



EXPLORING MEDIEVAL LONGHOUSES IN THE DUDDON VALLEY,

CUMBRIA

Long House Close Draft Interim Report



Oxford Archaeology North

April 2018

Duddon Valley Local History Group

Issue No:

OA North Job No

NGR:

2016-17/1913

L10953

NY 32454 49738

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SUMMARY

Oxford Archaeology North (OA North) was invited to provide supervision and enablement for a community archaeology survey and excavation project of three longhouses in the Duddon Valley (Tongue House A and B, and Long House Close) (NGR 32426 49758; 32429 49784; 32454 49738). This was undertaken on behalf of the Duddon Valley Local History Group, in conjunction with the National Trust and the Lake District National Park Authority; the project was financed by the Heritage Lottery Fund. The survey took place in April 2016, followed by the excavation of the first of these longhouses (Tongue House A) in late June and early July 2016. Following on from this site a second building was excavated Long House Close in June 2017.

Initially an archaeological survey was undertaken and this entailed a detailed survey of each longhouse using a theodolite and disto with data plotted in the field. A further process of photogrammetric survey was undertaken across a wide area, using photographs taken from a drone, in order to record the wider landscapes. In conjunction with this, a geophysical survey was undertaken to examine underlying structures and to identify any possible hearths. This preliminary work culminated with the excavation of Tongue House A in 2016, followed by the partial excavation of the archaeological remains at Long House Close in 2017, which, due to the unexpected prehistoric remains found at the site, will be further investigated in 2018.

Long House Close lay within the southern end of an enclosure containing several other structures, including a further possible shieling hut or longhouse. This enclosure lay at the northern end of a field system that extended down the valley side to Long House Close farm in the valley bottom.

The excavation at Long House Close revealed a far more complex site than in the previous year. A programme of scientific dating has established that activity was taking place on the site from the late Bronze Age (c 1400-1130 cal BC), with a further radiocarbon determination signalling activity at the beginning of the Iron Age. The stone building originally targeted for excavation produced a radiocarbon determination date of cal AD 1485-1643.

The Bronze Age activity at the site which lay directly below the late medieval budding comprised a series of rough cobbled surfaces often containing abundant charcoal interspersed with two hearths and two stone structures, the use of which remains obscure. Iron Age activity was restricted to a single feature; a shallow stone-filled gully cutting into the earlier deposits.

The function of the two parallel large stone walls that were one of the principal reasons for the choice of this site for excavation, which partially surrounded the late medieval building, has not been resolved. Nor has its precise relationship with the later building been resolved satisfactorily, something which the next seasons excavation will seek to determine.

The late medieval building comprised a rectangular stone structure divided by a cross-passage, with a stone surface occupying the western end, beneath which was preserved what might have been an earlier earthen floor in which the charcoal of a variety of tree species was common. It was this deposit that yielded the late medieval radiocarbon determination. The eastern end, which was marked a wall partly screening the cross-passage, contained a large flat stone considered to be a hearth, which, along with iron nails,

horseshoes and sherds of late medieval pottery found in and around the building attest to some form of domestic occupation and other activities.

ACKNOWLEDGEMENTS

Oxford Archaeology North would like to thank the Duddon Valley Local History Group (DVLHG) and the Lake District National Park Authority for commissioning the project, and the Heritage Lottery Fund for providing the funding. This project was made possible in part by a grant from the Council for British Archaeology's Mick Aston Fund, which is supported by English Heritage.

Thanks must go in particular to Stephe Cove, Kenneth Day, Mervyn Cooper, Bob Bell, Alison Matthews, and Peter Matthiessen of DVLHG and Eleanor Kingston of the Lake District National Park Authority, for their considerable involvement and support. We would also like to thank the landowner David Pennefather, in particular, for giving permission to access the site at Long House Close. We would also like to thank Gail Batten for enabling the use of the Parish Rooms, and to also thank Anthony and Hilary Hartley, from Turner Hall, for allowing access and parking. The heads and staff of all the schools must be thanked for facilitating the children's involvement. The excavations were primarily undertaken by volunteers, whom we must thank all for their boundless enthusiasm and energy throughout the project.

The volunteers were: Frances Green, Mike Green Lesley Steele, Sally Varian, Barbara Green, John Jordan, Alan Westall, Corey Birkett, Faiqa Aslam, John Nichols, Kelly Artingstoll, Chris Swanson, Dave Hughes, David Pennefather, Judith Illett, Keith Nixon, Piers Waterston, Helen Quartermaine, Philip Minchon, Alison Matthews, Alan Bell, Irene Dayer, Jennifer Gallagher, Janice Brockbank, Len Watson, Nick Russell, Alistair Craghill, June Craghill, Catherine Whitelock, Chris Shearin, Jackie Fay, Kristin Davison, Linda Wilkinson, Steve Douglas, Craig Stangroom, Adrienne Calsey, Jeff Benson, Helen Beaumont, Melanie Grange, Milly Wilson, Sue Dawson, Jeremy Rowan-Robinson, Yvonne Rowan-Robinson, Vicky Whibley, Marlene Mussell, Helen Tappenden, Mike Tappenden, Liz Kerrey, Frances Rand, Bob Mayow, Ken Lindley, Alan Dunthorne, Helen O'Brien, Ricky Rushton, Astrid Hardwick, Brian Hardwick, Liz Kingston, Roger Kingston, Ian Boyle, Kath Sallabank, Alan Naylor; from Greenhead College, Huddersfield were: Richard Brewster and Geraldine Walker and students: Robyn Cartwright, Elanor Straw, Jordan Roach, Emma Hynes, William Fenney, Sarah Ingham, Elinor Lang and Ayesha Irfaan. Day leaders from DVLHG were: Stephe Cove, Bob Bell, Ken Day, Alison Matthews, Mervyn Cooper, Peter Matthiessen and Sue Lydon, and archaeological days leaders were: Eleanor Kingston (LDNPA) and Jamie Lund (National Trust).

The excavations were supervised by Jeremy Bradley, Pete Schofield and Debbie Lewis. The charcoal was identified by Denise Druce who also supervised the environmental processing. The report was written by Jamie Quartermaine and Jeremy Bradley, and the illustrations were produced by Anne Stewardson and Mark Tidmarsh. The report was edited by Jamie Quartermaine, who also managed the project.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF PROJECT

1.1.1 Oxford Archaeology North (OA North) was invited to provide supervision and enablement for a community archaeology survey and excavation project of three longhouses in the Duddon Valley (Tongue House A and B, and Long House Close) (NGR 32426 49758; 32429 49784; 32454 49738) (Fig 1). This was undertaken on behalf of the Duddon Valley Local History Group in conjunction with the National Trust and the Lake District National Park Authority; the project was financed by the Heritage Lottery Fund. The survey took place in April 2016, followed, firstly by the excavation of the first of these longhouses (Tongue House A) in late June and early July 2016, followed by the excavation of the structures at Long House Close in June 2017. The following report documents the results of the archaeological excavation at Long House Close, and discusses them within their historical and archaeological context.

1.2 LOCATION, TOPOGRAPHY AND GEOLOGY

- 1.2.1 **Location, Topography, Geology:** the Duddon Valley is headed by Harter Fell, Little Stand and Grey Friar; the River Duddon flows to the south-west to Dale Head, Seathwaite and Duddon Bridge, and then on to the Duddon estuary. The three sites under study, Tongue House A and B and Long House Close, were on the unenclosed fell north-east of Seathwaite and Long House, on either side of the track between Long House (at the northern end of the Seathwaite Road) and Seathwaite Tarn, at altitudes of 273m, 300m and 294m (NGR 32426 49758; 32429 49784; 32454 49738 (respectively)) (Fig 1). The Long House Close site was to the south of the Tongue House sites on the east side of the track. The site has very clear visual remains, with bedrock and natural boulders close to the surface, and it forms part of a suite of buildings within and structures within an enclosure associated with an extensive field system.
- 1.2.2 The underlying geology was of rocks of the Birker Fell Andesite Formation in an environment previously dominated by volcanic eruptions. The soil cover was from Devensian - Diamicton till formed by Ice Age glaciers (mapapps.bgs.ac.uk/geologyofbritain).

2. METHODOLOGY

2.1 PROJECT DESIGN

- 2.1.1 A project design (*Appendix 1*) was submitted by OA North in response to an invitation to provide supervision and enablement for a community archaeology survey and excavation project of three longhouses in the Duddon Valley (Tongue House A and B, and Long House Close). The project design was adhered to in full, and the work was consistent with the relevant CIFA and Historic England guidelines (Chartered Institute for Archaeologists (CIFA) 2014a, 2014b, 2014c; Historic England 2015).
- 2.1.2 Several types of survey were undertaken including detailed topographic survey, a palaeoenvironmental survey, and a geophysical survey (*Sections 2.2-2.4*), and was followed by firstly the excavation of the Tongue House A in 2016, followed by the excavation of at Long House Close in 2017, which forms the subject of this report (*Section 2.5*).

2.2 DETAILED TOPOGRAPHIC SURVEY

- 2.2.1 A detailed topographic survey of each of the house sites was undertaken to EH Level 2 (Ainsworth *et al* 2007).
- 2.2.2 **Survey Methods:** as the survey was intended primarily to serve as a training exercise for the volunteers, the survey techniques employed were devised to be easy to understand, allow for plotting in the field and to be easily affordable by volunteers, but at the same time to provide a range of techniques. This included the use of some outdated technologies, which had a significant impact on productivity, but were off-set by the use of more current techniques that enabled detailed 3D recording.
- 2.2.3 Where appropriate, photographic methods were employed using aerial photography from a drone with respect to survey control established by GPS/ total station. Details of these techniques are outlined below;
- **Theodolite / Disto Survey:** the use of a theodolite/ disto was found to be very effective. The theodolite measured angles and the disto measured the distances, with the data then drawn up in the field by volunteers using an accurate film-based protractor and ruler. This allowed the volunteers to be involved in all stages of the process;
 - **Photogrammetric Recording:** where possible, the sites and immediate environs were recorded by means of high altitude photography, which, using specialist photogrammetric software, allowed the creation of accurate three dimensional models of the site and topographic surfaces. This was achieved using a UAV, a small multi-engined model helicopter, providing photography from any altitude up to approximately 100m height. Survey control was introduced to the photographs by the placement of survey control targets across the site which were located by means of survey grade GPS or total station;
 - The photogrammetric processing was undertaken using Agisoft software which provides detailed modelling using the overlap of up to 300

photographs, enabling the creation of a very detailed Digital Terrain Model (DTM) across the site. The photographs were then digitally draped over the model to create an accurate three dimensional model of the ground surface. The primary output, however, was an accurate two-dimensional image which was used to generate accurate plans or profiles.

- 2.2.4 **Survey Control:** where possible, survey control was introduced to the sites by means of a high accuracy survey-type differential GPS. This can achieve accuracy of +/- 20mm, and ensured that the survey was located accurately onto the Ordnance Survey National Grid. Where mobile reception (necessary to provide corrections for the GPS) was prohibited, then a base station was established to provide consistent accurate control.
- 2.2.5 **Detail Survey Overview:** the detail survey by theodolite recorded all structural and earthwork components. Survey points were marked on the ground using spray paint and the survey drawing was manually drawn up with respect to them. On completion of the survey, the field drawings were digitised into a CAD system. The survey recorded all archaeological features, earthworks and elements. The survey aimed to identify, locate and record all built elements of the landscape.
- 2.2.6 **Photographic Record:** a photographic archive was generated in the course of the field project, comprising landscape and detailed photography. Detailed photographs were taken of the archaeological features using a scale bar. All photography was recorded on photographic *pro-forma* sheets which show the subject, orientation and date. The photography was typically undertaken using a digital SLR camera with 16 megapixel resolution.

2.3 GEOPHYSICAL SURVEY

- 2.3.1 Magnetometry surveys were carried out at all three sites, concentrating on the interiors of the longhouses and a resistivity survey was undertaken of the Long House Close site (Plate 1). Magnetometry is not the best technique for recording rocky landscapes, or where there is the potential for bedrock near the surface; however, it is very effective for the identification of hearths. A rapid survey was undertaken of the interiors of Tongue Houses A, and B, and Long House Close, extending some way beyond the extent of each longhouse.



Plate 1: Undertaking a resistivity survey at Long House Close

- 2.3.2 The detailed magnetic survey was carried out using a Bartington Grad601-2 gradiometer which has an internal data logger. Data was collected in zig-zag mode over a half grid (15m x 30m), the magnetic data was collected at 0.25m intervals on profiles 1m apart (3600 readings per grid). In total, an area of approximately 0.18ha was surveyed with magnetometry (Fig 2), and most of the recording was undertaken by the volunteers under supervision.
- 2.3.3 The resistance survey is most effective at identifying stone structures; however, it can be masked, and the results confused, by the proximity of natural stones and bedrock. The detailed resistance survey was carried out using a Geoscan RM15 resistance meter, which has an internal data logger. Data was collected by the volunteers in zig-zag mode over 30m by 30m grids. The resistance survey data was collected at 1m intervals on profiles 1m apart (900 readings per grid).
- 2.3.4 **Data Capture and Processing:** the magnetometer survey was carried out in scan mode. The operator walked along survey tapes set out as a guide and observed the changes in reading on the left-hand tube whilst walking slowly forward. Any readings above the background of 1.5nT were recorded in spray paint on the ground to be surveyed in.
- 2.3.5 Resistance data were captured in the internal memories of the instruments and downloaded to a portable computer on-site and backed-up on to a USB drive. The grid was processed to produce an overall plan of the surveyed area, or 'composite'. The results were analysed and basic initial processing was carried out on-site using Terrasurveyor by DW Consulting.
- 2.3.6 Final processing of resistivity raw data was undertaken off site in accordance with Historic England guidelines (English Heritage 2008) to remove any instrument error or survey effects in order to enhance subtler anomalies normally associated with archaeological features. All data were clipped by the appropriate values where necessary and the following processing steps carried out:

- The data sets were de-spiked in order to remove high contact readings;
- The grids were edge matched in order to correct for changes in the position of the remote probes;
- A high pass filter was applied which removes variations in the background geological response;
- A low pass filter was applied where appropriate, which can improve the visibility of weak archaeological features.

2.4 EXCAVATION

- 2.4.1 The excavation at Longhouse Close was supervised by a core of three OA North staff members, with the intention that the excavation should allow an area of sufficient size to be excavated and completed over the course of 16 working days, including three weekends of the project. Initially, areas within Long House Close and its environs were targeted based upon what was thought to be practicable within the time frame of the excavation and, within that remit, those areas which would provide the most data, such as wall junctions and the geophysical survey anomalies, were also targeted. A plan of the intended excavation areas in and around Long House Close was drawn up and submitted to the steering group (representing DVLHG, OA North, LDNPA and the National Trust) for approval.
- 2.4.2 In practice, a flexible approach was undertaken, as outlined in the original methodology, whereby smaller areas were to be opened up initially and then be expanded or additional areas opened as the work progressed. The end result was that much of the interior of the late medieval building at Long House Close was stripped and excavated down to extant floor layers, whilst the more substantial, parallel walls and the area to the east of the internal building were only partially investigated. The prime reason for this was the realisation that it was not going to be possible to fully understand the archaeological sequence at Long House Close in the course of one season of excavation. This became more apparent once the programme of scientific dating had commenced as part of the post-excavation analysis, which identified a hitherto unexpected Bronze Age phase of activity below both the late medieval building and the outer parallel walls.
- 2.4.3 The emphasis for the excavation was upon providing a valuable experience for the participants, rather than undertaking extensive areas of excavations to tight timetables. Whilst it was important that all areas opened were fully excavated, the extent of the excavation areas were defined so as to ensure that the participants could comfortably complete these areas within the time allowed.
- 2.4.4 ***Turf Clearance and Excavation:*** the turf was carefully removed from the excavation areas by manual techniques and stored separately from the spoil and adjacent to the excavation. Following lessons learned from the excavation at Tongue House Close bracken rhizomes were also stored
- 2.4.5 All excavation was carried out using manual techniques. Spoil from the excavation was stored at a location adjacent to each site. Stone from the collapsed walls of the building and from the three ‘breaches’ made through the surrounding enclosure walls were stacked adjacent to the site.

- 2.4.6 Structural remains were cleaned to define their extent, nature, form and, where possible, date. All information identified in the course of the site works was recorded stratigraphically, using a system adapted from that used by the Centre for Archaeology Service of English Heritage. Results of the evaluation were recorded on *pro-forma* context sheets, and were accompanied by sufficient pictorial record (plans, sections and colour digital photographs) to identify and illustrate individual features. Primary records were available for inspection at all times.
- 2.4.7 Samples were taken from within the house site to enable phosphate analysis. This work was undertaken by the participants under the guidance of the core OA North staff members after consultation with the OA North palaeoenvironmentalist.
- 2.4.8 A full and detailed photographic record of individual contexts was maintained and, similarly, general views from standard view points of the overall site at all stages of the evaluation were generated. Photography was undertaken using digital photography. Photographs records were maintained on special photographic *pro-forma* sheets.
- 2.4.9 **Planning:** the precise location of all archaeological structures encountered was surveyed digitally by experienced surveyors utilising GPS to record the site according to OS co-ordinates. In this case, a Leica Differential GPS was employed that uses real-time (RTK) corrections using mobile SmartNet technology to achieve an accuracy of $\pm 0.01\text{m}$. The accuracy of the OA North GPS system provides for a quick and effective means of recording the position and extent of sites. The digital survey data will be transferred, via Leica Geo Office (V.4), as shp files into a CAD system (AutoCAD 3D 2015), and superimposed onto the embedded digital OS data.
- 2.4.10 Additionally, the site and general environs were recorded by means of aerial photography, using specialist photogrammetric software, which was used to create accurate three dimensional models of the site and topographic surfaces. Two methods were utilised; the first used a UAV (drone), that enabled photography from *c* 30 feet, this technique was primarily used when placing the building within its wider environs. The second technique used a mast with a camera mounted on top. The latter is not effective at recording large areas, but could be undertaken by the volunteers, and allowed them to get involved in the photogrammetric process using inexpensive equipment. This was used on a day to day basis to record the progress of the excavation and provide accurate plans. Survey control was introduced to the photographs by the placement of survey control targets across the site which were located by means of survey grade GPS.
- 2.4.11 The photogrammetric processing was undertaken using Agisoft software which provides detailed modelling using the overlap of up to 500 photographs, and creates a very detailed DTM (Digital Terrain Model) across the site. The photographs can then be digitally draped over the model to create an accurate three-dimensional model of the ground surface. The primary output, however, was an accurate two dimensional image which was used to generate accurate plans or profiles.
- 2.4.12 This process generated scaled plans within an AutoCAD system, which was refined by manual draughting. The drawings were generated at an accuracy appropriate for 1:20 scale. Sections were manually drafted at a scale of 1:10. All information was tied in to Ordnance Datum using the GPS. On completion of the excavations aerial photographs were taken of the site using a photographic mast.

- 2.4.13 **Backfilling:** the excavation areas were manually backfilled by OA North and the participants, and the turfs were relaid. In practice the stone heaps were consolidated, and only smaller stones and rocks were used to consolidate various he deeper features. The remaining stone was left as cairns adjacent to the site.
- 2.4.14 **Finds policy:** finds recovery and sampling programmes were in accordance with best practice (following current Chartered Institute of Field Archaeologists guidelines) and subject to expert advice in order to minimise deterioration. OA employs in-house artefact and palaeoecology specialists, with considerable expertise in the investigation, excavation, and finds management of sites of all periods and types, who were readily available for consultation.
- 2.4.15 Finds storage during fieldwork and any site archive preparation will follow professional guidelines (UKIC 1998). Emergency access to conservation facilities is maintained by OA North with the Department of Archaeology, the University of Durham. Samples were also be collected for technological, pedological and chronological analysis as appropriate.

2.5 ARCHIVE

- 2.5.1 An archive for the project was prepared during and immediately following the fieldwork programme and a summary forwarded to the Lake District Historic Environment Record. The results of the excavation will form the basis of a full archive to professional standards, in accordance with current Historic England guidelines (2015). The project archive represents the collation and indexing of all the data and material gathered during the course of the project. The deposition of a properly quantified, ordered, and indexed project archive in an appropriate repository is considered an essential and integral element of all archaeological projects by the Chartered Institute for Archaeologists.

3. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

3.1 INTRODUCTION

- 3.1.1 **Introduction:** this report has been abstracted from two key publications: *Longhouses in the Duddon Valley Cumbria* collated by the Duddon Valley Local History Group in 2013 (DVLHG 2013) and a more recent work *A Survey of Longhouse Structures in the Duddon Valley, Cumbria* by the DVLHG in 2015 (Matthiessen *et al* 2015). As part of its work on the historical background of the survey sites, the DVLHG searched the National Archive catalogues and undertook a thorough, and wide ranging study of the available primary sources and secondary sources (DVLHG 2013, 12 and 103). The primary sources comprised mainly legal documents, church records and manorial references, some dating from the early seventeenth century but most dating from the eighteenth to twentieth centuries (*op cit*, 12). For an understanding of the patterns of settlement in the Duddon Valley and the Lake District the DVLHG drew upon the works of Angus Winchester (Winchester 1987; 2000). For this interim report a third document was also studied: this was a chapter of the Lake District World Heritage Site Nomination (LDNPA 2015).
- 3.1.2 **Sites under Study:** from an initial Level 1 Identification Survey, as reported by the DVLHG in 2013, a short-list of longhouse sites was identified for a more detailed, Level 2 archaeological survey. Within this group were the three longhouse sites under study, Tongue House A, Tongue House B, and Long House Close (DVLHG 2013, 17 and 20). The sites were found as a cluster, comprising *c* 0.5km², on the unenclosed fells flanking the track from Long House Farm to Seathwaite Tarn. Long House Close is recorded under HER 38570 (NTSMR 23863).
- 3.1.3 **Previous Archaeological Work: Level 1 and Level 2 Surveys:** the DVLHG have found that all the longhouses in their surveys were sited near to surface water and their surrounding landscape had evidence for ancient agricultural activities (DVLHG 2013, 14). The initial survey at Level 1 discovered that, as with all the longhouses of the survey, the sites under study were similar; ie rectangular with cross passages and lateral door openings (*ibid*) and with a single wall perimeter (*op cit*, 17 and 20).
- 3.1.4 The southern structure at Long House Close was 9m x 3.9m in size and had one to two wall courses; it is uncertain whether there was a cross wall, although there may have been two entrances (DVLHG 2013, 41). It was closely associated with longhouse to the west, a circular sheepfold and enclosure walls, pre-dating eighteenth and nineteenth century walls (*ibid*). The southern longhouse was surrounded by a wall which may have enclosed a yard or, if it supported a roof, a small shelter (*ibid*).
- 3.1.5 The initial Level 1 surveys identified patterns of low walls or collapsed low walls used to enclose cleared land. They were perhaps topped with fences or palisades of brushwood and may have housed small cattle or sheep (*ibid*; Matthiessen *et al* 2015, 131); there was no evidence for ploughing or cultivation (DVLHG 2013, 103). The surveys also found many clearance cairns and disused tracks (*ibid*). It was tentatively surmised that the longhouses in the Duddon Valley Surveys were of mid to late medieval date (*op cit*, 104).

3.2 SITE HISTORY

- 3.2.1 **Prehistoric and Roman Period:** there is evidence for a significant number of settlements in the Duddon Valley during the prehistoric period, including the Neolithic stone circle at Swinside Farm on the north side of the Duddon estuary. Extensive Bronze Age cairnfields and associated settlements and field systems are to be found across the south-west fells, on the western side of Duddon Valley (Quartermaine and Leech 2012).
- 3.2.2 **Early Medieval and Medieval Periods:** studies of surviving manorial documents, place names, and pollen analysis have demonstrated overall patterns of three phases of colonisation of the Lake District and thus, perhaps, of the Duddon Valley (DVLHG 2013, 86; Winchester 1987 and 2000). An early phase of colonisation is indicated by place names, such as those with *-thwaite*, and *-scale* suggesting clearance and agricultural settlement by Norse peoples (LDNPA 2015, 154). It is generally thought that the Norse colonists of this early period built longhouses where they settled and certainly the design was adopted by Cumbrian builders in the medieval and late medieval period (Matthiessen *et al* 2015, 117-118 and 123). During the tenth century onwards there was a period of increased settlement as evidenced by pollen analysis (DVLHG 2013, 86), but this was followed by a period of reduced population numbers as suggested by the regeneration of the woodlands.
- 3.2.3 A second period of clearance and cultivation began in the second half of the twelfth century and thirteenth century (DVLHG 2013, 86). In the Duddon Valley evidence of farming can be seen on the sides at the valley at *c* 200-300m (*ibid*). This may have been the period when many of the identified Norse-style longhouses and enclosures adopted by Cumbrian farmers were occupied and worked on all year round (Matthiessen *et al* 2015, 123). The practice of transhumance and living part-year in shielings had also been introduced by the Norse peoples and was later adopted by indigenous northerners (DVLHG 2013, 86; Matthiessen *et al* 2015, 118). Within this second phase of settlement, and by *c* 1300, there had been further clearances and enclosures in the forests (for instance the forest of Ulpha) (DVLHG 2013, 86-87), perhaps 'assarting' in places such as Seathwaite (LDNPA 2015, 156). The influence of the Abbey of Furness was probably important, through cultivation and later sheep farming, stock farming, such as at Ulpha, fishponds, and iron production (LDNPA 2015, 155-6). Population declined during the fourteenth and fifteenth centuries due to the Black Death, poor harvests, and animal plagues (DVLHG 2013, 87).
- 3.2.4 The third period of population growth in the Lake District took place from the second half of the fifteenth century and during the sixteenth and seventeenth centuries when there was a substantial increase in 'assarting' and in the lease or ownership of enclosed agricultural farmsteads conjoined to form small hamlets (LDNPA 2015, 156-7; DVLHG 2013, 87). At Seathwaite there were two hamlets comprising two or three farmsteads surrounded, at a distance, by smaller farms such as Tongue House, and each farmstead was directly adjacent to small, irregular, enclosed fields or inbye fields (LDNPA 2015, 157). Larger intakes (perhaps through assarting) were on the lower slopes of the unenclosed fell, perhaps using the becks as boundaries (*ibid*). This might reflect the increase in sheep farming in this period as a response to the growth of textile industries in the Lake District. Some family estates also became larger (DVLHG 2013, 88). Thus the open fell side became farmed as enclosed pastures.

- 3.2.5 **Medieval and early Post-Medieval Periods:** there is an early documentary reference to Long House Farm dated to 1683 and thus the farmhouse may be of seventeenth century date or earlier (Higgins 1986; NTSMR 20632). The Long House Close fells were almost certainly associated with Long House Farm located on the lower levels; nineteenth century OS mapping demonstrated how the intakes on Long House Close were adjacent to the inbyes clustered next to the Long House Farm (1st edition OS map 1850-1851 and DVLHG 2013, 41). But it should be said that there seemed to have been no documentary confirmation of any relationship between the enclosures on the upper fells and Long House Farm itself. Long House Farm may originally have been a longhouse prior to being remodelled as a two storey structure (*ibid*) implying a longevity of occupation.
- 3.2.6 It is possible that during the seventeenth century farmhouses may perhaps have retained lands in the upper fells for summer pasture (Historic England 2011). Long House Close has been suggested as a shieling (DVLHG 2015, 131), and if this was so, the structure may have been associated with Long House farm.
- 3.2.7 There are references in the documents of Walney Scar settlement, which may have been a name for a farmstead close to the Walna Scar Road, which is the east/west track leading to the long house (*op cit*, 90). This was possibly in the vicinity of Long House Close longhouses and enclosures, which were north of this road (*ibid*). The location of Walney Scar is uncertain but records, suggest that Walney Scar may have been ‘on the fellside north-east of Long House up the old Lonin and in fields to the left. Three sides of a building stand...Near it is Barn remains....’ (Wade documents cited by DVLHG 2013, 90). The ‘fields to the left’ might have been those north of the Walna Scar Road and in the same area as the Long House Close.
- 3.2.8 **OS 1st edition OS map, 1:10,560, 1850-51 (Plate 2):** the mapping of the mid-nineteenth century is important as field patterns and upland pasture shown may have been similar to, or derived from, field patterns of the earlier centuries. The 1850-51 OS map showed the farms at both Long House and Tongue House and the pattern of small irregular fields, or inbyes, clustered around the farm buildings. Sunny Pike Gill flowed between the two farms and this may have acted as the marker for a possible boundary between the two farms. Five crossing points are shown on the stream between the two farms, and was possibly an indicator of the need for communications, and there was a footpath marked connecting the two farms.



Plate 2: OS First Edition 1:10,560 map 1850-1

- 3.2.9 Long House Farm was adjacent to a cluster of small irregular inbyes to its north and east. On their east side was Broad Hawes and two to three intakes as far north as Sunny Pike Gill. To the east was Long House Close and north-east of the farm was a label *Ancient Stone Walls*, depicting and labelling the sites at Long House Close. No track from Long House Farm to the upper fells was delineated. Further up the fell, Sunny Pike Gill also separated Tongue House High Close and Long House Close.
- 3.2.10 This pattern of farm buildings surrounded by inbyes with intakes on the lower slopes of the upper fells was a feature of the later medieval dispersed farmsteads and settlements of the sixteenth and seventeenth centuries (LDNPA 2015, 156-8 and DVLHG 2013, 87); the field shapes of the enclosed fields and larger intakes persisted into the post-medieval period to be mapped on the OS maps of the nineteenth century. The track between Long House and Seathwaite Tarn was not marked on the 1850-51 map but was first seen on the OS map of 1900, and was associated with the building of the Seathwaite Dam for the Barrow Corporation completed in 1904.
- 3.2.11 *OS map, 1:10,560, 1900 (Plate 3)*: the sites under study were marked on this map. East of the track from Long House to Seathwaite Tarn were the *Stone Walls*, and west of the track adjacent to one of the rocky outcrops of Tongue House High Close were marked two short sections of straight stone wall and a possible enclosure.

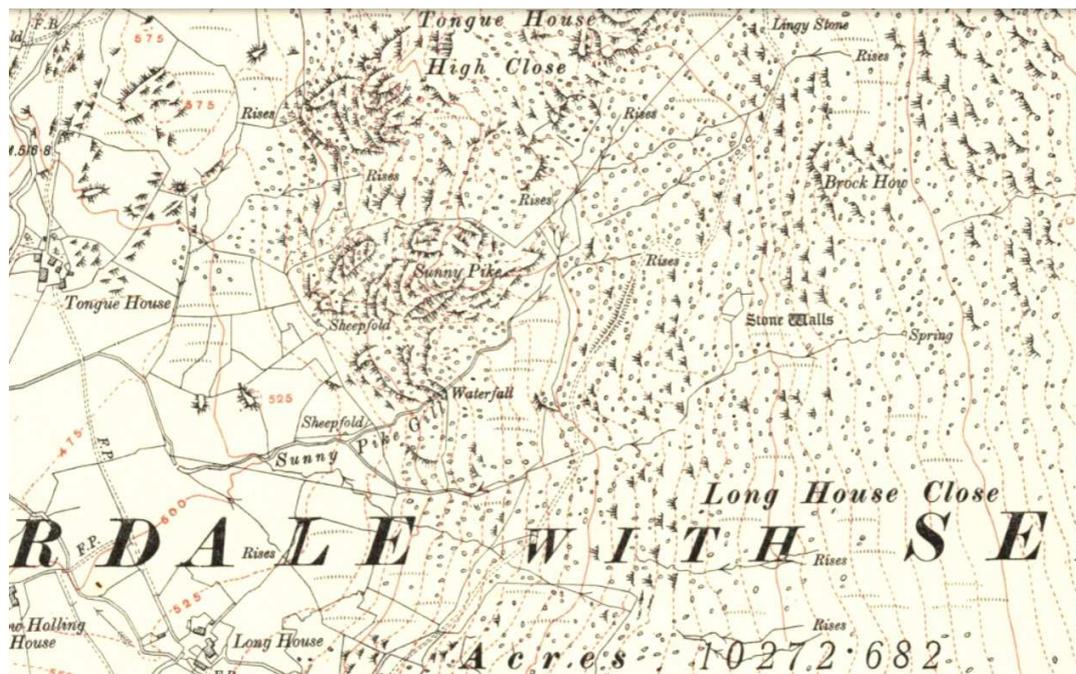


Plate 3: OS First Edition 1:10,560 map 1900

4 TOPOGRAPHICAL SURVEY RESULTS

4.1 INTRODUCTION

4.1.1 An archaeological survey was undertaken of the three longhouses between 4th and 15th April 2016. An outline of the results is presented below, and although a description of the structures at Long House is instead provided under the excavation results section (*Section 7*) as that process was able to analyse the form and development of the structure more comprehensively, the structures recorded at the site are discussed in their wider context below.

4.2 LONG HOUSE CLOSE

4.2.1 **Introduction:** a detailed survey of the Long House Close longhouse settlement was undertaken by a process of instrument survey of the longhouse and also aerial survey, using a drone, to record the wider field system (Figs 2 and 3). It is located on an area of fell called Long House Close, which is an historic holding of Long House Farm, and is divided from the area of fell called Tongue House High Close by Sunny Pike Gill.

4.2.2 The settlement is located on an area of moorland which has a west-facing, uniform, gentle slope and is covered by coarse scree with localised outcropping. A stream is located some 30m to the south of it. The longhouse settlement is particularly significant comprising two longhouses, and a storage structure, which are all linked by an encompassing enclosure boundary. Linked to the settlement are field walls of an open-sided field system that extends to the east.

4.2.3 **Southern Longhouse (Sites LC 1 and 2) (Fig 2 and Plate 4):** the southernmost longhouse (LC1) is an elongated longhouse, 10.1m x 4.1m in size, constructed of low (0.35m high) dwarf walls which are typically 0.9m in width. These dwarf walls have a uniform, flat, upper surface and served as the foundations for a superstructure that would have been of an organic material, such as wood or peat; with the decay of the superstructure, only the foundation is left and characteristically there is little or no stone collapse associated with the walls. There appears to be a cross-passage through the longhouse, with two opposing gaps in the walling; however, these gaps are currently used by a sheep trod that extends through the house and it is not apparent if the sheep trod adopted the line of a pre-existing pair of gaps or the sheep trod has formed the gaps. The interior of the longhouse is internally terraced, although there is some slippage that has resulted in a scarp slope at the eastern, upper, end of the house.

4.2.4 The dwarf-walled longhouse (LC1) is surrounded by a semi-elliptical 'pound' structure (LC2) which has curved side walls and straight end walls (size: 20.4m x 8.4m). There is an open area to the east and the side walls are set very close into those of the longhouse. The walls are constructed of dry-stone masonry, and stand up to 0.8m in height incorporating some large stones, particularly on the southern side. The northern wall is lower, has a uniform construction, is up to 1.8m in width and has no visible tumble associated with it; as such, this wall was potentially a dwarf wall, although that to the south was not.



Plate 4: LC1 longhouse, comprising a central dwarf-walled longhouse, surrounded by a later enclosure / structure

- 4.2.5 These walls are set so close to the longhouse that there is almost insufficient space to walk between them let alone allow for the movement of stock, and the longhouse is set very much at the western end of the 'pound' structure. The overall shape of the structure has far more symmetry than is completely necessary for a pound, and the space contained within the structure is too small to be pastorally useful. As such, the structure does not make sense as a pound that was constructed subsequent to that of the longhouse. The more likely explanation is that the longhouse was later and was located within the existing larger structure (LC2). If the wider structure (LC2) was earlier then there is the possibility that this was an earlier stock pound, and in that case, without the later longhouse, it would have been large enough to accommodate animals. There is the alternative possibility that this was an earlier boat-shaped longhouse, hence the dwarf wall on the northern side, and in terms of size and shape could potentially correspond with an early communal longhouse / hall. However, the ground surface within the LC2 structure has a uniform slope leading up to the eastern end wall, and there is no evidence of internal terracing that would be typical for a domestic structure.
- 4.2.6 **Western Longhouse (Site LC3) (Fig 3 and Plate 5):** the western longhouse has a fairly shortened shape, being 9.1m x 6.0m in size, by comparison with the very elongated form of the other longhouses within the group. It is of dry-stone construction, and there is some collapsed material in direct association with the walls; the average width of the wall and collapse is 1.5m and the width of the actual wall appears to be 0.9m. The stone material is substantially earthfast and the walls are typically 0.3m high. Constructed on top of the longhouse is a square dry-stone bield (4.2m x 4.7m in size) which has walls that are in places in good condition, and are up to 1.0m in height. To judge by the condition, the structure is not particularly old and is consistent with a later post-medieval shepherds bield (LC3b). The western and south-western edges of the underlying longhouse walls, beneath those of the bield, are in very good condition, and have probably been built up and maintained as part of the construction of the bield, whereas the eastern walls are substantially decayed. The construction of the bield has obscured much of the

earlier longhouse and it is not evident if the earlier structure had a cross wall or entrance.



Plate 5: The LC3 longhouse, with a later field built on top of the western half of the house

4.2.7 **Northern Structure (Site LC4) (Fig 3 and Plate 6):** at the northern end of the settlement is a slightly irregular, almost pentagonal-shaped, enclosure which is relatively small having external dimensions of 8.6m x 7.3m and internal dimensions of 5.4m x 3.9m. It is of dry-stone construction and there is substantial tumble associated with the walls; where the walling is relatively complete the wall width is c 1m. There is a possible entrance to the north-east, facing out from the wider enclosure (Site LC5). The floor of the structure has the same slope as the natural slope outside, and there is no evidence of any internal terracing. The function is uncertain; it is unlikely to have accommodated people, as it has a slightly irregular shape and is not internally terraced. If the building was unroofed then it would not have afforded any better accommodation for stock than the adjacent enclosure (LC5), and in any case was very small, being only about 4m across internally. The suggestion, therefore, is that even though it has an irregular pentagonal shape, it may possibly have had a low sloping roof, in which case it could have provided winter accommodation for limited numbers of stock or, alternatively, may have provided dry storage.



Plate 6: Aerial view of the northern structure LC4

4.2.8 **Settlement Enclosure (Site LC5) (Fig 3 and Plate 7):** extending between the two longhouses, and the northern structure is a decayed wall foundation and forms an irregularly-shaped enclosure. The wall / bank butts against each of the component features and was evidently a later feature. For the most part, it is a low-lying structure containing relatively small amounts of stone and, as such, would have not, by itself, been able to control stock and it is probable that this stone bank was augmented by a fence or similar boundary marker. The eastern boundary of the enclosure, however, has been overlain by a field boundary wall (Site LC6) and this is far more substantial and would have been able to restrain stock, but not in its original form as there is a short, insubstantial section of the original stone bank / wall extending between the corner of the field wall (Site LC6) and the northern structure (Site LC4). In addition, there is a low, narrow, bank that extends between the western longhouse (Site LC3) and the eastern wall of the enclosure, effectively dividing the enclosure. The western stone bank / wall extends through an area of poorly drained ground and again emphasises that this enclosure was an afterthought as if the enclosure was the primary feature and the house structures secondary, then the enclosure would have been moved a small distance upwards onto better drained ground.



Plate 7: The overall enclosure (Site LC6) linking the individual structures and the field wall to the east

- 4.2.9 **Field System (Site LC6) (Fig 2):** extending east from the settlement is an open sided field system formed of a single dry-stone wall now substantially decayed. It overlies the eastern boundary of the settlement enclosure (Site LC5) and the northern boundary extends east, through an area of scree before terminating at a small crag. From examination of Google Earth aerial photographic imagery it is evident that beyond the crag, to the north, is a series of further walls between further lines of crags that extend up to 400m from the enclosure (Fig 4).
- 4.2.10 A field wall also extends to the south of the settlement into an area of scree, and, by virtue of the photogrammetry, it has been possible to trace it further for at least 400m through the scree where it follows an erratic course between large boulders. It is, however, open to the east and there is no evidence of further walling in that direction as evidenced from ground survey or from Google Earth imagery. The

scattered, linear elements of field system would appear to define an area of upland intake, with this intermittent boundary defining the eastern limit of the Long House Close holding.

- 4.2.11 There is a possibility that the arrangement of walls would have provided a funnel-type field wall arrangement to feed stock off the fell within the intake lands to the west and into the settlement enclosure, and there is a convenient entrance between the northern structure and the field system to enable this.
- 4.2.12 **Settlement Phasing:** it is evident that there has been considerable development of the site over time. The earliest element is the boat-shaped structure (LC2) at the southern end of the settlement, which was apparently earlier than the dwarf-walled longhouse (LC1) within it. However, the relationship between this (LC1) and the other longhouse (LC3) is uncertain. The enclosure boundary (LC5) post-dated the individual elements (LC1-3) and then the stock enclosure boundary (LC6) was overlain by the walls of the field system. The most recent element was the bield (LC3b) constructed on top of the western longhouse.
- 4.2.13 This phasing indicates that the site probably had an extended life which in some respects (notably the bield) extended into the post-medieval period, but there is considerable uncertainty as to the origins of the settlement. The walls of Longhouse LC1 are dwarf walls, which is a characteristic of early houses, but it also seems to have a cross passage, which is more characteristic of later houses.

5. GEOPHYSICAL SURVEY RESULTS

5.1 INTRODUCTION

5.1.1 The magnetometry survey, as outlined in *Section 2.2.1*, can be quite limited when recording rocky landscapes, or where there is the potential for bedrock near the surface, therefore its main use at both sites was for the identification of hearths. Resistivity, meanwhile, is most effective at identifying stone structures, although, again, the results are typically confused by the proximity of natural stones and bedrock, both of which were encountered during the excavations.

5.2 MAGNETOMETRY

5.2.1 At Long House Close (Fig 2) there was a potentially significant 5nt anomaly inside the LC3 longhouse, and at its eastern end, and is in a location that could be interpreted as a hearth. Within the LC1 longhouse were two 5nt anomalies, one small localised one at the western end, and one against the southern wall. The latter, being non-central, is in an unusual location for a hearth, but that at the western end could potentially be.

5.2.4 Other anomalies beyond the longhouses include an 11nt anomaly (6) to the east of the longhouse LC3 and one against the enclosure wall (5). A further anomaly (4) is located just outside the north-eastern corner of the to the longhouse LC1, but is within the wider pound (LC2).

5.3 RESISTIVITY

5.3.1 Resistivity was undertaken at Long House Close, principally as this site appeared to have the greatest potential for useful results. However, the results of the resistivity survey on Long House Close were masked by the exposed geology and the difficulties in getting both probes in contact with the soils. As a consequence, dummy readings were generated over much of the grid, and the results were very erratic. As such it is not possible to make any reliable interpretation of structural remains indicated by the resistivity plot (Plate 8).

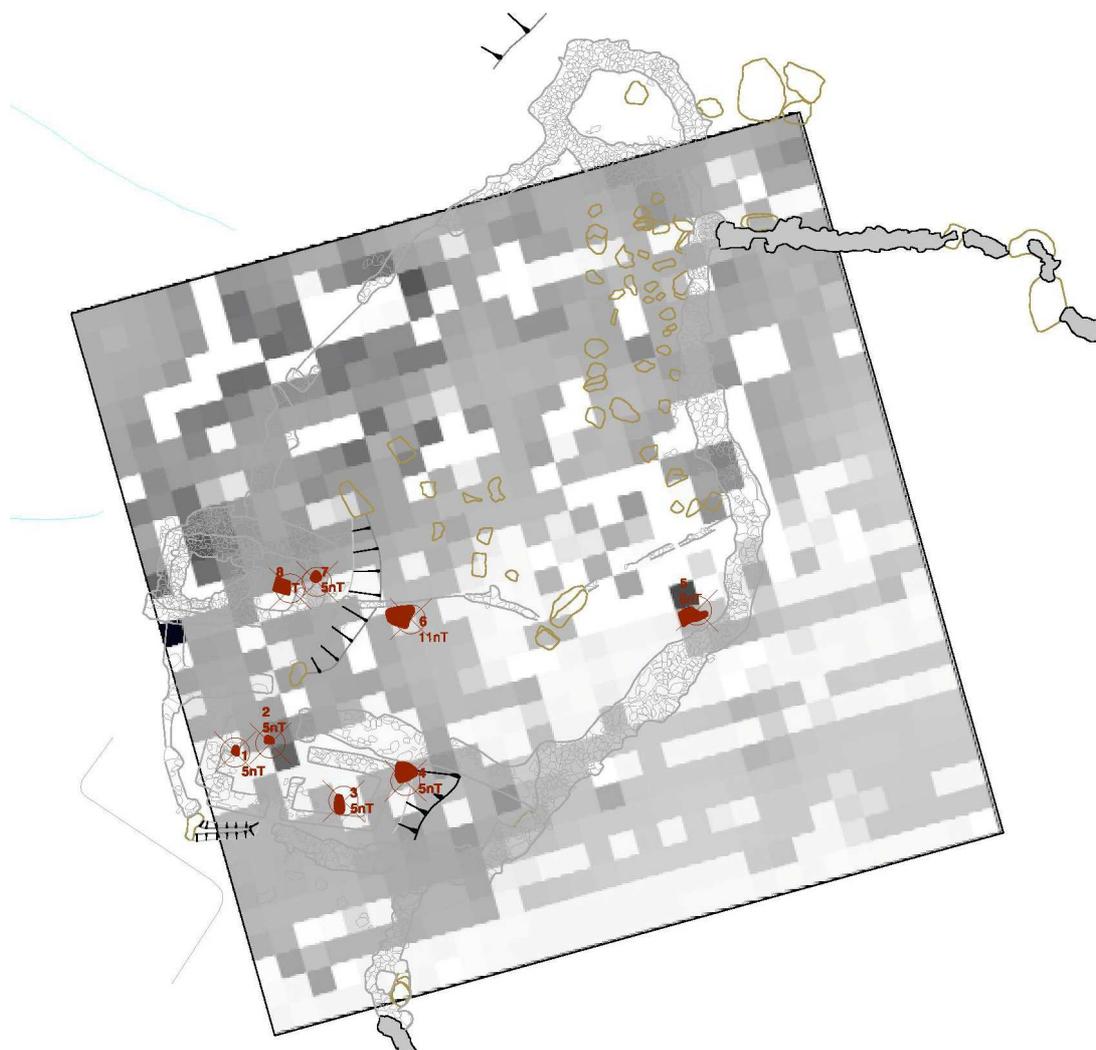


Plate 8: Resistivity plot superimposed on the Long House Close plan

5.4 DISCUSSION

- 5.4.1 It should be noted that the bedrock geology in this area is formed of Rhyolitic Stickle Pike Tuff which by its volcanic origins could contain iron and therefore produce magnetic enhancements in the magnetometer survey data. However, it was considered unlikely, due to the generally low background reading, that this rock could account for some of the anomalies. The subsequent excavations confirmed that many of the anomalies were caused by the presence of iron within the bedrock geology.
- 5.4.3 Anomaly (8) at Longhouse Close is against the end wall of the LC3 longhouse and has the potential to be a hearth. Similarly, there are two further anomalies in the LC1 longhouse, and the easternmost of these (1) could potentially be a hearth; the other (3) is against a side wall and is less likely to be a hearth.

6. EXCAVATION RESULTS

6.1 INTRODUCTION

6.1.1 The area investigated at Long House Close, comprising an irregular shaped trench some 146.6m² with maximum dimensions of 24.3 by 9.8m (Fig 5), focussed on the two superimposed rectilinear stone structures, which lay at the southern end of the enclosure. The pentagonal shape of the enclosure perhaps reflected the surrounding topography, and the irregular shape of the eastern boundary followed the contours of the hillside. The excavation trench was located on the prevailing east to west slope which descended from 294.3m OD to 290.2m OD. Because the eastern half of the excavation area will be more thoroughly investigated in the forthcoming 2018 season, the excavation area was handily divided approximately in the middle by a north/south baulk, the detailed stratigraphic narrative will concentrate, although not exclusively, on the western half of the site. Seven test pits, measuring 1m by 1m were also excavated as part of the outreach element of the project, and were either within the enclosure or on the exterior of the eastern boundary (Fig 5). These served as control trenches testing for the presence or absence of archaeological features and/or deposits, with the exception of test pit 3 which targeted a faint wall line.

6.2 RESULTS

- 6.2.1 *Natural deposits*: a series of localised glacio-fluvial deposits (**1001**) formed the natural substrate.
- 6.2.2 *Phase 1 (Prehistoric)*: the western end of the trench was marked by a distinct gradient, the ground falling by 1.3m over a distance of 6m. To counter this slope the western part of the site appears to have been revetted; this consisted of a layer of brownish-orange silt (**1049** not illustrated), which contained charcoal flecks and an intrusive nail fragment (OR 1007), and was perhaps used to level the area.
- 6.2.3 Lying above this deposit (**1049**) was structure **1032**, which was delineated to the west by a rough curb of north/south aligned boulders and large stones (measuring up to 400mm x 230mm) with rubble infill lying immediately to the east (**1056**), measuring some 2.37m in length (Fig 6). A second possible revetting structure, forming a rough step (**1034**), was located 1.5m to the east, which, like **1032**, was formed by a north/south curb of large stone boulders (Plate 9) measuring up to 600mm x 500mm; these appeared to terminate at a large bolder on the extreme northern edge of the trench. On the south side, it continued around to the east where it was visible as rubble layer **1043**.



Plate 9: Revetment structures **1032** (lower) and **1034** (upper) viewed toward the north (0.5m scale)

6.2.4 To the west of structure **1034** was a series of surfaces and at least two hearths; the earliest of these surfaces was **1053**, which was west of the north/south baulk, and was composed of sub-rounded stones set within a matrix of brownish–orange silt (Fig 6). Within this surface were frequent charcoal fragments dominated by alder/hazel, with a little oak, *malaoideae* and charred hazel nut shell, the latter of which yielded a radiocarbon determination of 1339-1228 cal BC (3012 ± 34BP; SUERC-75308). Within this deposit was a discrete, and reddened (possibly fire-affected), area which had also affected the underlying natural **1064/1065**; the area, measuring approximately 0.75m square, lay 2m from the baulk. A single stone may be the vestigial remains of a stone curb. Located almost immediately to the north-east, and also set within this surface, was a stone structure (**1052**; Plate 10), comprising only four stones placed in an L-shaped configuration, measuring c 1m by 1m. Although there was no evidence of burning to suggest it was a hearth, there were fragments of alder (*alnus glutinosa*) charcoal that yielded a radiocarbon determination of 1426-1278cal BC (3090±29BP; SUERC-74369), suggesting a Middle Bronze Age date for emplacement. A third feature, stone structure (**1055**), lay to the south, comprising an up-right stone to the west and two courses to the east, spaced c 0.5m apart; it was open to the north, but was sealed below a later wall (Plate 11). It is possible that surface **1053** can be equated to a layer of cobbles (**1047**) that lay on the southern edge of the excavation area, but this could not be verified due to overlying later feature.

Plate 10: Structure **1052**Plate 11: Structure **1055**

- 6.2.5 Surface **1053** was sealed below another layer of cobbles (**1022/1023**) that was seen to extend both east of the baulk, and west of it almost to structure **1034**, where its extent was interrupted by a later feature (Plate 12; Fig 6). The surface comprised sub-rounded stones (50-130mm) set within orange-brown silt. Cobbled surface **1045** (which lay above surface **1047**) marked the southerly extent of this feature. Charcoal was common within this surface, which was dominated by oak, alder/hazel and ash. A Charcoal-twig fragment of oak (*Quercus* sp) recovered from

this surface produced a radiocarbon determination of 1404-1261cal BC (3060±21BP; SUERC-76932). This date is sufficiently close to that obtained from feature **1052** and surface **1053** to indicate their contemporaneity. This feature also produced a small fragment of pottery (OR 1019), its small size and lack of diagnostic elements precludes the identification of a specific vessel type, but it is considered to be Bronze Age in date (per comm, Adam Tinsley).



Plate 12: Orthophoto image showing surface **1023** (centre), plus revetments structures **1032** and **1031** (left)

- 6.2.6 Cutting into surface **1023**, and lying partially within the baulk, was a hearth (**1060**) (Plate 13, Fig 6), which was visible as a shallow depression with a layer of sub-angular stones at its base, amongst which was a layer of charcoal (dominated by alder/hazel) disturbed by root action (**1061**). A fragment of round-wood hazel charcoal (*Corylus avellana*) produced a radiocarbon determination of 1406-1207cal BC (3035±34BC; SUERC-75307), again this date suggests that the Bronze Age activity is all fairly contemporaneous. A further cobbled layer (**1044**), which lay above **1045**, was probably part of the same sequence of surfaces.
- 6.2.7 There then appears to be a hiatus, which is marked by a resumption of activity, albeit brief and isolated, with a north/south aligned shallow intrusive feature (**1062**). The feature which was cut into the area between revetment **1034** and surface **1023**, was approximately 1m wide, contained small stones within a silt matrix. Flecks of hazel charcoal from this material produced a radiocarbon determination of 731-401cal BC (2405±28BC; SUERC-74817), a date that puts it on the cusp of the late Bronze Age/early Iron Age.



Plate 13 Hearth **1060**, with structures **1052** and **1055** to the left and right, respectively

- 6.2.8 **Phase 2 (Later activity)**: the later activity comprises a late medieval shieling hut (Building **1016**), dated both by a single radiocarbon determination and corroborated by a few pottery finds, and two large outer walls (**1017**), with both the walls and shieling hut being placed upon the earlier prehistoric surfaces. At the present time the relationship between these two elements are imperfectly understood.
- 6.2.9 **Outer walls**: it is conceivable that the earliest of the structures were the two outer boulder walls (**1018** and **1019**, structure **1017**; Plate 14). These were east/west aligned and 5m apart narrowing to 4m in the east (Fig 7). The northern wall (**1019**) measured 11.7m long by 1.89m wide, surviving as a single course, and was constructed directly onto the natural substrate (**1001**). The wall was faced with outer skins of unworked boulders, measuring between 360mm x 310mm and 610mm x 300mm, with a rubble core. The southern wall (**1018**) was 10.8m long by 1.6m wide, which, despite having the appearance of being constructed entirely of boulders (the wall was unexcavated), a partial collapse at its western terminus revealed what appears to be a rubble core. Occupying the eastern end of the area, and located above the natural (**1001**) between the two walls, was a layer of friable orange-brown fine silt (**1029**) containing abundant angular stones.



Plate 14: Orthophoto image of Building **1016**, enclosed by walls **1019** (above) and **1018** (below)

- 6.2.10 **Building 1016**: the remains of the building probably represented a late medieval shieling hut. It lay on the same alignment within the western two thirds of the footprint of structure **1017** (Plate 14; Fig 7). By locating Building **1016** within this part of the older structure the builders had not only chosen the most level area (c 291.1m OD to 291.6m OD), clearly at a premium on this part of the hillside, as well as being clear of boulders, the area having already been cleared and utilised during the Bronze Age, but structure **1017** also provided a ready-made yard and may have afforded some protection from the elements. Despite this pre-existing platform and encompassing structure (**1017**), a step had been dug through deposit **1029** and the underlying natural geology to enable the construction of the eastern end of Building **1016**.
- 6.2.11 The overall dimensions of the rectangular drystone constructed building were 9.21m long by 4.5m across. The western third of the building was divided from the remaining two thirds by a cross-passage. East of the cross-passage the building comprised walls **1012**, **1013**, **1014** and **1015** (Group **1011**), with wall **1015** forming what might have been a windbreak and was aligned parallel with the cross-passage, with an opening to the north (Fig 7). Internal dimensions measured 3.34m by 2.3m wide. The walls were constructed in a similar fashion to each other, with large unworked stones (measuring up to 600mm x 400mm x 380mm) forming the outer edges, often with flat outer faces, and a rubble core. The walls, which were built without foundations, rarely survived to more than a single course in height and measured between 0.86 and 1m wide. Only the cross-passage wall (**1015**) differed from the others being 0.68m wide and having little in the way of a rubble core.
- 6.2.12 West of the cross passage, which was 1m wide, this portion of the building was formed by wall group **1024**. The walls, which were between 1.05m and 1.15m wide, survived to a single course in height. They were constructed in the same fashion as **1011**, using large boulders up to 800mm by 480mm, with a rubble core.

The exception to this was at the eastern terminus of the northern wall, where some robbing was evident, but which left a discernible foundation course (**1067**). Internally, this end of the building measured 1.93m east to west and 2.25m wide. Located within the south-western corner was an area of pitched stone, possibly used to level the floor in this part of the building, although its stratigraphic position was not clear, and it may have been related to the much earlier surface **1023**.

- 6.2.13 Preserved below later stone surface (**1025**), and mostly occupying the western end of the building, but straddling the cross-passage and partly extending into the eastern part of the structure, was a deposit composed of friable orange-brown silt (**1037**; not shown). This deposit, which contained moderate amounts of small angular stones (5-15mm) and frequent charcoal, was thought to be an occupation layer. The charcoal was derived from a mixture of tree and shrub species, comprising mostly oak, some ash (*fraxinus*), hazel/alder and other fragments identified as *Maloideae* (which may include hawthorn, apple, pear or whitebeam). A charcoal fragment of *Maloideae* (Hawthorn type), which retained at least 10 rings, provided a radiocarbon determination of cal AD 1485-1643 (327±24BP; SUERC-76928). Two unidentified iron objects (OR 1005) and two small fragments of unidentified fired clay were also recovered from this deposit (Fig 7).
- 6.2.14 Sealing layer **1037** was an area of rough flagstones (**1025**; Plate 15; Fig 7), measuring 4.3m east/west by 1.54m north/south. The stones were irregular in shape and size (300mm x 200mm to 500mm x 290mm) and quite thick (between 40-100mm). Floor **1025** respected the walls of the western end of the building, straddling the cross-passage and penetrating a short way into the eastern room. Wall **1012** appeared to overlie part of floor **1025**, but this was limited to a single stone, and it is highly likely, however, that this stone may have been part of the foundation of that particular wall. The only other feature within the eastern room was a hearth (**1020**), formed from a large irregular flat stone measuring 0.87m by 0.76m that lay in a central position but was close to wall **1015** (Plate 16). The top of feature Phase 1 **1055** was still visible within this phase of activity, though whether it was utilised is not clear. East of the north/south baulk, the Phase 1 prehistoric floor **1022** was visible, although it is not clear at the present time whether this surface was reused or not. Lying beyond the western end of the Building **1016**, on the northern edge of the excavation area, was a layer of silt and stones (**1033**) overlying the natural geology, which produced a sherd of late medieval pottery (OR 1017).



Plate 15: Flagstone surface **1025** (to the right of the baulk) during excavation



Plate 16: Hearth **1020** (0.5m scale)

6.2.15 Extending between the two longhouses (Building **1016** and unexcavated building LC3), and the northern structure (LC4) is a decayed wall foundation that forms an irregularly-shaped enclosure. The eastern wall/bank (**1041**) was evidently a later feature and can be seen to overlie the northern termini of the walls of structure **1017** (Fig 7). A north/south aligned tumbled wall (**1042**), also later than **1017**, can be seen extending to the south which forms part of the field systems associated with the enclosure (Section 4.2).

6.2.16 **Phase 3 (Abandonment and after)**: rubble deposits (collectively **1054**), presumably resulting from the collapse of the walls, or robbing, were found throughout the

remains of both Buildings (**1016** and **1017**). Rubble deposit **1002**, was located at the terminus of wall **1017**, whilst **1003** lay between walls **1018** and **1014**. Centrally within Building **1016**, deposit **1005** was located between wall **1015**, and **1004/1006** filled the interior of the eastern portion of Building **1016** (Plate 17). Rubble deposit **1007** lay to the west and north of wall group **1024**, whilst **1008/1009** was located between wall **1012** and **1019**, with **1010** lying just to the north of wall **1019**. Some of this rubble was probably the result of the demolition of both Buildings **1017** and **1016**; the material may have been used to construct the nearby later field which was built on top of LC3 (See section 4.2).



Plate 17: Rubble deposit (**1003**; foreground), presumably the result of the collapse or robbing of wall **1015**, with rubble deposit **1004** beyond (1m scale)

- 6.2.18 The two buildings were partially sealed below a layer of humic turf/topsoil (**1000**) of varying depth, which, in places, was heavily infiltrated by *Juncus* grass roots and bracken rhizomes. A number of artefacts were recovered from this layer, which included two horseshoes (ORs 1011 and 1012), a nail (OR 1004), a medieval pottery sherd (OR 1018), and unidentified iron and lead objects (ORs 1006 and 1003; Table 1).
- 6.2.19 **Test pits**: nine test pits were excavated during the course of the excavation, seven of which were within the confines of the enclosure, and two were located just to the south and east of field boundary wall **1042**. All, with the exception of one, proved to be blank in terms of archaeological deposits or features, and revealed the same sequence of deposits - a layer of topsoil/turf overlying the natural fluvio-glacial substrate. Test pit 3 was placed to examine a linear arrangement of stones (**1068**) crossing the enclosure in an approximate east/west alignment (Fig 7). The stones proved to be solely within the topsoil, and of recent origin.

7. FINDS AND ENVIRONMENTAL RESULTS

7.1 INTRODUCTION

7.1.1 In contrast to the excavation at Tongue House A (OA North 2016), finds from the 2017 excavations of Longhouse Close were more plentiful, and included both medieval and Bronze Age ceramics, as well iron horseshoes and nails. The traverse coring undertaken in 2016 to assess the potential for the preservation of organic sediments, only revealed sufficient peat at two of these sites (Tongue House A and Tongue House B). However, organic preservation within the deposits obtained via bulk sampling did provide charcoal for a series of radiocarbon determinations.

7.2 FINDS

7.2.1 Some 26 object were recovered during the course of the excavations, the majority of which (6 objects) were recovered from the topsoil (**1000**) or were unstratified (also six objects), with the remaining 14 items being recovered from stratified contexts. The bulk of the finds were iron objects, whilst there were also ceramic fragments and unidentified lead objects (see Table 1).

OR number	Context	quantity	Material	Identification
1001	1500	1	Lead	Unidentified object
1002	1500	1	Iron	Nail shank
1003	1000	1	Lead	Unidentified object
1004	1000	1	Iron	Nail
1005	1037	2	Iron	Nail shank
1006	1000	1	Iron	Unidentified object
1007	1049	1	Iron	Unidentified object
1008	1059	1	Iron	Nail head and shank
1009	1001	1	Iron	Horseshoe
1010	1500	1	Iron	Nail
1011	1000	1	Iron	Horseshoe
1012	1000	2	Iron	Horseshoe
1013	1001	4	Iron	Horseshoe
1014	1500	1	Iron	Possible blade
1015	1500	1	Iron	Unidentified object
1016	1500	1	Iron	Unidentified object
1017	1033	1	Ceramic	Silverdale type ware pottery
1018	1000	1	Ceramic	Silverdale type ware pottery
1019	1045	1	Ceramic	?Bronze Age pottery
1020	1037	1	Iron	Nail shank
1022	1037	3	Ceramic	Unidentified fired clay

Table 1: Finds catalogue

- 7.2.2 Six ceramic fragments were found during the excavation, perhaps the most significant of these was a single undiagnostic sherd of Bronze Age pottery from Prehistoric surface **1045**, the same deposit yielding a radiocarbon determination of 1404-1261 cal BC (see Table 2), thus confirming the date. Two sherds of Prehistoric pottery were recovered from the nearby Seathwaite ring cairns, which, despite the radiocarbon determinations being very similar to those from Long House Close, they were identified as being more akin to Neolithic fabrics (DVLHG 2009, 105-06). Similarly dated pottery was also recovered from the roundhouse and other Bronze age features at Stephenson Ground (*op cit*, 81-2).
- 7.2.3 Two sherds of late medieval Silverdale type ware (named for the site of the kilns across Morecambe Bay), were recovered during the excavation, a rim sherd from the topsoil (**1000**) and base fragment from a deposit (**1033**: Plate 18) located to the north-west of Building **1016**. The simple upright rim probably belongs to a jug, similar vessels having been identified from Silverdale itself (White 2000) and from a site in Kendal (Whitehead *et al* 2013). Conceivably, the base fragment may well derive from the same vessel. Fragments of the same type of pottery were also recovered from the late medieval shieling huts at Stephenson Ground (DVLHG 2009, 83). This type of pottery is part of a much broader grouping known as Late Medieval Reduced Grey ware, which had broad currency stretching from North Lancashire, to Cumbria, and northern England in general. Medieval Reduced Grey ware generally dates from, perhaps, the mid fourteenth century through to the seventeenth century (White 2000; McCarthy and Brooks 1992, 29). A radiocarbon determination of cal AD 1485-1643 (Table 2) from Building **1016** suggests that the pottery was likely to be contemporary.
- 7.2.4 Objects of iron were the most numerous, amongst which were four fragmentary horseshoes recovered from either topsoil (**1000**) of subsoil (**1001**) (Plate 19). Initial assessment of these objects suggests they are of a late medieval type. Six nail fragments were identified, four of which were from demolition deposits (**1002**, **1004**, **1008** and **1010**). Whilst a nail fragment from deposit **1059** (structure **1052**), may be intrusive since this is potentially a prehistoric feature, although its incorporation into a later wall might suggest the feature was repurposed. A possible blade fragment was recovered from **1014** (Building **1016**). Four of the iron objects remain unidentified at the present time, as do the two lead objects.



Plate 18: A base sherd of Silverdale type ware (OR 1017) from deposit **1033**



Plate 19: Horseshoe (OR 1012) recovered from the topsoil (**1000**)

7.3 ENVIRONMENTAL SAMPLING

7.3.1 *Quantification and Methodology*: samples from six of the features/layers excavated at the site were highlighted as a priority for radiocarbon dating (Table 2). Given their lack of suitable, single entity, charred plant remains, charcoal fragments

from each of the samples were selected and identified prior to submission for radiocarbon dating.

7.3.2 Charcoal identification was carried out using a binocular microscope at up to x40 magnification in order to record the presence of any small round wood, and to determine the presence of either diffuse porous (generally short-lived) or ring porous (generally long-lived) wood taxa. Due to anatomical similarities, charcoal identified as hawthorn-type (*Maloideae*) may include hawthorn, apple, pear or whitebeam. Similarly, alder (*Alnus glutinosa*) and hazel (*Corylus avellana*) are not general differentiated during assessment, unless selected for radiocarbon dating. Fragments selected for radiocarbon were fractured to reveal transverse, radial and tangential sections, which were examined under a Meiji incident-light microscope at up to x400 magnification. Identifications were made with reference to Hather (2000), and modern reference material.

Laboratory code	Sample no.	Context no.	Feature type	Material	radiocarbon age BP	calibrated date (95% probability)	$\delta^{13}\text{C}$
SUERC-74369	511	1059	fill within possible hearth 1052	Charcoal: <i>alnus glutinosa</i>	3090 ± 29	1426-1278 cal BC	-26.8
SUERC-75307	507	1061	Fill of hearth 1060	Charcoal-round wood: <i>Corylus avellana</i>	3035 ± 34	1406-1207 (94.6%); 1201-1196 (0.5%); 1138-1135 (0.3%) cal BC	-23.8
SUERC-76932	503	1045	Surface	Charcoal-twig fragment: <i>Quercus</i> sp	3060 ± 21	1404-1261 cal BC	-24.8
SUERC-75308	510	1053	Surface	Charred nut shell fragment: <i>Corylus avellana</i>	3012 ± 34	1339-1338 (14.9%) 1319-1156 (75.9%) 1147-1128 (4.6%) cal BC	-27.0
SUERC-74817	508	1062	Gully feature	Charcoal: <i>corylus avellana</i>	2405 ± 28	731-691 (7.8%); 660-651 (4.4%); 544-401 (86.2%) cal BC	-26.1
SUERC-76928	501	1037	Occupation layer	Charcoal-round wood: <i>Maloideae</i>	327 ± 24	1485-1643 cal AD	-26.5

Table 2: Radiocarbon dates

8. DISCUSSION

8.1 INTRODUCTION

- 8.1.1 The excavation and subsequent radiocarbon dating of the features, deposits and structures at Long House Close has revealed activity in the Bronze Age, Early Iron Age and the late medieval period. The investigations revealed Bronze Age surfaces and hearths, whilst Early Iron Age activity was restricted to a stone filled shallow gully. The two large boulder walls (**1017**) have yet to be dated, and at present their relationship to (Building **1016**) is uncertain. Building (**1016**) identified during the earlier survey has been dated by radiocarbon determination to the late Medieval period and was likely to have been a used as shieling hut.
- 8.1.2 Bronze Age activity in the vicinity is well attested from the presence of the Seathwaite Tarn ring cairns, which produced two sherds of Bronze Age pottery and two flaked lithics. A series of very similar radiocarbon dates indicated that the cairns were constructed just before *c* 1400 BC (DVLHG 2009, 105-07), which would make them contemporary with the activity found at Long House Close. However, away from ceremonial monuments Bronze Age activity of a more domestic nature was revealed during excavations at Stephenson Ground between 1986 and 1995 (*op cit*, 80). At Stephenson Ground there were the remains of roundhouse indicated by a circle of postholes, with internal features comprising stake holes, fire pit and shallow pits. Finds included pottery and flaked lithics (*op cit*, 81-2). Interestingly, the annual recap of the excavations suggest that the roundhouse was overlain by a charcoal bearing deposit that also contained later Bronze age pottery (Thorpe nd), which may be analogous to the surfaces at Long House Close, for example surfaces **1047** and **1053**.
- 8.1.3 Other similarities between the sites at Stephenson Ground and Long House Close are apparent, for instance there were no obvious traces of prehistoric activity above ground at either site. The absence of Bronze Age dated structural elements at Long House Close cannot be commented on, other than to say that further excavation work is to take place on the site in 2018, where such considerations can be further examined. The access to scientific dating available to the present excavations contrasts with the work at Stephenson Ground, which was excavated during a period when such dating methods were not as common, and limits the ability to draw comparisons with the dates provided from Stephenson Ground. What was apparent about the picture of Bronze Age settlement from the discoveries made at Stephenson Ground still holds true; that upland sites are ephemeral and that the picture of settlement of this period is haphazard and related to chance discovery (*op cit*, 80).
- 8.1.4 The superimposition of the two periods of occupation is probably not coincidence. The Prehistoric features at the Long House Close location would have occupied a prime site, and the area would have then been cleared of boulders in the Bronze Age, and because the thin upland soils were unlikely to promote colluviation and thus bury the site, it therefore remained visible, and seemingly became the focus for later occupation in the medieval period.
- 8.1.5 The precise relationship between the parallel wall structure (**1017**) and Building **1016** remains as elusive as when it was first surveyed, although a second season of excavations will hopefully resolve this issue. The interpretation of what this

structure (**1017**) represents has already been rehearsed in *Section 4.2*, but it is probably worth reiterating the premise that the larger structure (**1017**) was earlier and that Building **1016** was added later, is at present the most likely proposition. Given its relative size Structure **1017** was potentially an earlier stock pound.

- 8.1.6 The alternative possibility is that this was an earlier boat-shaped longhouse, and while it does share superficial similarities to superimposed Norse and later communal longhouses, seen for instance at the Brough of Birsay in Orkney (Morris 1996, 245), this may not hold true. Not only has the structure been placed on a fairly steep slope, although this again may not preclude its use for occupation, with examples of houses been placed on quite severe gradients in Orkney (pers obs J Bradley), but the walls are not as bowed as the initial survey depicted (contrast Plate 4 with Fig 7).
- 8.1.7 The possible interpretation of Building **1016** as a shieling hut is based upon a number of factors; shape, size and date and location. Although shieling huts are very similar to the traditional medieval longhouse, they differ in several aspects. The most detailed definition of the longhouse proposes the presence of byre/shippon indicated by a central drain (David Austin quoted in Grenville 1997, 136), which is not apparent at either Long House Close or Tongue House A (OA North 2016), although this is not a necessary prerequisite of the longhouse. Although this aspect is open to debate, and equally longhouses need not house livestock (Grenville 1997, 137). They do share similarities; a cross-passage and hearths, although south-western examples are often associated with cooking pits, and the presence of subdivision or off-shots (*op cit*, 136).
- 8.1.8 Shielings on the other hand are usually found singly or in small groups, usually in upland areas on land that would be today would be considered to be marginal (Historic England 2011, 2). Although, again it is not easy to distinguish a shieling used for transhumance and homesteads for permanent occupation (Ramm *et al* 1970, 6). Shielings can vary in length between 5.7m and 14m, usually being less than 3m wide, in this respect both Long House Close or Tongue House A conform to these dimensions being 9.21m long by 4.5m across and 10.45m long by a maximum of 4m across, respectively (OA North 2016). In plan, two roomed types are typical, although a cross-passage is less so, but there was no evidence that a second entrance at Long House Close was a later alteration.
- 8.1.9 Place name and landscape evidence point to a transhumance use for the site. It has already been noted (*Section 3.2*) that perhaps during the seventeenth century farmhouses may perhaps have retained lands in the upper fells for summer pasture (Historic England 2011). That both the Long House Close and Tongue House farms have eponymous upland territories visible as irregular shaped field systems does suggest the existence of shieling grounds. Chronologically too, historical evidence of the use of shielings suggest that they had mostly been abandoned by the sixteenth century, with only one reference to a shieling in a survey of the Lake district in 1586 (*ibid*). Worsening climatic conditions in the sixteenth century, with onset of the so-called 'Little Ice Age' may have been a contributory factor in their decline, as well as changing farming practices. Certainly the radiocarbon determinations of cal AD 1485-1643 (Table 2) for Long House Close and cal AD 1514-1668 for Tongue House A (excluding a 4% probability that the date extended into the eighteenth century; OA North 2016), appear to sit well in this time-frame. The presence of Silverdale type pottery at the similar structures located at

Stephenson Ground, also thought to be connected to a Shieling, suggest that such activity may have been widespread around the valley (DVLHG 2009, 83).

- 8.1.9 Despite the small size of the structure, it is within an enclosure that contains another long-house type structure, and a stock pound and is within an overall enclosure that is tied into a wider field system. These are all features that would be associated with a farmstead, rather than a shieling. While there is some uncertainty as to the chronological relationship between the individual Building **1016** structure and the wider field system, there exists the likelihood that this was part of a more permanent structure than the conventional shieling.
- 8.1.10 This structure has, along with the Tongue House A building, demonstrated that there is a considerable grey area between the simple transhumant shieling hut and the conventional farmhouse. As such the next phase of fieldwork needs to explore the development of the building complex to explore how the complex has developed and if there is a migration from transhumance to permanence, or even vice versa.

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APPENDIX 1: PROJECT DESIGN

1. INTRODUCTION TO THE PROJECT

- 1.1.1 Oxford Archaeology North (OA North) has been invited to provide supervision and enablement for a community archaeology survey and excavation project of three longhouses in the Duddon Valley (Tongue House A and B, and Long House Close). This is to be undertaken on behalf of the Duddon Valley Local History Group and in conjunction with the National Trust and the Lake District National Park Authority and financed by Heritage Lottery Fund. OA North would provide supervision and guidance for a community survey and excavation of the longhouses.
- 1.1.2 This is part of a long standing community project which has already been involved in both detailed and identification surveys throughout the Duddon Valley, and the results of which have been widely disseminated (DVLHG 2009; Matthiessen *et al* 2013). The survey programme identified a number of longhouses that warranted further investigation, and is a class of monument that has rarely been subject to detailed excavation. The wider aim of the project is to involve local people and to provide training in excavation for three of the sites and the survey of four sites.
- 1.1.3 OA North would provide supervision of volunteers undertaking detailed geophysical surveys of each of the three sites, and would entail both resistivity and magnetometry surveys. OA North would also undertake excavations of each site over three seasons. A principal aim of the project is to involve the local community as widely as possible, and to provide new information on the wealth of archaeological remains in the area. This will entail providing presentations to the volunteers and getting them directly involved in undertaking field surveys and also the excavations. There would be the provision of interpretation panels and the project would entail presentations to schools. Ultimately the results would be disseminated in reports, and publications and in updated records for the Lake District National Park Authority Historic Environment Record and the National Trust SMR.

2.1 AIMS OF THE PROGRAMME

- 2.1.1 The primary aims of the project are as defined in the project brief and are as follows:
- To encourage local volunteers to gain an understanding of the history of the area through survey and excavation. The volunteers will learn techniques of surveying and excavation and provide them with a clear understanding of the archaeological processes.
 - The information collated will be able to be used for interpretation purposes to inform local communities and visitors in the catchment.
- The objectives of the project are as follows:
- To excavate part of each long house site with the help of local volunteers to obtain evidence for dates of construction (charcoal, pottery, other artefacts etc) from secure contexts undamaged by bracken.
 - To look for evidence of stock husbandry (livestock types and numbers) associated with each structure.
 - To look for any evidence of crop-growing in the vicinity of the structures.
 - To investigate deposits from secure contexts within and around the structures for palaeo-environmental evidence of foods (*eg* seeds, grains, bones etc) eaten by the former inhabitants.
 - To obtain evidence from pollen and other deposits in peat beds to indicate the nature of the environments surrounding the structures when they were in use.
- 2.1.2 **Community Aims:** the project aims to seek a wide community involvement in the research and investigation of areas within the Lake District National Park, and to foster a wider community awareness of the rich cultural heritage in the local landscapes. It is intended to use the present project as a means of training volunteers, and others in the wider community, in archaeological survey and excavation techniques. Great emphasis will be placed on the virtue of survey

techniques and to encourage a legacy of skills within the community. The project will therefore provide a capacity for further archaeological and historical research in the area. The project will involve local schools and community organisations, and will entail visits to local schools and to provide teaching packs for the schools.

3. METHODOLOGY

3.1 PROJECT PREPARATION

- 3.1.1 At the outset there will be a process of liaison between OA North, DVLHG, The National Trust, and the Lake District National Park Authority staff. This will entail defining the output formats for incorporation into the HER, and having at least one field visit to examine the known archaeology and refine the project methodology. At the same time a project surveyor will establish survey control across each of the respective sites in advance of the main survey using survey grade GPS.

3.2 INTERPRETATION BANNERS

- 3.2.1 It is proposed to produce a series interpretation banners which could be used at public events, and workshops. In the course of the project it is proposed that two Roller Banners, and one fabric banner be created, and at the end of the project a legacy Roller Banner be created to commemorate the results of the whole project. The Roller Banner can be free standing and quickly set up at events; they are, however, only intended for internal display. The fabric banner is a waterproof banner than can be erected against walls, and is intended for longer term display. In addition it is also proposed to produce an A3 poster that will advertise the project and can be put up around the area and would be appropriate for external display. The roller banners / fabric banner would be produced at the outset and over the course of the project. They would have limited amounts of text and a small number of large photographs, and would be similar to those used at Sizergh Castle albeit some would be on vertical roller banners rather than A0 format (see below). There would be one banner to describe longhouses generally, another to provide information about the project and present the initial survey results and finally there would be one to summarise the previous work of the Duddon Valley History Group. There would also be an A3 poster that would provide a general introduction to the project and would provide contact details. It would be printed either on full weather proofed fabric or on glossy paper which has limited weather resilience.

3.3 SCHOOLS AND GENERAL OUTREACH

- 3.3.1 There will be a process of interaction with the local schools as part of the projects outreach. The first stage will be a presentation to the five schools at the outset of the project and prior to any visit to site, then it is anticipated that there will be a site visit from the schools in the course of the project. This outreach phase would be undertaken by a member of staff with experience of schools presentations. On the day of the site visit, there will be support from the DVLHG to supervise the children and provide additional instruction. On completion of the project a final presentation will be established for the schools as a follow up and will reinforce the learning experience from the excavation. It is anticipated that there will be 10 days of schools supervision and presentation per year.
- 3.3.2 **Transport:** it is anticipated that the school children will be taken by minibus to the start of the track up to the Seathwaite Tarn and from there they will walk up to the sites. The costs do not allow for the for the hire of a minibus to transport the children to the start of the UU track.

3.4 ARCHAEOLOGICAL SKILLS WORKSHOP

- 3.4.1 The first stage of the project will be a skills workshop that will be undertaken at a local hall and would be intended to train volunteers in excavation and survey techniques. It would entail a power point presentation and then a practical demonstration of archaeological methods outside the hall or on adjacent ground. The workshops will have an important need to provide valuable training in advance of the fieldwork, but also serve as an introduction to the archaeologically uninitiated and therefore should, above all be enlightening and entertaining. There will be a mixture of experienced archaeological volunteers, who have been involved in comparable community projects in the past and also there will be those who have had no previous experience; the workshops will aim to provide training for both. This will be achieved by providing a variety of techniques on the workshop day so that there will always be some aspect that even the more experienced volunteers can benefit from. As there will be three workshops, one for each season of fieldwork, there will be

introduced a variety of techniques in the later workshops so that the body of experienced volunteers will continue to be engaged and enthused. In the later workshops this will include a brief presentation of the results from the earlier phase of the project. Although there will be powerpoint presentations, the emphasis of the workshops will be upon the practical demonstrations, and to increase variety it may be appropriate for one or two of the more experienced participants to lead demonstrations in the later seasons. The themes and subjects for the later workshops will develop out of the first season of fieldwork, and it would be inappropriate to propose them at the outset as part of the present project design. It is, however, possible to define the subjects for the first workshop.

3.4.2 **First Workshop:** the first workshop will start with a brief power point presentation to introduce the participants (and potential participants) to the project and provide them with a guide as to what the project will do, and also will introduce them to the sites. This would outline the range of techniques available to the archaeologist, before addressing in detail the methods that will be undertaken by the participants. This would include an introduction to the theory and practices of archaeological excavation, palaeoenvironmental analysis, finds processing, and survey techniques. This would be followed up by demonstrations and instruction in geophysical survey, site planning, and instrument survey. The survey techniques would include a total station with pen computer (to display the results), and survey grade GPS. There may also be an introduction to the aerial photogrammetric modelling and would allow participants to create their own models based upon photos taken with a photographic mast. The aim would be to introduce the participants to the proposed programme but also to raise interest and enthusiasm. Experience of previous launch events (eg at Holwick and Windermere Reflections) was that these attract lots of people, lots of interest and set the project off to a good start.

3.4.3 It is anticipated that the workshops would be delivered over a Saturday prior to the start of the programme and will require three OA North staff, in order to provide sufficient variety of technique and also to provide more personal instruction. The potentially large numbers of attendees will demand that they are split into smaller groups and the activities will be staggered to allow full use of the day and provide for more individual instruction by the professional archaeologists.

3.5 DETAILED SURVEYS

3.5.1 It is intended that this survey process serve as a training exercise for the volunteers, so the survey techniques will be devised to be easy to understand, and will allow for plotting in the field, is easily affordable by volunteers, but at the same time will provide training in a variety of techniques to present the range of techniques available. This will include the use of some outdated technologies, which will have a significant impact on productivity, but this will be off-set by the use of more current techniques that will enable detailed 3D recording. It is proposed to undertake a range of different survey techniques which will be varied to meet the needs of each longhouse structure. The general techniques are: theodolite and disto topographic survey, photogrammetry survey from a UAV (drone), magnetometry survey, resistivity survey, palaeoenvironmental survey (coring), and probing survey. Described below are the general techniques and a further section will outline how each will be applied for each longhouse.

3.5.2 **Topographic Survey:** it is understood that the physical remains have already been recorded, but there is a need to record the wider topography to set the context for the base survey. This will be done by a range of techniques and will be intended to provide as much training as possible in survey techniques, but is also intended to provide an accurate and general survey of the wider landscape. To survey the immediate environs it is proposed to use a theodolite and disto which is cheap and easy to use equipment, and is a technique which can potentially be used by the group following the end of the present project. In conjunction with this a photogrammetric survey will be undertaken of the wider area using specialist UAV equipment. The two will be combined to create the final survey results.

- **Theodolite / Disto Survey:** the use of a theodolite / disto has been found to be very effective during earlier surveys. The theodolite measures angles and the disto measures the distances and then the data is drawn up in the field by volunteers using an accurate film based protractor and ruler. This allows the volunteers to be involved in all stages of the process.
- **Photogrammetric Recording:** it is proposed to record the sites and general environs by means of aerial photography, which, using specialist photogrammetric software, can be used to create accurate three dimensional models of the site and topographic surfaces. For

large landscapes there are two methods available, the first is to use a UAV, which is a small multi-engined model helicopter and provides photography from any altitude up to approximately 200m height. The alternative is to use a mast with a camera mounted on top. The latter is not effective at recording large areas, but can be undertaken by the volunteers, and allows them to get involved in the photogrammetric process using inexpensive equipment. In practice it is proposed to use both techniques. Survey control is introduced to the photographs by the placement of survey control targets across the site which are located by means of survey grade GPS or total station.

- The photogrammetric processing is undertaken using Agisoft software which provides detailed modelling using the overlap of up to 120 photographs, and creates a very detailed DTM (Digital Terrain Model) across the site. The photographs are then digitally draped over the model to create an accurate three dimensional model of the ground surface. The primary output, however, is an accurate two dimensional image which can be used to generate accurate plans or profiles.
- **Survey Control:** it is proposed that survey control be introduced to the sites by means of a high accuracy survey type differential GPS where possible. This can achieve accuracies of +/- 20mm, and will ensure that the survey is accurately located onto the Ordnance Survey National Grid. If at any of the sites there is no mobile reception (necessary to provide corrections for the GPS) then the control will be established by means of a total station.

- 3.5.3 **Magnetometry Survey:** magnetometry is not the best technique for recording rocky landscapes, or where there is the potential for bedrock near the surface; however it is very effective for the identification of hearths. It is therefore proposed to undertake a rapid survey of the interiors of each of the longhouses, but which will also extend some way beyond the extent of each longhouse.
- 3.5.4 The detailed magnetic survey will be carried out using a Bartington Grad601-2 gradiometer which has an internal data logger. Data will be collected in zig-zag mode over a half grid (15m x 30m), the magnetic data will be collected at 0.25m intervals on profiles 1m apart (3600 readings per grid). The instrument is easy to use and handle and the basic survey operations and technique can be easily explained to volunteers.
- 3.5.5 **Resistivity Survey:** the resistance survey is most effective at identifying stone structures; however, it can be masked, and the results confused, by the proximity of natural stones and bedrock. It is anticipated that it will only provide useful results at a selected number of longhouse sites and the survey will therefore concentrate on those sites.
- 3.5.6 The detailed resistance survey will be carried out using a Geoscan RM15 resistance meter, which has an internal data loggers. Data will be collected in zig-zag mode over 30m by 30m grids, the resistance survey data will be collected at 1m intervals on profiles 1m apart (900 readings per grid). The instrument is easy to use and handle and the basics of survey operation and technique can be easily explained to volunteers.
- 3.5.7 **Survey Control:** the survey grids will be staked out and surveyed using either an RTK GPS system or total station to Ordnance Survey co-ordinates to at least 0.05m accuracy. Bamboo canes will be placed at grid node points and survey ropes and canes will be used to mark out the survey traverses.
- 3.5.8 All data will be downloaded immediately following collection using specialist survey software and will be minimally processed where applicable. Raster images will be exported, usually in .png or .jpg format for presentation and dissemination. These images will be imported into CAD software and overlain on a geo-referenced base plan. An interpretation of the anomalies will be presented in CAD and a non-technical summary and discussion of the results will be included in a report which will accompany the interpretation.
- 3.5.9 It is proposed that much of the survey area will be surveyed by an experienced geophysicist prior to project participants and casual visitors' involvement in order to allow for some final example data to be available for viewing at the commencement of the project. The survey will be carried out in accordance with English Heritage guidelines (2008) and IFA standards (2010).
- 3.5.10 **Coring Survey:** a process of environmental coring will be undertaken by experienced palaeoenvironmentalists within and around the area of each longhouse, macrofossils and pollen. A rapid process of probing will be used to examine stratigraphy of the soils in the environs of each longhouse to identify any significant deposits, particularly peat, that would warrant more detailed coring. This will be undertaken using a gouge auger and the depth, type, and preservation of the

waterlogged stratigraphy will be recorded on *pro-forma* record sheets, and the survey will seek to record the character of the underlying stratigraphy. The sediment stratigraphy will be recorded using the terminology and procedures outlined by Troels-Smith (1955). If good peat deposits are identified then a core will be undertaken with a Russian Corer which has the capability of taking clean and secure deposits and will be appropriate for radio carbon dating. The cores will be located, both spatially and in altitude, by means of survey grade GPS. Samples will be taken from the top and bottom to facilitate radio carbon assay. Selected sampling will be undertaken within the longhouse to investigate for the potential for charcoal deposits related to a hearth; however, this will entail a limited number of core holes as there is a need to limit disturbance to the buried soil deposits.

- 3.5.11 **Analysis of Cores:** an assessment will be undertaken of selected cores taken with the Russian corer, and will be in addition to the recording of the deposits in the field. This will entail taking small samples of peat will from significant levels in the core. These will be examined microscopically in the laboratory for plant macrofossils to confirm the field identification and some will be assessed for pollen sampling. Larger samples from basal deposits will be assessed for radiocarbon dating to provide inception dates for the waterlogged deposits.
- 3.5.12 **Probing:** it is proposed to undertake probing at the site and will entail the use of a steel probe to identify stone elements below the ground. It is particularly effective at tracing structures which have a limited surface expression, and where there is a need to establish where and how they continue. Where stone elements are identified the edges will be defined with the probe and then marked on the ground with a survey arrow. The process is continued until the whole outline of a wall or stone structure is defined by survey arrows. The arrows are then surveyed using a survey grade GPS to record the extent of the buried stone features. It is proposed to use the technique at selected sites where it is considered that there is uncertainty about the form of visible structures and where the technique will be profitable.
- 3.5.13 **Proposed Survey Strategies for each Longhouse Site:** each long house is different and the survey needs of each site is correspondingly different. The survey strategies have been devised for each site in order to provide the most informed and effective range of techniques. At each site there will be a need to clear the vegetation from the site to allow a detailed understanding of the site and topography; however, the extent of the vegetation clearance will again depend on the needs of the site.
- **Tongue House A:** the site has very clear visual remains, bedrock and natural boulders close to the surface and is associated with a field system that is fairly extensive. The main topographic survey of the immediate environs around the longhouse, will be undertaken using the theodolite and disto as that provides the best training potential. The wider area, containing the field system, will be surveyed by means of the photogrammetry using a drone. This will also record the wider topography and will generate contours. The bedrock is too close to the surface to make resistivity an effective technique, but magnetometry will be used to search for a hearth within the structure. There is a possible peat deposit in the immediate environs of the site and it is proposed to use gouge and Russian corers to explore this deposit.
 - **Tongue House B:** the site has very clear visual remains, bedrock and natural boulders close to the surface and is associated with a field system that is fairly extensive. The main topographic survey of the immediate environs around the longhouse, will be undertaken using the theodolite and disto as that provides the best training potential. The wider area, containing the field system, will be surveyed by means of photogrammetry using a drone. This will also record the wider topography and will generate contours. The bedrock is too close to the surface to make resistivity an effective technique, but magnetometry will be used to search for a hearth within the structure. There is a possible peat deposit below the site, and adjacent is an area that looks as though it may have been improved in the past. It is proposed to use gouge and Russian corers to explore this peat deposit and to also undertake a stratigraphic survey, using the gouge auger, to establish the character of the area of improved ground. There is limited potential for probing.
 - **Longhouse Close:** the site is a large enclosure and a group of at least two longhouses; it has a mixture of clear visual remains and some which are apparently obscured. There is the potential to explore remains beyond the limits of the main house enclosure. The main aim of the survey will be to identify the character and form of the buried components of the structures, and it is therefore proposed to use a programme of probing and resistivity

survey to explore the extent of the site, and to trace the continuations of surface features which seemingly extend below the surface. A magnetometry survey will also be undertaken to examine the potential for hearths within the longhouses. As the emphasis will be on the investigative element of the survey, it is proposed to undertake all of the topographic survey by photogrammetry.

3.6 EXCAVATION

- 3.6.1 OA North will supervise the excavation of the longhouses, and will entail the excavation of areas of sufficient size to be able to be excavated and completed over the course of 16 working days, including three weekends. In practice the area will be dependent upon the numbers of participants, and it is anticipated that this will entail a flexible approach, whereby smaller areas will be opened initially and can then be expanded or additional areas opened as the work progresses. It is proposed to excavate one longhouse each year over three years.
- 3.6.2 It is proposed to excavate three of the four sites, and the decision as to which of the sites is not excavated should be informed by the survey programme; however, for practical and planning purposes there is a need to have some guide as to which of the four sites will be excavated in the first year. It is proposed that this site should be Tongue House Close A, because it is conveniently near to the Seathwaite Tarn track, and because it is a logistically straight forward site to excavate. It is proposed to make an aperture through the field wall separating it from the track, and it would be sensible that the survey and excavation of this site be undertaken as close as possible to minimise the time that the aperture is open.
- 3.6.3 The following section outlines a methodology for the undertaking of excavations of the longhouses. The emphasis for the excavation will be upon providing training, and providing a valuable experience for the participants, rather than undertaking extensive areas of excavations to tight timetables. While it is important that all areas opened are fully excavated, the extent of the excavation areas will be defined so as to ensure that the participants can comfortably complete these areas within the time allowed. At the end of the excavation the excavations areas will be backfilled and the turf will be relaid.
- 3.6.4 It is anticipated that there will be two professional archaeologists supervising the excavations and surveys, and that there will be a ratio of four or five participants for every professional.
- 3.6.5 **Site Preparation and Preliminary Survey:** prior to the commencement of any work, a risk assessment will be compiled by the OA North Project Director. The initial element of the fieldwork will comprise the establishment of survey control using survey grade GPS. Gazebos / tents will be erected on site to provide cover immediate to the site and a mobile welfare unit, including portable toilets, will be established at the closest point to the excavations. It is proposed to use a groundhog welfare unit, which is a towable trailer and can be taken along rough tracks using a 4x4 vehicle, and therefore the unit can be located as close as possible to each excavation area. Netlon fencing will be erected around the excavation areas in order to keep sheep out.
- 3.6.6 **Turf Clearance and Excavation:** at the outset the turf will be carefully removed from the excavation areas by manual techniques and the turf will be stored separately from the spoil and adjacent to the excavation on terram.
- 3.6.7 All excavation will be carried out using manual techniques. Spoil from the excavation will be stored at a location adjacent to each site. Structural remains will be cleaned to define their extent, nature, form and, where possible, date. It should be noted that no archaeological deposits will be entirely removed from the site. It is not anticipated that excavation in any of the trenching will proceed below a depth of 1.2m, although should this be considered necessary, then the trench will be widened sufficiently to allow the sides to be stepped in or battered back to a safe angle of repose.
- 3.6.8 All information identified in the course of the site works will be recorded stratigraphically, using a system adapted from that used by the Centre for Archaeology Service of English Heritage. Results of the evaluation will be recorded on *pro-forma* context sheets, and will be accompanied with sufficient pictorial record (plans, sections and both black and white and colour photographs) to identify and illustrate individual features. Primary records will be available for inspection at all times.

- 3.6.9 Samples will be taken from within the house sites to enable phosphate analysis and will be undertaken alongside the excavation programme. This work will be undertaken by the participants under the guidance of a palaeoenvironmentalist.
- 3.6.10 A full and detailed photographic record of individual contexts will be maintained and similarly general views from standard view points of the overall site at all stages of the evaluation will be generated. Photography will be undertaken using digital photography and will be undertaken throughout the course of the fieldwork. Photographs records will be maintained on special photographic *pro-forma* sheets.
- 3.6.11 **Planning:** the precise location of all archaeological structures encountered will be surveyed by a combination of manual techniques using a planning frame or using a total station. All survey drawings will be completed by manual draughting techniques on site. This process will ultimately generate scaled plans within an AutoCAD system, which will then be refined by manual draughting by local community volunteers. The drawings will be generated at an accuracy appropriate for 1:20 scale, but can be output at any scale required. Sections will be manually drafted as appropriate at a scale of 1:10. All information will be tied in to Ordnance Datum. On completion of the excavations aerial photographs will be taken of each site using a photographic mast.
- 3.6.12 **Backfilling:** the excavation areas will be manually backfilled by OA North and the participants, and the turfs will be relaid.
- 3.6.13 **Finds policy:** finds recovery and sampling programmes will be in accordance with best practice (following current Institute of Field Archaeologists guidelines) and subject to expert advice in order to minimise deterioration. OA has close contact with Ancient Monuments Laboratory staff at the University of Durham and, in addition, employs in-house artefact and palaeoecology specialists, with considerable expertise in the investigation, excavation, and finds management of sites of all periods and types, who are readily available for consultation.
- 3.6.14 Finds storage during fieldwork and any site archive preparation will follow professional guidelines (UKIC). Emergency access to conservation facilities is maintained by OA North with the Department of Archaeology, the University of Durham. Samples will also be collected for technological, pedological and chronological analysis as appropriate.
- 3.6.15 Human remains are not expected to be present, but if they are found they will, if possible, be left *in situ* covered and protected. If removal is necessary, then the relevant Home Office permission will be sought, and the removal of such remains will be carried out with due care and sensitivity as required by the *Burials Act 1857*.
- 3.6.16 Any gold and silver artefacts recovered during the course of the excavation will be removed to a safe place and reported to the local Coroner according to the procedures relating to the Treasure Act, 1996.

3.7 POST-EXCAVATION WORK

- 3.7.1 An archive for the project will be prepared during and immediately following the fieldwork programme for and a summary forwarded to the LDNPA Historic Environment Record. The results of the excavation will form the basis of a full archive to professional standards, in accordance with current English Heritage guidelines (*Management of Research Projects in the historic Environment*, 2006). The project archive represents the collation and indexing of all the data and material gathered during the course of the project. The deposition of a properly quantified, ordered, and indexed project archive in an appropriate repository is considered an essential and integral element of all archaeological projects by the Institute for Archaeologists.
- 3.7.2 An interim report will be compiled at the end of each season of excavation. It will present, summarise, and interpret the results of the programme. It will include an index of archaeological features identified in the course of the project, with an assessment of the site's development. It will incorporate appropriate illustrations, including copies of the site plans and section drawings all reduced to an appropriate scale.
- 3.7.3 An assessment of the samples will be undertaken on the fauna, the palaeoenvironment for waterlogged plant remains, and for phosphate analysis. It is considered that there is considerable potential to better understand the activities within the longhouses by means of phosphate and microfossils analysis.

3.7.4 Initial finds processing will, as far as possible, be carried out on site. This may involve the initial processing and cataloguing of finds, cross-checking site records, preparing phase plans, and checking all drawings. Participants will be encouraged to contribute any fresh research information, which may be incorporated into the final report.

3.8 INTERIM REPORT PRODUCTION

3.8.1 **Interim Report:** the interim report will present, summarise, and interpret the results of the programme detailed in Stages 3.6 above, and will include the following:

- a front cover to include the NGR and the client;
- the dates on which the fieldwork was undertaken;
- acknowledgements and the names of all contributors to the project, including all the volunteers;
- a description of the project and methodology;
- a summary of the historical background to settlement in the specific areas;
- results of the geophysical survey
- results of the coring programme
- results of the excavation work
- specialist reports on the assessment of the samples and artefactual assessment
- a complete bibliography of sources from which data has been derived;
- presentation of the completed topographic survey mapping
- a copy of this project design, and indications of any agreed departure from that design;
- a gazetteer of all identified monuments and historic features;
- a list of the archive contents;

3.8.2 The report will incorporate appropriate illustrations, including copies of the site plans, and detailed survey plans of each longhouse, all reduced to an appropriate scale. The site mapping will be based upon the CAD base. The report will be accompanied by photographs and historic illustrations illustrating the principal elements of the landscape.

3.8.3 **Final Report:** the final report will incorporate all the results of the earlier seasons of work and also will include a landscape assessment to set the wider context for the house sites

3.8.4 **Popular Report:** a reduced version of the final report will be compiled, which will be heavy on illustrations and photographs and will be approximately 25 pages in length and in A4 format. Although based on the final report, it will be subject to desk-top publishing design, and will include a well designed cover to improve the visual appearance. It will be commercially printed and it is anticipated that there would be an output of 50 copies. While this will be adequate to present the results to the group it will not be a glossy published booklet and will not be appropriate for publication or commercial sale.

3.8.3 **Editing and submission:** the report will be subject to the OA North's stringent editing procedure; then a draft will be submitted to the client and Lake District National Park for consultation. Following acceptance of the report, six bound copies of the report (and digital copy) will be submitted to the LDNPS HER. A summary of the work will be provided for OASIS.

3.9 OTHER MATTERS

3.9.1 **Access and Welfare:** access for the sites will be negotiated with the land owners by DVLHG. Access to the sites for excavation will allow for the use of a 4x4 vehicle to gain access. Welfare facilities will be provided for the staff and volunteers. It is proposed to use a ground hog welfare unit, which can be towed to the site behind a 4 x 4 vehicle.

3.9.2 **Site Conditions:** all the sites have considerable vegetation cover and this will need to be cleared in advance of the survey particularly, but also in advance of the excavation programme. The extent of

the vegetation clearance will need to be agreed with DVLHG in advance, so that sufficient of the area will be exposed during the aerial and ground surveys.

3.9.3 **Health and Safety:** full regard will be given to all constraints during the survey, as well as to all Health and Safety considerations. The OA North Health and Safety Statement conforms to all the provisions of the SCAUM (Standing Conference of Unit Managers) Health and Safety manual. Risk assessments are undertaken as a matter of course for all projects, and will anticipate the potential hazards arising from the project. A very careful risk assessment will be undertaken in conjunction with the client.

3.9.4 **Insurance:** insurance in respect of claims for personal injury to or the death of any members of the public in the course of the project will be covered by OA North, who has insurance cover which complies with the employers' liability (Compulsory Insurance) Act 1969 and any statutory orders made there under. For all other claims to cover the liability of OA North in respect of personal injury or damage to property by negligence of OA North. The insurance cover is as follows:

- £10 million public liability
- £10 million employers liability
- £5 million professional indemnity

4. WORK TIMETABLE

4.1 The proposed timetable is defined in the brief and is reproduced below:

- Spring 2016, 10 days survey
- Spring 2016, Preparation of survey reports
- Summer 2016, Schools outreach
- Summer 2016, Training Workshop - 1 day
- Summer 2016, Excavation of longhouse - 16 days
- Summer 2016 Production of interim excavation report
- Summer 2017, Schools outreach
- Summer 2017, Training Workshop - 1 day
- Summer 2017, Excavation of longhouse - 16 days
- Summer 2017 Production of interim excavation report
- Summer 2018, Schools outreach
- Summer 2018, Training Workshop - 1 day
- Summer 2018, Excavation of longhouse - 16 days
- Summer 2018, Production of final report

5. RESOURCES

5.1 OA NORTH PROJECT TEAM

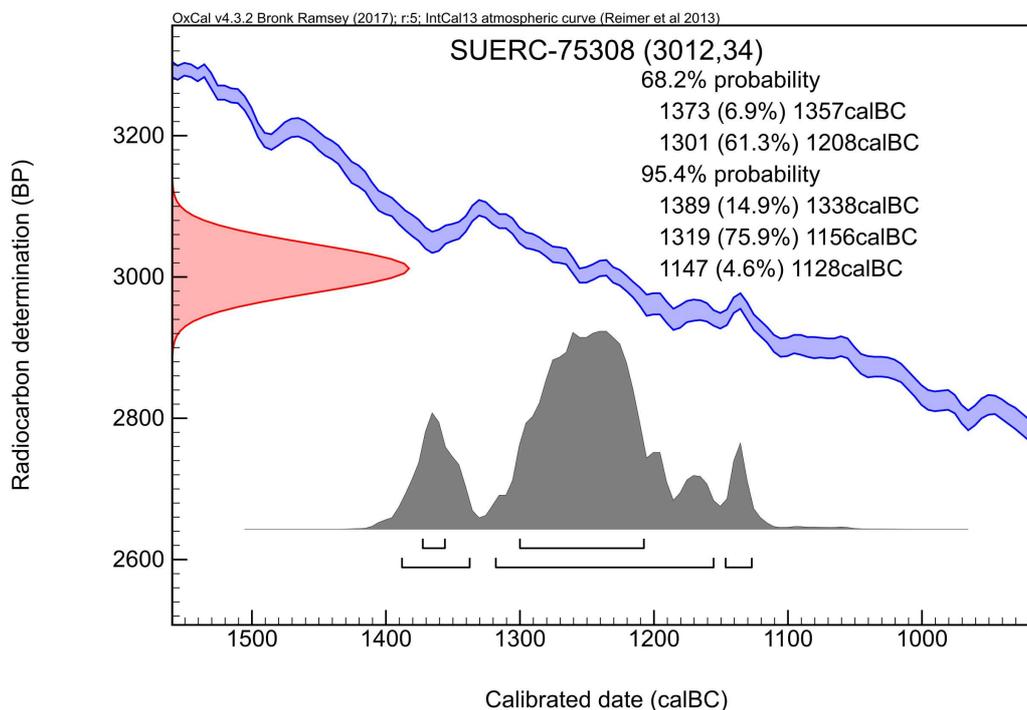
5.1.1 The excavation will be directed by Jeremy Bradley (Project Officer) and the survey will be undertaken by Peter Schofield (Project Officer), under the guidance of the project manager, Jamie Quartermaine. The OA North element of report production will be split between Peter and Jeremy.

5.1.2 *Project Management:* the project will be under the project management of Jamie Quartermaine, BA Surv Dip MIFA FSA (OA North Project Manager) to whom all correspondence should be addressed. Jamie is a very experienced landscape surveyor, who has undertaken or managed literally hundreds of surveys throughout Northern England since 1984, and has considerable

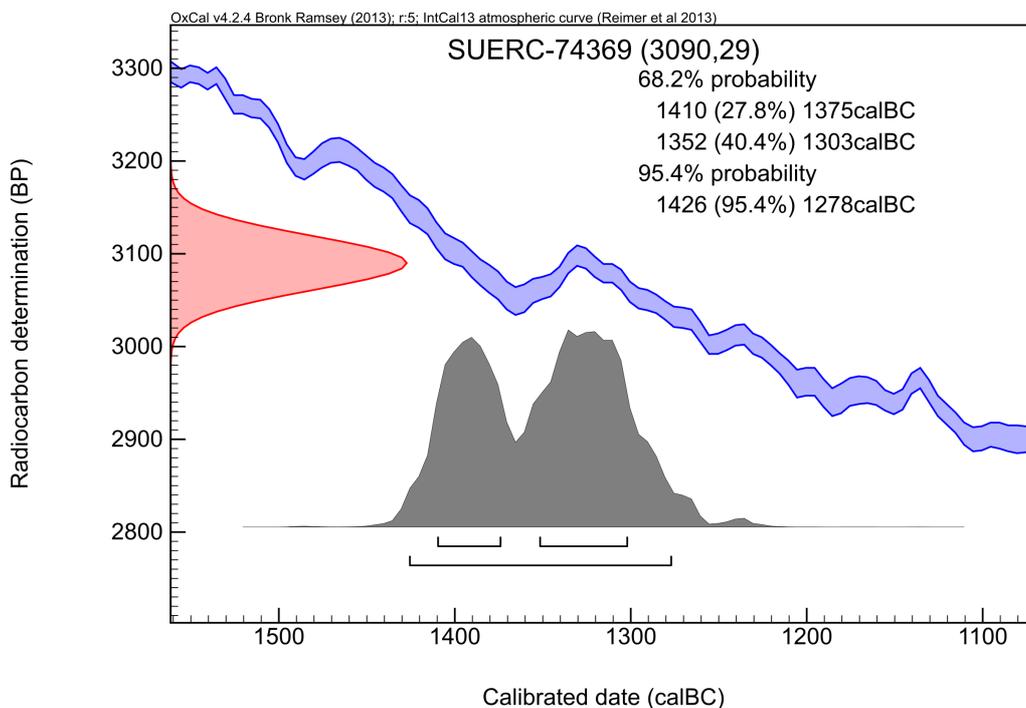
experience of working on similar projects to that proposed. He has managed a major recording programme of Lyme Park, Cheshire, and very detailed surveys of the South West Fells including areas such as Barnscar and Burnmoor. He has also undertaken surveys of Lowther Park, Cumbria, Rufford Park, Lancashire and has also managed the recording programme of Lathom Hall and Park, Lancashire and the survey of the Forest of Bowland for United Utilities. He has been a project manager since 1995 and has managed over 350 very diverse projects since then, which are predominantly survey orientated, but of all periods from the Palaeolithic to the twentieth century.

- 5.1.3 Jamie is a qualified land surveyor (Topographic Sciences Diploma Glasgow University) and has an exhaustive knowledge and understanding of surveying techniques. He regularly runs training courses in survey techniques and has the expertise to devise a variety of survey techniques for training volunteers.
- 5.1.4 **Excavation Director:** the excavations will be directed by **Jeremy Bradley** BA Hons (OA North Project Officer) who has a wide range of archaeological experience, gained over the last 20 years, on both rural and urban sites, and on evaluations and open-area excavation, including large infrastructure projects such as the Wasdale (2012) pipeline. Other projects Jeremy has directed include three campaigns of field work at Furness Abbey Presbytery between 2009-11 and other medieval sites such as Clitheroe Castle sites and Penrith New Squares. Jeremy's chosen area specialism is the medieval period, particularly the study of medieval pottery in the North West. Work on medieval pottery has included a significant assemblage from a pottery production site at Samlesbury, Lancashire and urban assemblages from Carlisle, both of which have been published. Jeremy worked as a Project Officer for Humber Field Archaeology between 1999-2005, which involved supervising all levels of archaeological excavation, post-excavation analysis on sites in Hull, east Yorkshire and North Lincolnshire.
- 5.1.5 **Project Surveyors:** the survey will be undertaken by **Peter Schofield** (OA North Project Officer). Peter works full time on landscape surveys across the north-west. He has undertaken surveys at Hardknott Forest, Cumbria, Hartley Fold Estate, Cumbria, Ennerdale Valley, West Cumbria, a major programme of landscape survey across nine upland areas in North Wales, Little Asby Common for the Friends of the Lake District, and the Holwick and Force Garth surveys, Teesdale. With the exception of Jamie Quartermaine, he is our most experienced landscape archaeologist.

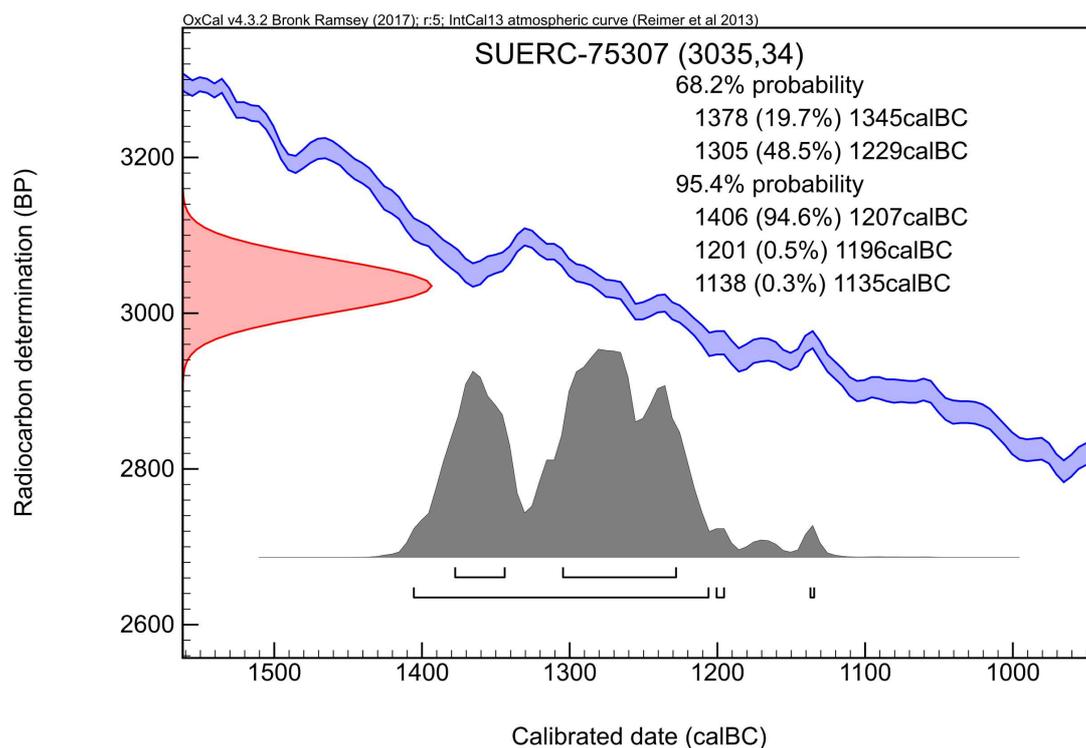
APPENDIX 2 - RADIOCARBON DATES



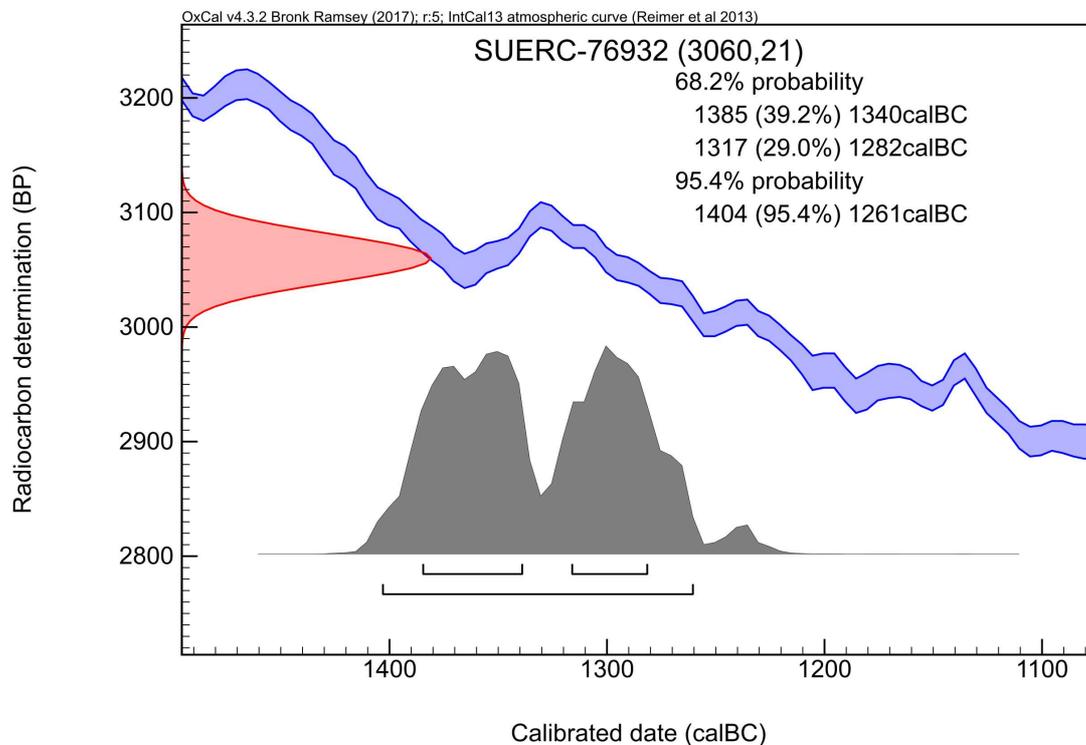
Calibration plot for radiocarbon date of Charred hazel nut shell fragment from context **1053**



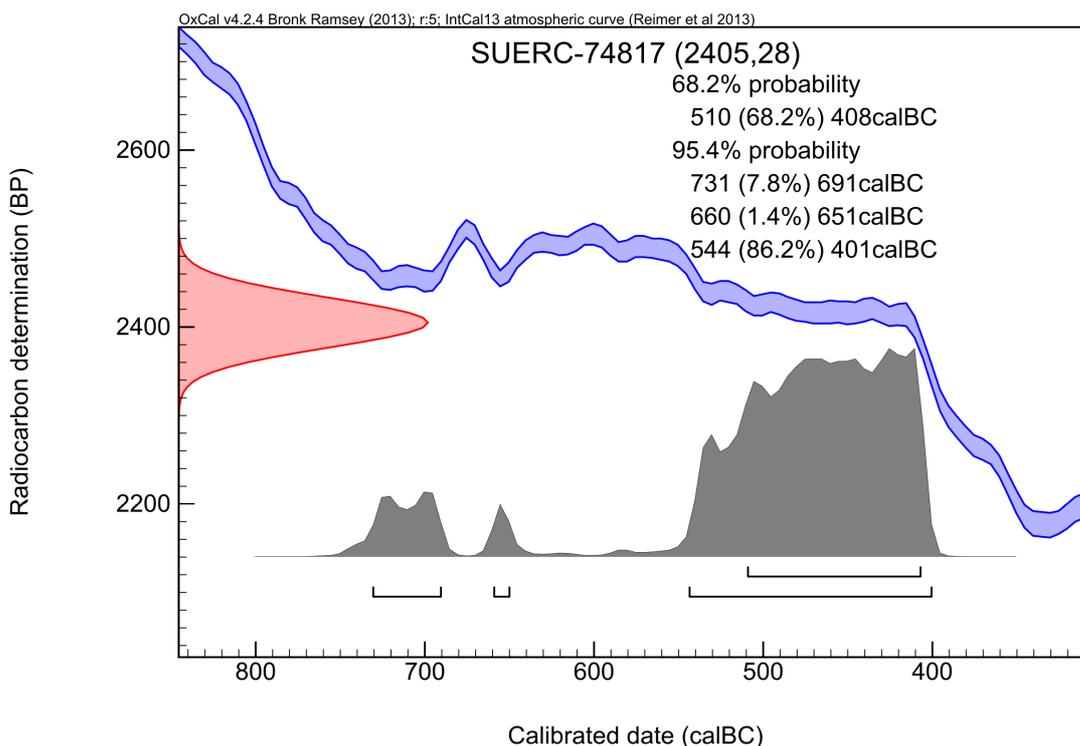
Calibration plot for radiocarbon date of an alder sample from context **1059**



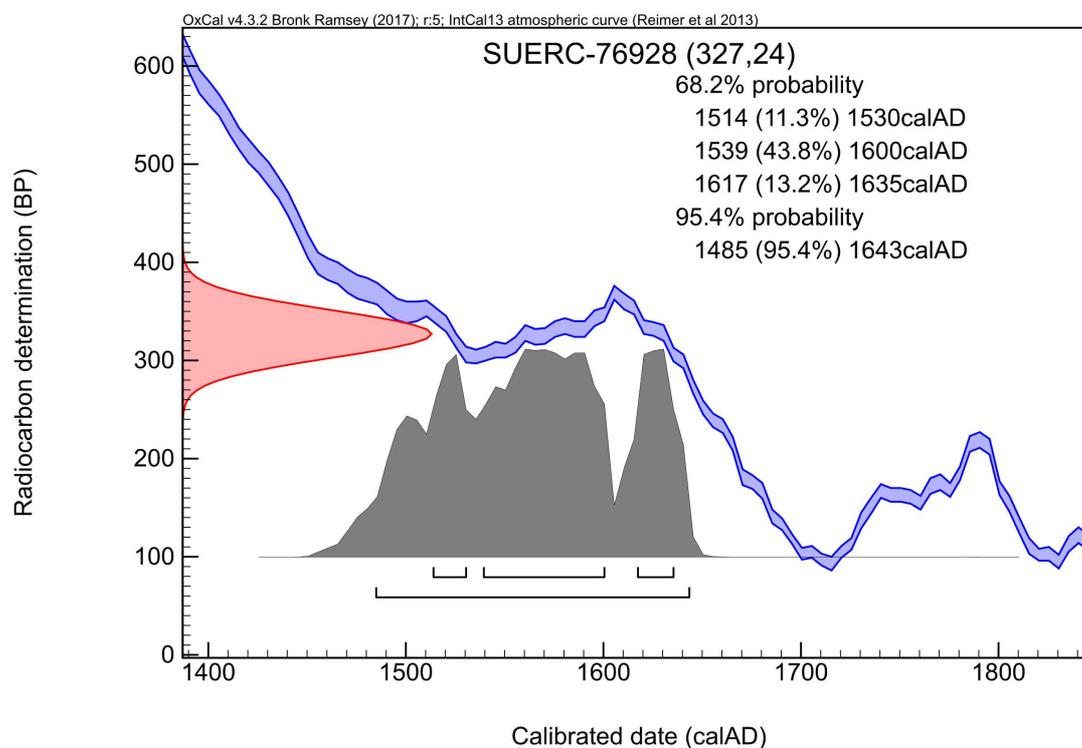
Calibration plot for radiocarbon date of a hazel sample from context **1061**



Calibration plot for radiocarbon date of an oak sample from context **1045**



Calibration plot for radiocarbon date of a Hazel sample from context **1062**



Calibration plot for radiocarbon date of a *Maloideae* sample from context **1037**

APPENDIX 3 - CONTEXT LIST FOR LONG HOUSE CLOSE

Context Number	Description
<i>1000</i>	Turf/topsoil
<i>1001</i>	Natural geology
<i>1002</i>	Rubble/collapse
<i>1003</i>	Rubble/collapse
<i>1004</i>	Rubble/collapse
<i>1005</i>	Rubble/collapse
<i>1006</i>	Rubble/collapse
<i>1007</i>	Rubble/collapse
<i>1008</i>	Rubble/collapse
<i>1009</i>	Rubble/collapse
<i>1010</i>	Rubble/collapse
<i>1011</i>	Group number for eastern half of Building <i>1016</i>
<i>1012</i>	E/W aligned wall Building <i>1016</i>
<i>1013</i>	N/S aligned wall (Building <i>1016</i>)
<i>1014</i>	E/W aligned wall (Building <i>1016</i>)
<i>1015</i>	N/S aligned wall (Building <i>1016</i>)
<i>1016</i>	E/W aligned Building (Building <i>1016</i>)
<i>1017</i>	E/W aligned Building (Building <i>1016</i>)
<i>1018</i>	E/W aligned wall (Structure <i>1017</i>)
<i>1019</i>	E/W aligned wall (Structure <i>1017</i>)
<i>1020</i>	Hearth within Building <i>1016</i>
<i>1021</i>	Rubble layer
<i>1022</i>	Surface
<i>1023</i>	Surface
<i>1024</i>	Group No for western wall of Building <i>1016</i>

1025	Flag stone surface in Building 1016
1026	Surface
1027	Fill of 1028
1028	Drain cut
1029	Layer
1030	Rubble
1031	N/S aligned boundary wall
1032	NE/SW aligned revetment
1033	Rubble layer
1034	N/S aligned revetment
1035	Rubble layer
1036	Surface
1037	Occupation layer within Building 1016
1038	Rubble layer
1039	Surface
1040	Natural deposit
1041	N/S aligned wall
1042	N/S aligned boundary wall
1043	Rubble layer
1044	Surface
1045	Layer
1046	Surface
1047	Surface
1048	Surface
1049	Layer
1050	Stake hole
1051	Fill of 1050
1052	Hearth like structure
1053	Surface

1054	Group No for rubble/collapse deposits
1055	Structure
1056	Rubble layer
1057	Surface
1058	Structure
1059	Fill 1052
1060	Hearth
1061	Fill of 1060
1062	Shallow gully
1063	Fill within 1058
1064	Possible hearth
1065	hearth deposit
1066	Not used
1067	Wall foundation (Group 1024 , Building 1016)
1068	Wall (Test pit 3)

ILLUSTRATIONS

FIGURES

Figure 1: Site Location

Figure 2: Detailed survey of Long House Close

Figure 3: Field System local to Long House Close

Figure 4: Field System around Tongue House A and B, and Long House Close

Figure 5: Location of excavation area and test pits at Long House Close

Figure 6: Excavated features (Phase 1)

Figure 7: Excavated features, Building **1016** (Phase 2)

Figure 8: Excavated features, Phase 3

PLATES

Plate 1: Undertaking a resistivity survey at Long House Close

Plate 2: OS First Edition 1:10,560 map 1850-1

Plate 3: OS First Edition 1:10,560 map 1900

Plate 4: LC1 longhouse, comprising a central dwarf-walled longhouse, surrounded by a later enclosure / structure

Plate 5: The LC3 longhouse, with a later bield built on top of the western half of the house

Plate 6: Aerial view of the northern structure LC4

Plate 7: The overall enclosure (Site LC6) linking the individual structures and the field wall to the east

Plate 8: Resistivity plot superimposed on the Long House Close plan

Plate 9: Revetment structures **1032** (lower) and **1034** (upper) viewed toward the north (0.5m scale)

Plate 10: Structure **1052**

Plate 11: structure **1055**

Plate 12: Orthophoto image showing surface **1023** (centre), plus revetments structures **1032** and **1031** (left)

Plate 13: Hearth **1060**, with structures **1052** and **1055** to the left and right, respectively

Plate 14: Orthophoto image of Building **1016**, enclosed by walls **1019** (above) and **1018** (below)

Plate 15: Flagstone surface **1025** (to the right of the baulk) during excavation

Plate 16: Hearth **1020** (0.5m scale)

Plate 17: Rubble deposit (**1003**; foreground), presumably the result of the collapse or robbing of wall **1015**, with rubble deposit **1004** beyond (1m scale)

Plate 18: A base sherd of Silverdale type ware (OR 1017) from deposit **1033**

Plate 19: Horseshoe (OR 1012) recovered from the topsoil (**1000**)