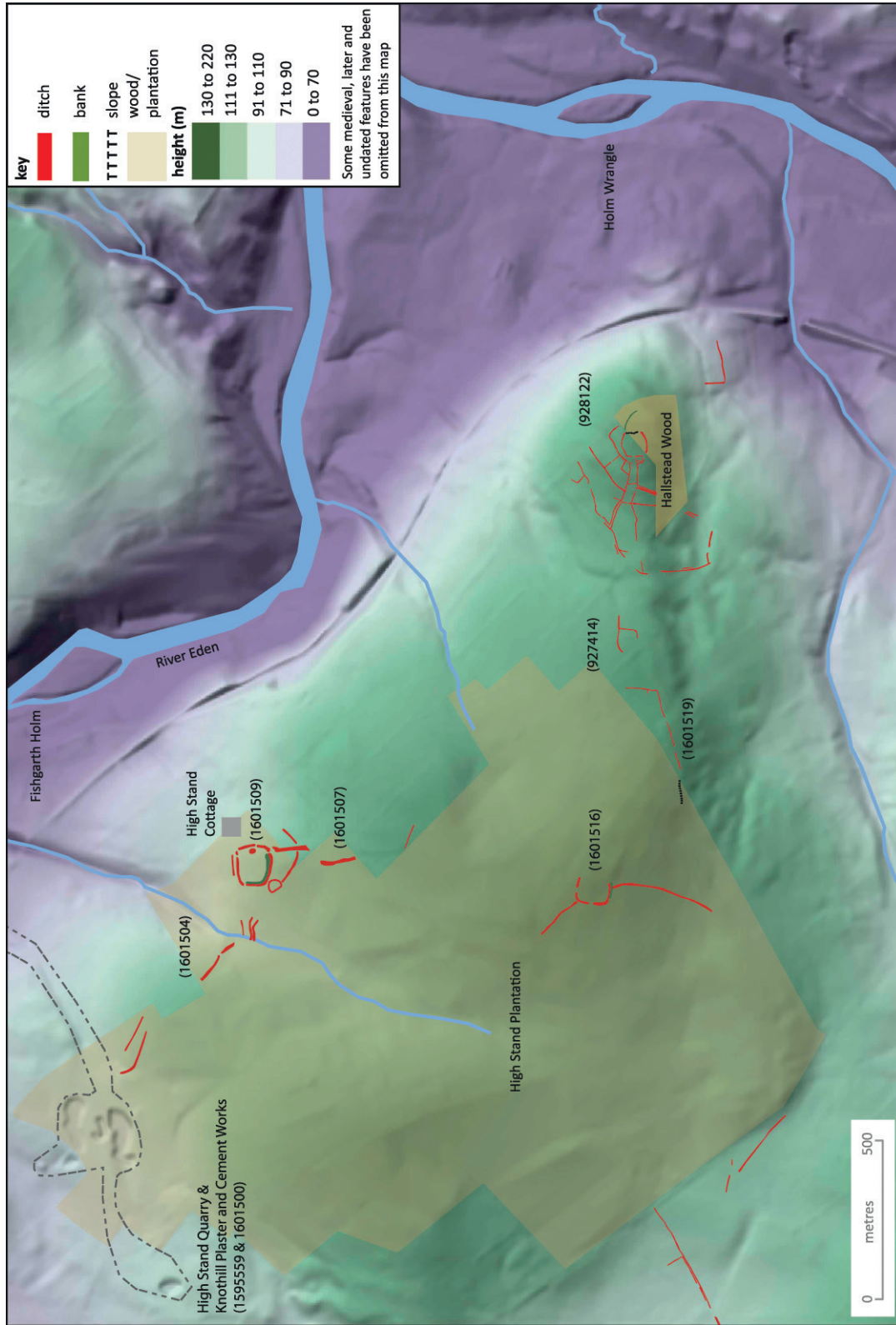


Figure 11 Selective extract of AP and lidar mapping for the High Stand Plantation and its environs. (Height Data-Bluesky International/Getmapping PLC.)

west through the wood corresponds with the former southern boundary of the wood and is not associated with the landscape above (1601848, not depicted on Fig 11). The name 'Hallsteads Wood' may indicate some historical knowledge of this enclosure, with 'Halstead' meaning 'protection place' (kepn.nottingham.ac.uk/map/place/Essex/Halstead). Another example, 'Hallsteads Fort' (12523) lies just outside the area of this project at Castle Carrock, although early 20th century investigations suggest that it may have been no more than a low natural mound that was modified for the keeping of stock (Hodgson and Hodgson 1908).

To the west of the Hallstead Wood enclosure complex, in the fields adjacent to High Stand Plantation, there are cropmarks of a possible enclosure (927414) and ditches that may be the continuation of the field system (1601519). On the lidar visualisations one of the ditches can be seen to continue into the plantation as an earthwork.

A previously unrecorded rectilinear enclosure was discovered by this project within High Stand Plantation (1601516). It sits on the western shoulder of the low hill. This earthwork is visible on historical air photos that were taken when the tree cover was still sparse, and in more recent years when sections of trees had been harvested, but it shows with greater clarity on the lidar DTM visualisations. The combined evidence suggests a rectilinear enclosure covering at least 0.65hectares, defined by a broad ditch and with slight traces of an outer bank. Two ditches extend outward from this enclosure, one curves gently to the south-west and the other runs north-westward. This enclosure sits between two forest roads and, being in a coniferous sector of the plantation, is in an area of relatively high activity (Forestry Commission England 2010, 4).

The third enclosure in this area is also a new discovery (1601509). It is located approximately 1km north of the last, between High Stand Gill and Highstand Cottage. Again some earthworks are visible on the air photos but the lidar visualisations are the key source for this monument. The enclosure comprises a broad ditch circuit with traces of an inner bank and an internal area of approximately 0.85ha. There are suggestions of a non-concentric outer circuit around its southern side. Broad and deeply-incised trackways run from the site of the enclosure in two directions: southward (1601507) in the direction of the High Stand enclosure and north-westward (1601504) across the gill but it is not known if these routes are contemporary with the enclosure. A forest road cuts across the northern part of the enclosure and may present a threat to its integrity. Given this location and its proximity to modern dwellings it is surprising that this enclosure had not been identified prior to this project.

Barrock Fell and environs.

Looking at their wider setting the High Stand Plantation trio sit between the Rivers Petteiril and Eden. The landscape is characterised by low hills, some above 100m but no higher than 230m. The bedrock is Penrith Sandstone

overlain in most parts with till. The soils are freely draining and slightly acid, except in the lower lying basin of Wragmire Moss where they are peaty. Both rivers are sinuous, flanked by broad flat terraces in some places and cutting cliffs in others. The interfluvium is drained by a series of small gills that run into either river. Just south of the area under discussion lies the remains of Wadling Tarn, which was drained and converted to farmland some time after 1823 and before 1861 (1608521).

One of the highest points in this area rises to the south-east of the hamlet of Aiketgate. This elevation is due partly to an extrusion of hard basaltic-andesite in the Cleveland Dyke. The hill above Aiketgate has long been associated with ancient ruins known as Castle Hewen (11326). In the 1500s, in his itinerary of Cumberland, Leland observed

In the forest of Ynglewood a vi. myles fro Cairluel appere ruines
of a castel cawled. Castel Luen.’(Toulmin Smith (ed) 1910, 56).

In 1794 Hutchinson described in some detail the ruins associated with Leland’s ‘Castel Luen’

On the crown of lofty eminence, towards the north east
of the lake. And adjoining Aiket-gate, are the remain of a
strong building, which has consisted of several apartments,
strengthened with out-works, and long extended trenches. p492

The lake mentioned is the now dry Wadling Tarn (1608521). Hutchinson proceeds to give details of a building 70x44m and walls up to 2.5m thick. Remarkably there is little evidence on the air photos or lidar visualisations that any such structure stood on this hill top. There are, however, interesting remains here and on the flanking slopes. The hilltop is bisected by a trackway that can be traced on the air photos and lidar imagery over a distance of 730m: in a south-westward orientation towards Low Hesket and, more briefly, northward (1601481). This trackway crosses the hill top at a point that is immediately adjacent to the purported site of Castle Hewen. It is associated with several other linear features and on the northern slopes of the hill these seem to resolve into a rectilinear field system. Some of these features may be the ‘long extended trenches’ identified by Hutchinson. The lidar visualisations created by this project also reveal earthwork ditches in Priory Wood that may be part of the same field system (1601475).

In the late 1970s archaeological excavations were undertaken at the site of Castle Hewen. Here the excavators found a ‘native settlement’, in the form of two circular huts, and Roman rectangular buildings, within a defended hill top enclosure (CHER709). Air photos taken during these works show some of the excavated features, but it is not possible to precisely locate the archaeological trenches because these images lack any reference points. This apparently long-lived settlement (or perhaps used, abandoned, and then

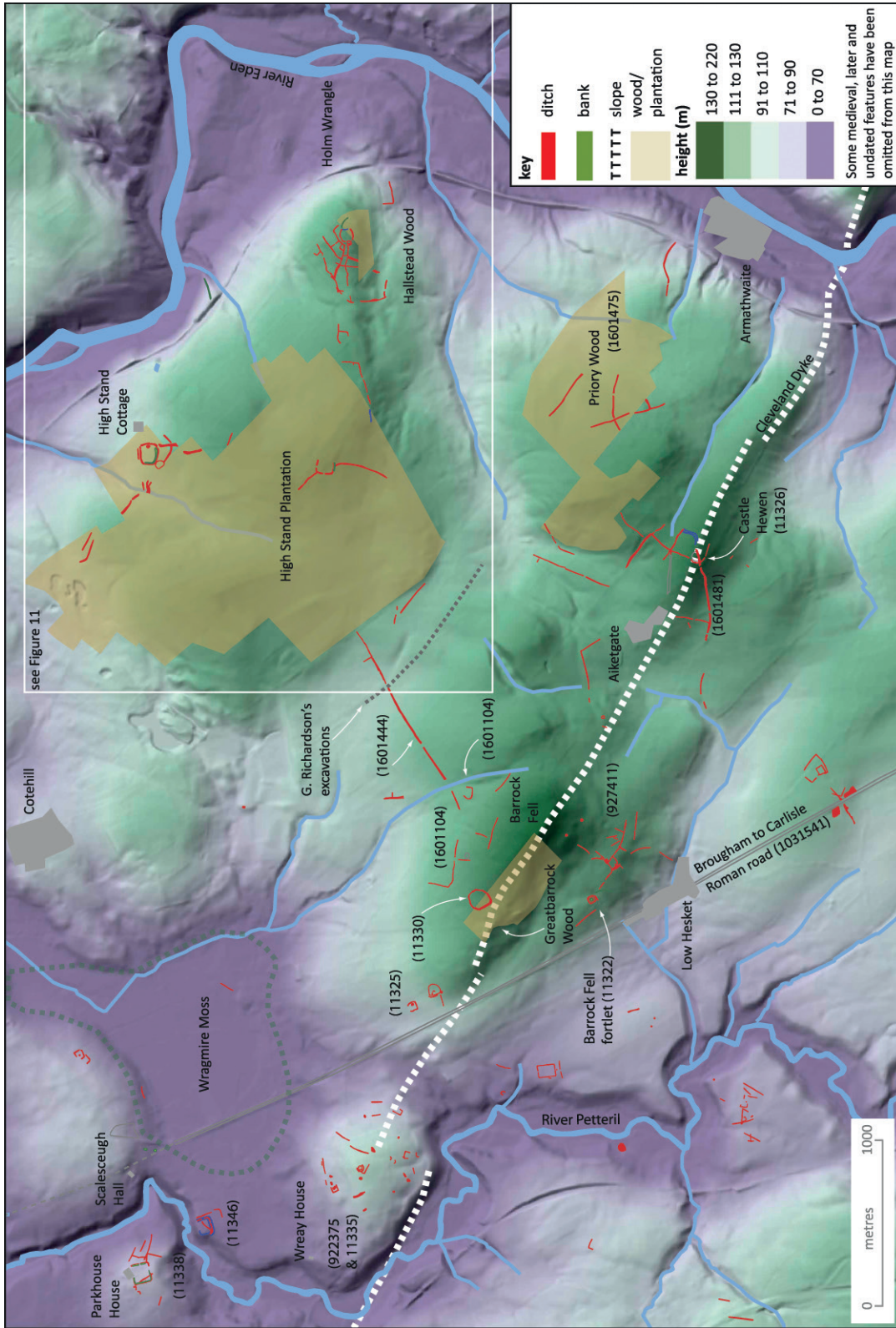


Figure 12 Selective extract of AP and lidar mapping for Barrack Fell and its environs. (Height Data- ©Bluesky International/Getmapping PLC.)

reused settlement) lends some credence to the notion that the surrounding trackway and field system are of Iron Age and/or Roman date.

To the north-west of Aiketgate the land rises again to Barrock Fell. The summit, at just over 220m is marked by a few small post medieval quarries (1601093) and is partly obscured by trees. On the north-west shoulder of the fell at a height of approximately 170m lies one of the most substantial enclosures recorded in this area (11330). It is described and scheduled as a univallate hillfort, but it lies at least 40m beyond the area defined in the Schedule (Hogg 1979, 140, LN1007874). Today a small part of the enclosure lies within Greatbarrock Wood, where it survives as a low earthwork, the larger part lies in a neighbouring field and appears as a cropmark. It is slightly curvilinear in appearance and encloses an area of just over 1 hectare. It has an east-facing entrance, marked by slightly out-turned ditches that looks towards High Stand Plantation.

Cropmarks east of the Barrock Fell hint at a system of land division (1601104). This evidence is mostly fragmented except for a linear feature consisting of two closely-spaced ditches that is visible over a distance of more than 1.2km (1601444). It is oriented south-west to north-east and towards High Stand. It runs on a near perpendicular alignment to the Brougham to Carlisle Roman road (1031541), though it does not meet it by some distance. In the 1970s G. Richardson investigated the line of the parish boundary between Wetherel and Hesket in the fields to the west of High Stand Plantation (Richardson A 1986, 73). He uncovered an 'old buried road' at one point and a 'thin spread of metalling' at another. G. Richardson was looking for a north-west to south-east aligned manifestation of the 'Hee Street' mentioned in medieval records, which he and A. Richardson regarded as part of a network of roads that may have has its origins in centuriation (Richardson A 1986, 73). Centuriation was the system of land division employed by the Roman state and some archaeologists, including the Richardsons, have claimed evidence for these field systems in the landscapes between Carlisle and Penrith (Philpott 2006, 77). Frustratingly it is not clear, from the information reported, if G. Richardson had actually encountered the double ditched boundary (1601444) that is visible as cropmarks.

There are several enclosures around the lower flanks of Barrock Fell, two to the north-west near Ivy Cottage (11325) and one on the eastern flank close to the long boundary (1601104). The south-western flank contains an interesting array of features including the 4th century Barrock Fell Roman fortlet (11322), a field system and a paddock or enclosure associated with the fields (927411).

A lower hill known as Little Barrock, near Wreay Hall, overlooks the River Petteril. Although no more than 120m high it was evidently an area of strategic importance as it the site of both a possible small Roman camp (922375) and a 3rd or 4th century post (11335) (St Joseph 1961, 120, Bellhouse 1953, 51). Its importance was no doubt elevated by its position

between the River Petteril to the west and the Brougham to Carlisle Roman road to the east. In 1951 trenches were cut across the inner and outer ditches of the post, but the perimeter of the possible camp was not encountered (Bellhouse 1953, 49-51). A series of small, narrow-ditched rectilinear enclosures encircle Little Barrock, at about the 100m contour line and there are fragments of other ditches too.

North of Little Barrock two rectilinear enclosures sit on either side of the River Petteril. The Wreay Hall enclosure (11346, sometimes referred to as the Scalesceugh enclosure) lies at around 70m with Wragmire Moss to the east, the river to the north-west and Little Barrock to the south. It covers a rectilinear area of approximately 0.5hectares and is defined by a broad and now very shallow earthwork ditch on three sides. On some occasions this enclosure has been revealed by the cropmarks of a very narrow ditch, again visible only on three sides. These narrow cropmarks may represent only the deepest section of the ditch circuit. The enclosure sits on the edge of a 20-30m high cliff cut into the sandstone by the river. This drop may have served as the northern side of the enclosure, although it is also possible that it has been lost to erosion.

On the opposite side of the river and at a height of approximately 95m sits the purported Roman fort at Park House (11338). The circuit of this enclosure was trenched in two locations and test-pitted in others by Bellhouse in 1953 revealing a V-shaped ditch with a square-profile channel cut into the base and an inner clay rampart (1954, *see* Figs 2 and 3). He also showed the likely presence of an internal cobbled road and structures including a gatehouse on the eastern side of the enclosure. He surmised a route down to the river and over to the Brougham to Carlisle Roman road, a distance of no more than 600m. Finds were rather sparse, a few indeterminable sherds and two pieces of Roman glass. Bellhouse concluded that this enclosure was a short-lived fort (1954, 16).

Although it is scheduled as a Roman Fort, Jones suggests that the Park House enclosure should be considered instead as an Iron Age/Romano-British farmstead (Higham and Jones 1975, 34). This echoes the developing interpretation of a similar enclosure at Petteril Green (11351).

hat lies approximately 8km to the south, just beyond the area of this project at Petteril Green.

The Petteril Green enclosure lies 8km south of Wreay Hall and Park House on the north-west shoulder of Thiefside Hill. Like these examples it is close to the banks of the river and the Brougham to Carlisle Roman road. The Petteril Green enclosure was initially identified from the air by Wing-Commander Insall in 1930. It appears on later photography as a cropmarked rectilinear enclosure defined by broad rampart with inner and outer ditches that enclose an area of approximately 0.75ha. However the lidar data suggests some elements may still survive as low or shallow earthworks. This enclosure was

identified as a 'semi-permanent camp' of Roman date when partly excavated in the 1930s, again these excavations uncovered relatively few finds (Spence 1933, 231). This site was considered but rejected as a Roman military camp by the Roman Camps of England project (Welfare and Swan 1995). It was scheduled in 1972 and in the 1994 the description was amended to reflect its reinterpretation as a Romano-British farmstead, with associated trackway and field system (LN1007868).

The Park House and Wreay Hall enclosure bear comparison with the Petteril Green farmstead as does a third enclosure at Petterilbank Cottage (11354). There are fragments of linear features around both the Park House and Wreay Hall enclosures and these may be the remains of fields (1598006, 1598074). The Petterilbank Cottage enclosure is associated with a more cohesive field system.

3.6 Concluding remarks on Iron Age and Romano-British enclosures and field systems.

In the absence of more extensive dating evidence it is difficult to construct anything more than the broadest chronology for the landscapes discussed above and in the project area as a whole but the project data and the discussions above have given rise to the following observations and questions

- Small scale unenclosed settlement such as the Late Bronze Age or Early Iron Age structure recently excavated just beyond the area of this project at Townhead Farm, is not represented, or at least not recognised for what it is on the air photos or the lidar imagery (Robinson and Town 2015).
- LBA or EIA palisaded enclosures like those excavated at Scotby Road (Hirst 1998) have not been identified by this project, although a possible palisaded enclosure was identified by the earlier Cumbrian Terrestrial Minerals Resource project at Low Plains Farm (1573681, *see* Fig 9).
- Rigorous excavation evidence for later Iron Age settlement in the project area is sparse: the outer circuit of Castlesteads enclosure and the hut circles at Castle Hewen being the few examples. The univallate hillfort on Barrock Fell is Iron Age by implication only.
- There is evidently continuity or reuse between the Iron Age and Romano-British settlement for example Castlesteads and Castle Hewen
- There does appear to be a distinctive Roman defended farmstead type: Petteril Green, Petterilbank Cottage, Wreay Hall and Park House, that is located with good access to the river and the Roman road. Higham and Jones identified that there would have been a need for productive farms in this area to feed and supply the military and urban population at Carlisle and the frontier (1975).

- Evidence of field systems is now more extensive as a result of this project. However the dating for these fields requires considerable refinement before a meaningful context with the enclosures can be constructed.
- On the accumulated cropmark, soilmark and earthwork evidence there is little to support the suggestion, from others, for the presence of the centuriation in the project area (Philpott 2006, 77). However integration of this project's results with other sources such as historical cartography may be a useful avenue of study.
- There is some evidence for the continuity of certain boundaries from the Iron Age or Roman period into the post Roman periods and later, particular on Broad Field.

3.7 Medieval and post medieval

The remains left by cultivation and extraction are the most prevalent of the features dated to the medieval and post medieval periods by this project. The majority of the ridge and furrow appears to be of post medieval origin, judged on the narrowness of the ridges and the straightness of the furrows. Very little ridge and furrow was confidently dated to the medieval period. Ridge and furrow and narrow ridge and furrow are widespread along the valley floors but sparser on the interfluves, particularly west of the Eden (Fig 13). This probably reflects the wide expanses of common and uncultivated lands within the historical Forest of Inglewood up until the late 18th century.

The extraction industries are diverse and of course they reflect the underlying geology. Small scale (0.1-0.5ha) to medium scale (single pits greater than 0.5ha or deliberate clusters of smaller pits) gravel extraction from the superficial glacial and post-glacial deposits is widespread across the whole of the project area, except along the edge of the fells where these deposits are absent. There are largescale industrial works at Cocklakes Alabaster and Gypsum mines (1594566) and Knothill Plaster and Cement Works (1595559) that were still in use in the 20th century. On the fell edge there are extensive limestone quarries and numerous limekilns such as at Clints Quarries (958385). The hard andesite-basalt of the Cleveland Dyke is exploited in several small pits including a 'Cobble Quarry' on Barrock Fell (1601089). There are also a handful of brick earth pits and associated works, including a post medieval to 20th century pit (1601071), which is adjacent to the Roman tiliary at Scalesceugh Hall (11340).

Evidence of medieval or post medieval settlement and other activities is less prevalent but this project has prompted some interesting observations. It has recorded archaeological remains at or around several significant medieval and/or post medieval sites in the area: Rose Castle, High Head Castle, Dunwalloght Castle, Kirkoswald Castle and the Kirkoswald 'moated site'.

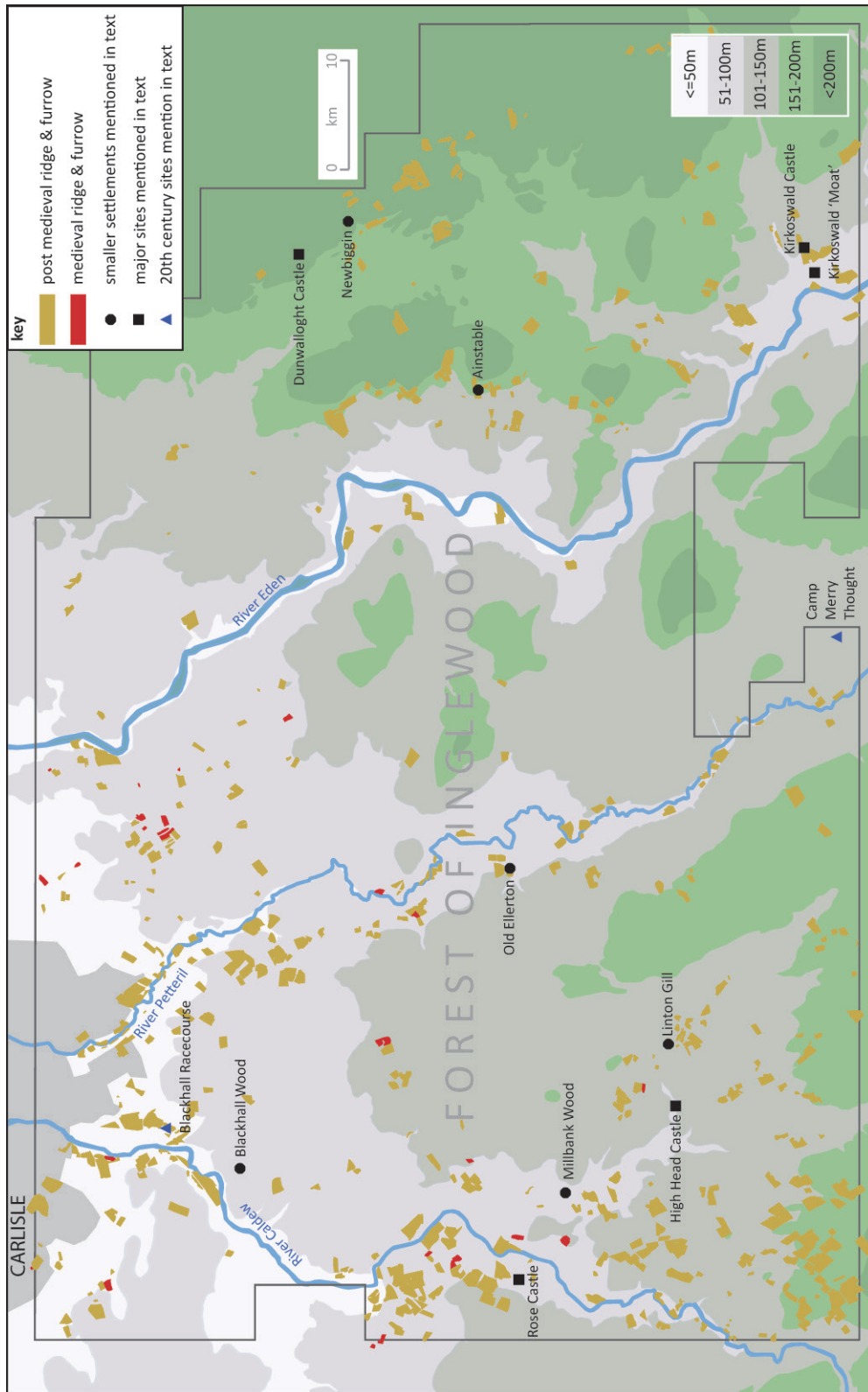


Figure 13 Location plan of medieval and post medieval sites mentioned in the text. (Height Data – ©Bluesky International/Getmapping PLC.)

At Rose Castle (10509) the air photos and lidar imagery, as well as showing the broad sub-rectilinear moat that surrounds the castle, indicated the presence of a series of hitherto unrecorded ponds or garden beds that survive as earthwork in the field north-west of the gatehouse (1596973).

Although it was the site of a medieval timber pele, High Head Castle (11369) is essentially an 18th century house. A fire in 1956 destroyed the roof of the house but much of the structure remains. This project recorded earthwork garden terraces to the west of the castle ruins as well as some of the landscaping that defines the approach to the castle from the north (1599785). It identified incised trackways running westward along the upper river bank and southward from the south bank of the river up to Keepers Cottage (1599783 and 1599789). On the opposite (south side) bank of the river a ditch, running alongside an extant field boundary follows the alignment of the castle approach road and this may have been a deliberate design to continue the line of sight from the south face of the house (1599787). The 'castlegate' sits on the approach road approximately 500m north of the castle but this location is still 340m south of the road leading to Stockdalewath. Donald's map of 1770-71 shows a more southerly road which would have passed directly by the gatehouse. A ditch (1599793) recorded by this project in a field to the east of the gatehouse may be the remains of this road. All of these features are likely to date to the post medieval period rather than the earlier incarnations of the castle.

At Dunwalloght Castle the combined air photo and lidar evidence established the presence of a near-square enclosure (12554). This may be the remains of the 'mote and rampart' described by Hutchinson in the late 18th century (1794, 182). It measures approximately 83x74m internally and there are traces of a low walled structure within. The lidar visualisation suggest that only a short section of the enclosing ditch now survives as an earthwork.

Kirkoswald Castle (12421) lies to the south-east of the small town of that name (Figs 14 and 15). Parts of the quadrangle castle: angle towers and other walls are visible as ruined structures. These sit within a moat that is approximately 10m wide and encloses a platform some 115x80m. The internal platform is irregular in plan with the south-east corner excluded and the north east corner isolated by a ditch to produce a small near-square island. At present the moat still holds water but it is partially obscured from the air by trees. The lidar visualisations and CUCAP air photos taken when the tree cover was sparser, indicate the presence of a causeway in the middle of the western arm of the moat. Outside of the moat ditch and extending into the fields to the north and east there are traces of a low spread bank. This may be upcast from the moat ditch, either from construction or subsequent dredging. This spread appears to be cut by post medieval ridge and furrow (1608363).

Less than 500m to the west of the castle lie the enigmatic earthworks adjacent to the Church of St Oswald (Figs 14 and 15). The description of this Scheduled Monument, the 'Medieval moated site W of St Oswald's Church', suggests

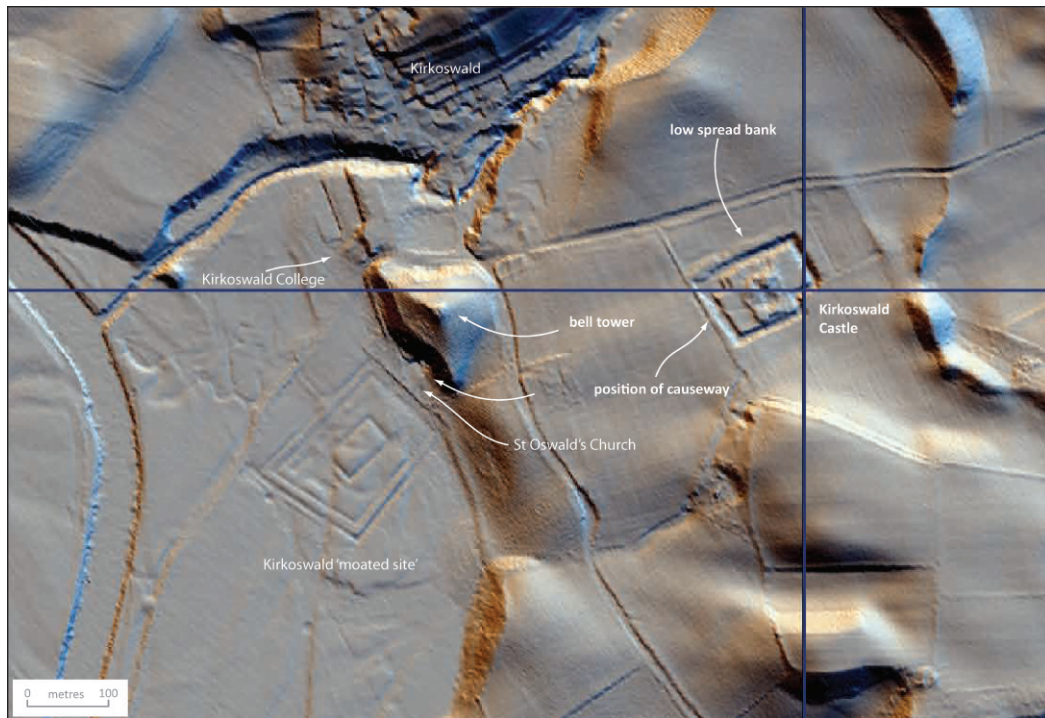


Figure 14 A 16-direction hill shade lidar visualisation of Kirkoswald Castle and Kirkoswald 'moated site'. (LIDAR NY5540, NY5541, NY5640 & NY5641 Environment Agency DTM 2m resolution, multiple dates)

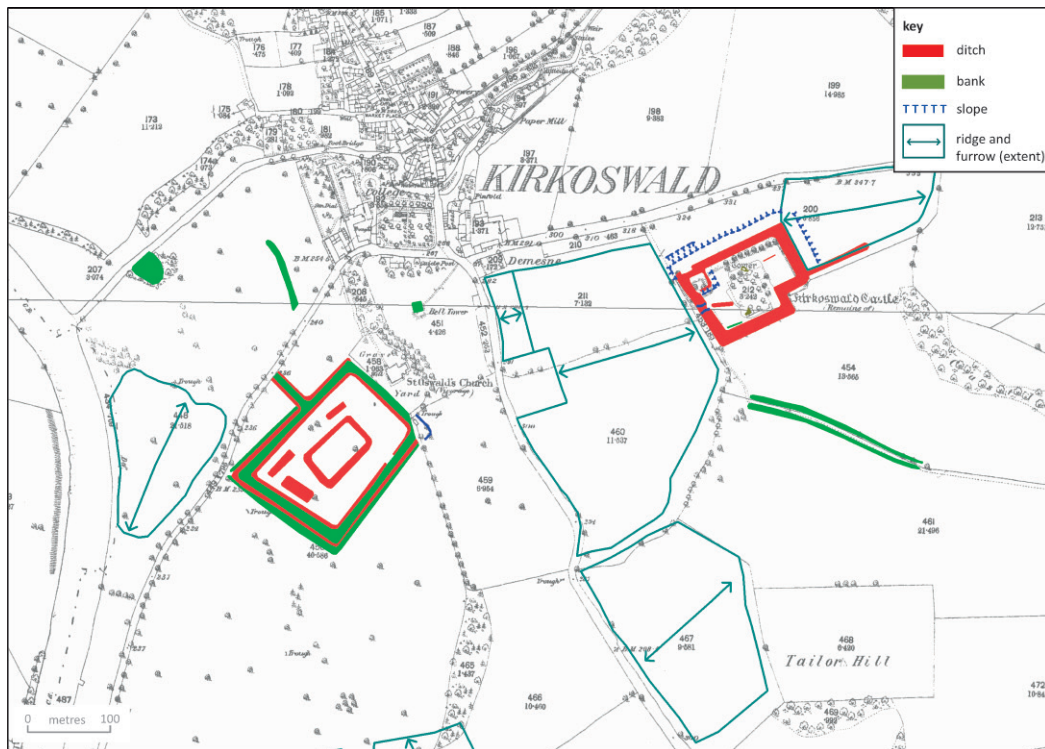


Figure 15 Air photo and lidar mapping of the Kirkoswald Castle and Kirkoswald 'moated site' and the Ordnance Survey 1888 six inch map (©and database right Crown Copyright and Landmark Information Group Ltd (All rights reserved 2017) Licence numbers 000394 and TP0024.)

that it is a pre-cursor to Kirkoswald Castle (LN 1007088). This large scale earthwork measures over 200mx150m with a low, broad and flat topped bank flanked on either side by ditches, an inner moat and ponds (12451). An embankment also links the enclosure to the road leading to Eden Bridge. This enclosure sits on a low river terrace and the ditches sometimes hold standing water. It is overlooked by a mound that is topped with the St Oswald Church free standing bell tower. Kirkoswald 'moated site' is not depicted on Donald's map of 1770-71 nor on Greenwood's map of 1823, though both show the castle and Greenwood depicts the moat around the castle too. These earthworks are not depicted on the Ordnance Survey maps of 1867, 1901 or the 1:2500 scale map published in 1976. The absence of this feature from the historical cartography proves nothing of its date and function except perhaps that there have been no upstanding structural remains on the site since the 1770s. The north-east side of the enclosure appears to neatly abut the wall surrounding the churchyard of the Church of South Oswald (LN 1137385), which is attributed to the 18th century, suggesting that it post-dates the wall. A small barnlike building south of the church appears to overlie the north-east corner of this feature and this has been in place since at least 1860. When St Joseph photographed this site in the 1950s it was catalogued as a 'pleasaunce' - an area attached to a house, or part of an estate used for pleasure and recreation. Although the banks are low and the ditches relatively shallow, these earthworks retain a crispness of form and profile that suggests this was close to their original form rather than the result of erosion and truncations. Thus it seems plausible to suggest that the broad and low bank, rather than the truncated remains of a defensive enclosure was instead a raised walk way that navigated around the ponds and/or flower beds within. However the date of these earthworks and whether they were for amenity of the castle, Kirkoswald college or some other establishment remains unknown.

Some lesser sites have also generated new information and ideas. A small group of earthworks were observed on historical air photos close to the River Caldw and east of Blackhall Wood (10800) (see Fig 16). By 1965 these had been levelled and showed as soilmarks. They comprised a well-defined rectilinear enclosure with traces of an inner building, field boundaries and a pond. The 1965 soilmarks also reveal two possible sub-circular enclosures that were not seen as earthworks on the earlier air photos. Higham and Jones had noted the presence of the rectilinear enclosure in their corpus of Iron Age and Romano-British sites (1975, 34, C4). However the Ordnance Survey map of 1868 shows this to be the site of Blackhallwood Hall, which was extant at that time. The rectilinear enclosure, building, pond and field boundaries all correspond with features depicted on that map. However the nature of the two underlying enclosures is uncertain and a prehistoric origin cannot yet be discounted.

Remains of a medieval or post medieval farmstead are visible as earthworks on air photos and lidar visualisations on the slope between Ellerton Grange and Raughton Gill (1598040, see Fig 17). The 1862 Ordnance Survey map depicts a rectangular yard flanked by two small structures in this area and

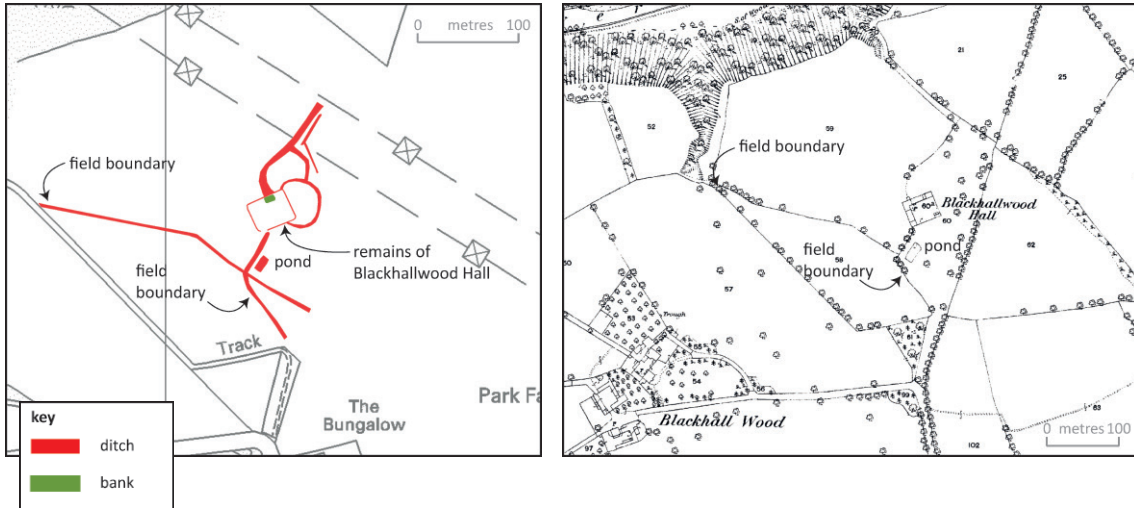


Figure 16 Blackhallwood Hall: extract from project mapping (left) and extract from Ordnance Survey 1867 map (right). (map base left: © Crown Copyright and database right 2017. All rights reserved. Ordnance Survey Licence number 100019088. map right © and database right Crown Copyright and Landmark Information Group Ltd (All rights reserved 2017) Licence numbers 000394 and TP0024.

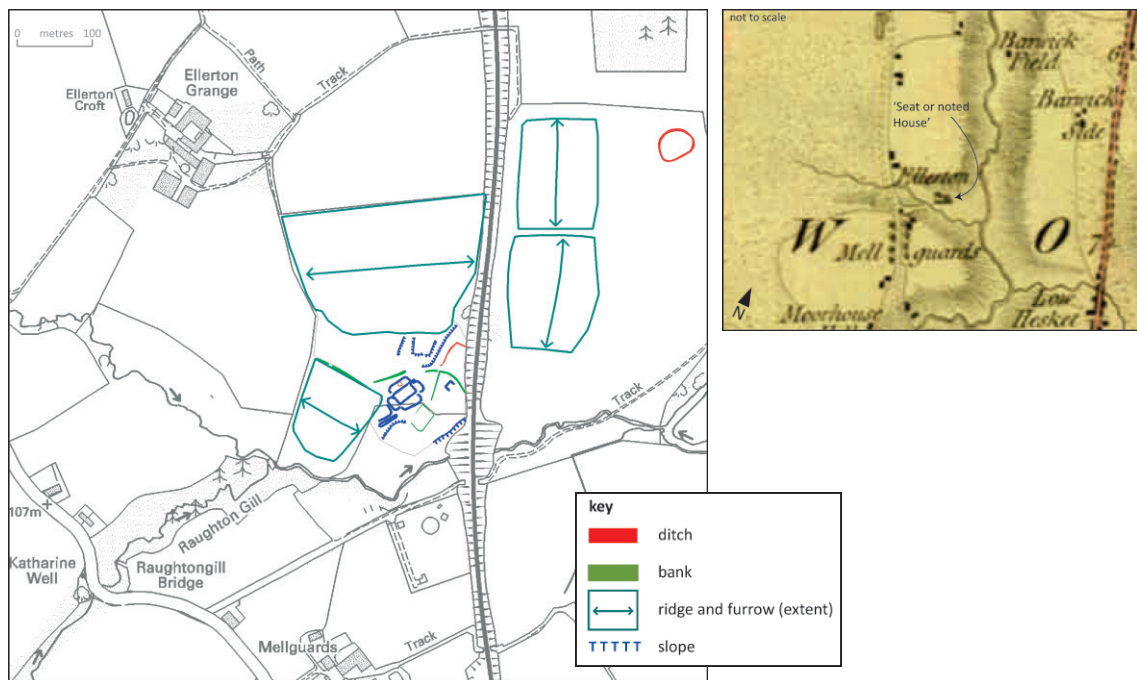


Figure 17 'Old Ellerton': detail from project mapping (top), and extract from Donald's map of 1770-71 (bottom). (© Crown Copyright and database right 2017. All rights reserved. Ordnance Survey Licence number 100019088)

labels them 'Old Ellerton'. These features are shown to be at the south-west corner of Barrock Park on this map. The low walls of the farmyard are visible on the historical air photos but the structures had been removed. To the immediate north-west of the farmyard the photos and imagery show four possible building platforms arranged around a central courtyard. Narrow gullies cut into one of the platforms may be the foundations or robber trenches of a former building. Hollow ways cut from the south-west from the farmyard and farmstead down towards the gill. A large rectangular platform to the north of the farmstead may have been the site of further buildings. There are other banked and ditched boundaries in the vicinity. This area of settlement is flanked to the north and west by post medieval ridge and furrow (1598043). Interestingly, Donald's map of 1770-71 depicts a 'Seat or noted House' at the approximate location of these earthworks. Whilst this might represent either the present or Old Ellerton the listed building description suggest that Ellerton Grange was not built until the late 18th or early 19th century, so perhaps after Donald's map (LN 1145502). Prior to this project there was no record of these earthworks in either the NRHE or the CHER.

As noted in Section 3.4, Donald's map of 1770-71 shows a number of dwelling on the strip of land between Broad Field and Ivegill, upstream of High Head Castle. Where Linton Gill meets the Iver this project recorded a series of earthworks from historical air photos and lidar visualisations (Fig 18 top left). They include a possible building platform cut into the upper edge of the terrace and seemingly enclosed within a rectilinear enclosure or toft (1599839). These earthworks lie to the south-east of the present Sycamore House. A zigzagging field boundary marked on the Ordnance Survey map of 1861 coincides with the northern edge of these features but that has now been removed.

The Ordnance Survey map of 1861 shows the small village of Ainstable to be a dispersed collection of farmsteads, other dwellings, a church and a chapel arranged around a quadrangle of roads. Between Vicarage Farm and Northgill Banks traces of small enclosures and paddocks abutting a broad ditch or hollow are visible on air photos and lidar visualisations (Fig 18 top right). The enclosures may be the remains of medieval or post medieval plots (1606464).

Moving eastward towards the fells, there is a cluster of three bastles along Newbiggin beck. Two are incorporated into surviving structures (1389664 and 12345), the third is a low ruin (1389660, Fig 18 bottom). The air photos and lidar imagery show that it sits on the northern edge of a small walled enclosure or paddock and a trackway leads down towards the beck and that there are other one, two and three-celled structures in the vicinity.

In a field flanking the eastern bank of the River Roe just north of Stockdalewath low earthworks including a water channel and possible building platforms have been interpreted as the remains of a possible water mill (1596925). Mills and their associated water course are usually fairly well documented on the historical Ordnance Survey maps but there is no indication of any buildings at this location on the 1868 edition. This map does

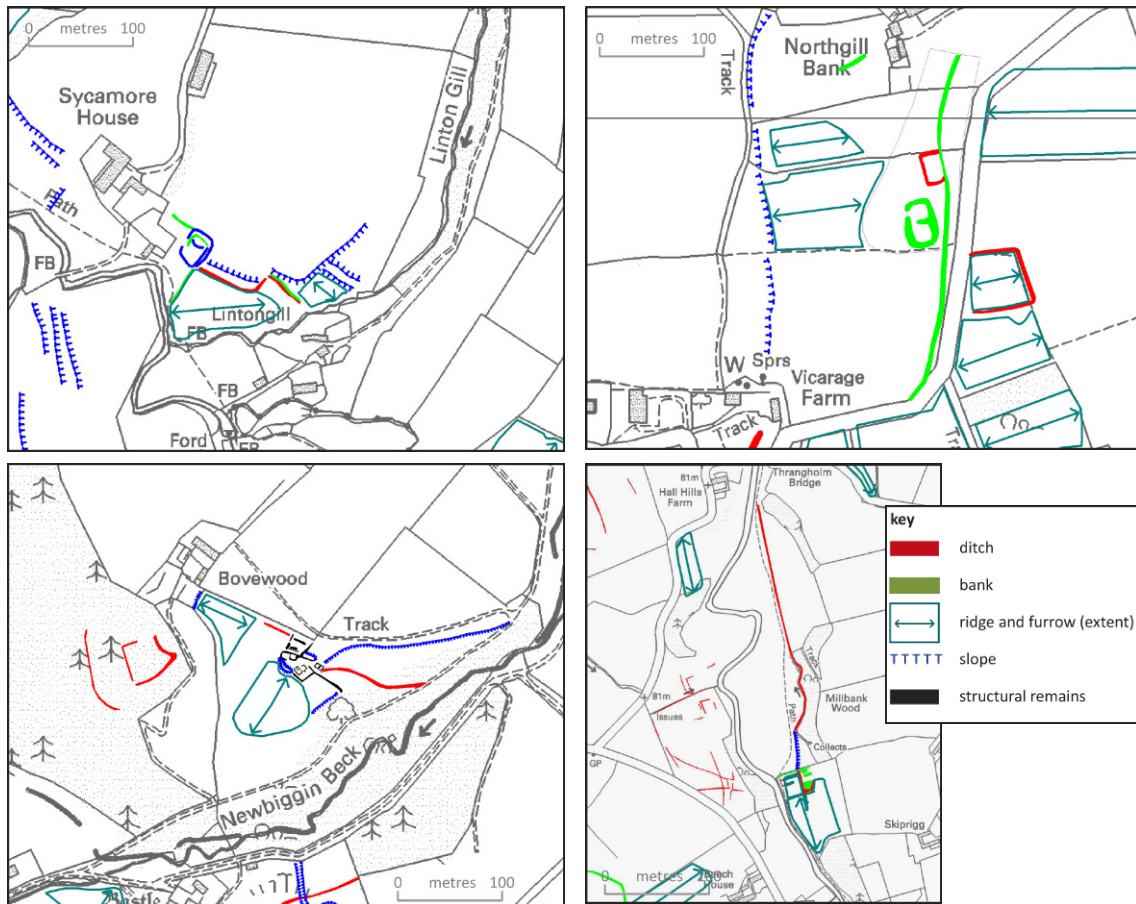


Figure 18 Extracts of project mapping for Linton Gill (top left), Ainstable (top right), Newbiggin (bottom left) and Millbank Wood (bottom right). (© Crown Copyright and database right 2017. All rights reserved. Ordnance Survey Licence number 100019088)



Figure 19 Extracts of project mapping for Camp Merry Thought (left) and Blackwell Racecourse (right) (©Crown Copyright and database right 2017. All rights reserved. Ordnance Survey Licence number 100019088)

depict what is thought to be part of the tail race running along the eastern edge of the informatively-named Millbank Wood (Fig 18 bottom right)

3.8 20th century military remains.

There are relatively few 20th century military sites within the project area, reflecting its inland location away from the zones of coastal coast defences and the absence of strategically important industries. There are however two significant sites: Blackhall racecourse, Carlisle and a prisoner of war camp on Aikbank Common (see Figs 13 and 19).

Air photos taken in the 1940s and 1950s show a series of earthwork trenches, hollows and scarps on land to the immediate east of Blackhall racecourse, Carlisle (1593021). The trenches have the characteristic crenallated pattern of practise trenches and they cut the underlying post medieval ridge and furrow (10799). The racecourse was requisitioned by the War Office in 1914 and it became the base for the Lonsdale Battalion. The scarps and hollows may have been the platforms for wooden camp buildings. The lidar visualisations indicate that some of these earthworks may still survive. The Cumbria HER records a deserted medieval village seen from air photos in this same location but it is possible that this was a misinterpretation of the earthwork evidence (CHER3403). The interior of the race course, along with other open areas along the banks of the Caldew north of Cummersdale was laid with anti-landing obstacles in Second World War (1593005, 1593797). Some individual ditches appear to survive as shallow earthworks, but most have been levelled.

During the Second World War a prisoner of war camp was constructed on the southern edge of this project's area on Aikbank Common (1472798). Known as Camp 76 and Merry Thought Camp it housed German and Italian prisoners. The camp buildings were mostly still extant on air photos taken in the late 1940s. More recent imagery shows that the upstanding structures have been removed but concrete platforms and roads survive. The main accommodation area is now planted with trees.

4. MONUMENTS OF SIGNIFICANCE AND SUGGESTIONS FOR FUTURE WORK

UID (Parish)	Summary description	Suggested actions	Potential or known significance
11338 (St. Cuthbert Without)	'Park House Roman Fort' LN	Re-assess designation polygon	Scheduled Monument
11335 and 922375 (Hesket)	'Roman camp and signal station' 1007871	Re-assess designation polygon	Scheduled Monument
11354 (Hesket)	'Polygonal prehistoric enclosure ...' Ln 1007872	Re-assess designation polygon	Scheduled Monument
11330 (Hesket)	'Slight univallate hillfort on Barrock Fell' Ln 1007872	Re-assess designation polygon (current polygon does not encompass any visible part of this monument)	Scheduled Monument
12451 (Kirkoswald)	'Medieval moated site at W of St Oswald's Church' Ln 1007088	Historic research and ground survey to investigate the nature of these earthworks. Re-assess designation polygon (current polygon does not cover large parts of this monument)	Scheduled Monument
12546 (Cumrew)	'Cairns of Cardunneth Pike' LN1007232	Re-assess designation polygon (current polygon does not cover large parts of this monument)	Scheduled Monument
1582810 - 1582813, 1598717, 1598718, 1598720, 1598722, 1598724, 1598725 (Sebergham)	Multi-period cropmarked landscape close to the R. Caldeu with remains dating possibly from Bronze Age to Early medieval and including a palisaded enclosure and site of a rectilinear building	Geophysical survey and field walking to recover any surface artefacts	Regional
1601516 (Wetheral)	Earthwork remains of a rectilinear enclosure in High Stand Plantation	Topographic survey to investigate the nature of these earthworks	Regional
1601509 (Wetheral)	Earthwork remains of a rectilinear enclosure in High Stand Plantation	Topographic survey to investigate the nature of these earthworks	Regional
1601500 and 1595559 (Wetheral)	Cocklakes industrial complex - post medieval to 20th century plaster and cement works	Topographic survey to inform a future use strategy	Regional
928122 (Wetheral)	Halstead Wood Iron Age and/or Roman enclosure and field system	Geophysical survey and field walking to recover any surface artefacts and ground survey in woodland	Regional
1598040 (Hesket)	Earthworks that may be the remains of a 'Seat or Noted House' at Ellerton	Historical research and ground survey to investigate the nature of these remains	Regional
1606746 (Kirkoswald)	A possible stonework enclosure of later prehistoric date	Topographic survey to investigate the nature of this feature	Regional (if interpretation verified)
1606710 (Kirkoswald)	Possible low stonework remains of Bronze Age hut circle and/or ring cairn and curvilinear enclosure	Topographic survey to investigate the nature of these remains	Regional (if interpretation verified)
1603284 (Cumrew)	Stonework remains of a possible Bronze Age cairn and enclosure	Topographic survey to investigate the nature of these remains	Regional (if interpretation verified)
1598739 (Castle Sowerby)	A newly-identified possible Iron Age curvilinear enclosure visible as a low earthwork on lidar imagery	Topographic survey to verify shape and form and field walking to recover any surface artefacts	Local

1582812 (Castle Sowerby)	Fragment of Iron Age and/or Roman cropmarked landscape including an enclosure with possible internal building	Geophysical survey and field walking to recover any surface artefacts	Local
1596925 (Dalston)	The site of a possible water mill and race, visible as earthworks on lidar visualisations	Ground survey to investigate the nature of these earthworks	Local
10800 (St. Cuthbert Without)	Levelled remains of a post medieval hall superimposed upon curvilinear enclosures of uncertain origin	Geophysical survey and field walking to recover any surface artefacts	Local
1472798 (Hesket)	Levelled remains of Merry Thought Camp or Camp 76 – a Second World War prisoner of war camp	Topographic survey to inform a future use strategy	Local
Vicinity of 928135 and 160997 (Kirkoswald)	Emerging cropmarked landscape	Specialist aerial reconnaissance	Local
Vicinity of 1609200 (Kirkoswald)	Emerging cropmarked landscape	Specialist aerial reconnaissance	Local
Vicinity of 1606726 (Kirkoswald)	Emerging cropmarked landscape	Specialist aerial reconnaissance	Local
Vicinity of 1606480 (Ainstable)	Emerging cropmarked landscape	Specialist aerial reconnaissance	Local

5. DATA ARCHIVING AND DISSEMINATION

5.1 Copyright

The copyright of the air photo mapping and associated records produced by this project lies with Alison Deegan. Alison Deegan grants Historic England a perpetual non-exclusive royalty- free licence to use and/or sub-licence the project archive and all other project materials for any purpose.

5.2 Project Archive

The results of this project's mapping and interpretation are contained within two ESRI shape files, one for the detailed mapping and the other for the simplified polygons that mark the extents of the NRHE record descriptions. These will be deposited with the Historic England Archive. Aerial Investigation and Mapping shall also retain digital copies.

The records resulting from this project are contained within and are integral to the NRHE. They may also be accessed online via Pastscape (www.pastscape.org.uk).

In accordance with the Historic England terms of use, all air photo scan and rectifications files are deleted at the end of the project. There are no formal arrangements for archiving the various lidar visualisations created during the course of this project; these will also be deleted.

5.3 External Partners

A copy of the project's mapping and interpretation data was sent to Cumbria HER.

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APPENDIX 1 SPHERE OF INTEREST (SUMMARISED FROM WINTON 2016)

Cropmarks, parchmarks, soilmarks

All sub-surface archaeological remains that are visible as cropmarks, parchmarks or soilmarks on the sources consulted were mapped and recorded.

Earthworks

All archaeological earthworks that are visible on the sources consulted were mapped and recorded. This includes features that are visible as earthworks on early photographs but which show as cropmarks, soilmarks or not at all on later sources.

Buildings and Structures

All foundations of buildings that are visible as cropmarks, soilmarks, parchmarks, earthworks or ruined stonework on the sources consulted were mapped and recorded. Standing roofed or unroofed buildings were not usually mapped except where the absence of the feature would affect the integrity of associated features that were in scope. Some non-roofed structures including sheepfolds and shooting butts were mapped when they were considered to be of archaeological significance to the project.

Ridge and Furrow

All visible ridge and furrow was mapped, regardless of preservation or date, using the NMP-standard conventions.

Post Medieval Field Boundaries

Post medieval field boundaries showing as cropmarks, soilmarks or earthworks that are depicted on historical ordnance survey maps were not usually mapped except when : they were directly associated with a feature or features that do fall within the scope of this project; or there was risk of confusion with older features

Parkland, Landscape Parks, Gardens and Country Houses

All man made garden or landscape features were mapped where visible. Industrial Features and Extraction Quarries of all dates and those larger than approximately 0.1 hectares were mapped and record. Although smaller quarries are usually not mapped for NMP-standard projects they were included on this occasion because so many had already been recorded in the NRHE. Recent quarries were included as a record of where earlier remains will have been truncated or destroyed.

Transport

In general railway lines (embankments, cutting and line structure) were not recorded by this project except those mineral railways that were associated with industrial complexes. The remains of roads that were visible on air photos, depicted on the historical maps but were out of use on the earliest air photos were mapped and recorded.

Urban areas

This was not particularly relevant to this project but refer to Winton 2016 of required.

20th Century Military Features

All visible First and Second World War features were recorded. No Cold War features were identified.

Natural features

Cropmark, soilmark or earthwork features of geological or geomorphological in origin were outside the scope of this project. However a small number of possible natural features were mapped and recorded: those where it was uncertain whether the feature was of human or natural origin and those natural features that had a known archaeological significance (eg Tarn Wadling for the pollen sequences it has yielded).

APPENDIX 2 MONUMENT DATA (GIS)

The Monument Data table consists of eleven data fields. These are associated with and specific to each graphical element in a monument depiction.

Field name	Field content	Sample data
QSHEET*	Name of OS map quarter sheet within which the object lies	SE 25 SW
EHLAYER*	Name of NMP layer to which the object belongs	BANK, DITCH, EXTENT OF FEATURE, RF, MONUMENT POLYGON, STRUCTURE, THACHURE
NMRUID	NRHE Unique Identifier (UID)	1460426
CHER*	Corresponding monument record in Cumbria HER (where appropriate)	CHER123456
PERIOD	Date of features (HE Thesaurus)	LATER PREHISTORIC
TYPE	Monument type (HE Thesaurus)	ROUND HOUSE (DOMESTIC)
PHOTO1	Reference for the photograph from which the feature was plotted and its date of photography	MAL/68025 V 69 25-APR-1968
EVIDENCE	Form of remains as recorded on the source photograph (HE Thesaurus)	CROPMARK
LIDAR*	If the monument could be detected on the lidar- derived images the relevant tile reference was recorded here.	LIDAR SE2896 ENVIRONMENT AGENCY D0057155 20TH-JUL- 2006 (NULL = -)
LIDAR CONDITION*	Condition of the monument as suggested by the latest available photos or lidar-derived images (this field may be blank if EVIDENCE was CROPMARK)	LEVELLED EARTHWORK (NULL = -)
PHOTO2*	Reference for the most recent photograph (this field may be blank if the EVIDENCE was cropmark or latest condition relied on the evidence of the lidar-derived images.)	Next Perspectives PGA Imagery SE2050 16-JUN-2010 (NULL = -)
PHOTO2 CONDITION*	Condition of the monument as suggested by the PHOTO 2 (this field may be blank if EVIDENCE was CROPMARK)	LEVELLED EARTHWORK (NULL = -)

* these are not core NMP-standard data fields and they may not be retained in the files that are formally archived by the HEA and/or uploaded to the HE GIS. However it is highly desirable that arrangements are made for the archive and dissemination of the full data versions as this information cannot easily be recovered from the NRHE records alone.

APPENDIX 3 THE PERIOD TERMS INDEXED BY THE PROJECT

At the time of writing there are 45 period terms permitted in the NRHE, several of which are overlapping. Given the nature of the evidence considered by this project, only the broadest period terms were usually employed. This list is provided to avoid false-negative search results.

PREHISTORIC

LATER PREHISTORIC

NEOLITHIC

LATE NEOLITHIC

BRONZE AGE

IRON AGE

ROMAN

EARLY MEDIEVAL

MEDIEVAL

POST MEDIEVAL

19TH CENTURY

20TH CENTURY

EARLY 20TH CENTURY

FIRST WORLD WAR

SECOND WORLD WAR

MID 20TH CENTURY

LATE 20TH CENTURY

UNCERTAIN

APPENDIX 4 HE THESAURUS TERMS INDEXED BY THE PROJECT

This list of the archaeological types record by this project is provided to assist users that wish to interrogate the data via this field

ADIT	DITCH
ANGLE TOWER	DRAINAGE DITCH
ANNEXE ENCLOSURE	DROVE ROAD
ANTI LANDING OBSTACLE	EMBANKMENT
AVENUE (LANDSCAPE FEATURE)	ENCLOSED SETTLEMENT
BANK (EARTHWORK)	ENCLOSURE
BASTLE	EXCAVATION TRENCH
BOUNDARY	EXTRACTIVE PIT
BOUNDARY BANK	FARM BUILDING
BOUNDARY DITCH	FARMSTEAD
BRICK AND TILEMAKING SITE	FARMYARD
BRICKEARTH PIT	FIELD BOUNDARY
BRICKWORKS	FIELD SYSTEM
BRIDGE BUILDING	FISH TRAP
BUILDING PLATFORM	FISHPOND
CAIRN	FLOOD DEFENCES
CASTLE	FLOWER BED
CAUSEWAY	FORT
CEMENT WORKS	GARDEN TERRACE
CHAPEL	GRAVE
CHURCHYARD	GRAVEL PIT
CIRCULAR ENCLOSURE	GROTTO
CLAY PIT	GYPSUM MINE
CLEARANCE CAIRN	HA HA
COAL WORKINGS	HILL TOP ENCLOSURE
COBBLE QUARRY	HOLLOW
COTTON MILL	HOLLOW WAY
CURVILINEAR ENCLOSURE	HOLY WELL
D SHAPED ENCLOSURE	HUT
DAM	HUT CIRCLE
	IRON WORKS

ISLAND	RAILWAY CUTTING
LEAT	RAILWAY SIDING
LIME KILN	RECTILINEAR ENCLOSURE
LIMESTONE QUARRY	RIDGE AND FURROW
LONG MOUND	RING CAIRN
LYNCHET	RING DITCH
MILL DAM	ROAD
MILL POND	ROBBER TRENCH
MILL RACE	ROMAN
MOAT	ROUND BARROW
MOUND	ROUND CAIRN
NARROW RIDGE AND FURROW	ROUND HOUSE (DOMESTIC)
NATURAL FEATURE	ROYAL OBSERVER CORPS SITE
OFFICE	SAND AND GRAVEL EXTRACTION SITE
PADDOCK	SCARP
PALISADED ENCLOSURE	SETTLEMENT
PEAT CUTTING	SEWAGE WORKS
PEN	SHAFT
PIPELINE	SHEEPFOLD
PIT	SHIELING
PIT CIRCLE	SHOOTING STAND
PLANT BED	SIGNAL STATION
PLASTER WORKS	SPOIL HEAP
PLATFORM	STANDING STONE
PLEASANCE	STOCK ENCLOSURE
PLOUGH HEADLAND	STONE CIRCLE
POLYGONAL ENCLOSURE	STONE STORE
POND	SUB CIRCULAR ENCLOSURE
PRACTICE TRENCH	TAIL RACE
PRISONER OF WAR CAMP	TARGET
PROSPECT MOUND	TEMPORARY CAMP
QUADRANGULAR CASTLE	TERRACE
QUARRY	TERRACED GROUND
QUARRY PIT	TILE KILN

TOFT
TRACKWAY
TRAMWAY
TREE CLUMP
UNIVALLATE HILLFORT
WALL
WATER CHANNEL
WATERCOURSE WATERMILL
WOOD RECTANGULAR
ENCLOSURE
WOODBANK



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