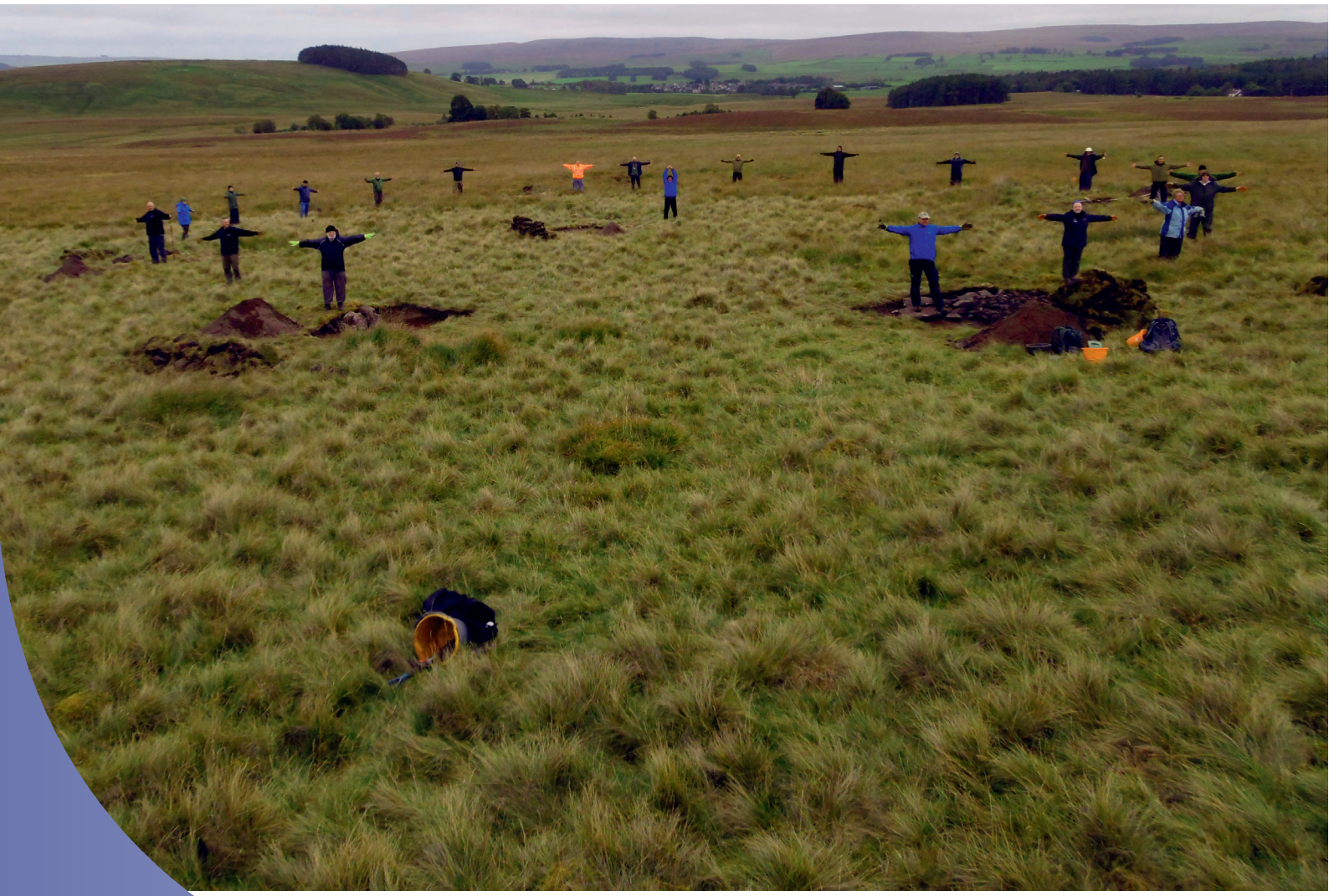
Exercise Lidar Truth
Otterburn, Northumberland

Evaluation Report



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Summary

Wessex Archaeology were commissioned by Landmarc Support Services Ltd to complete an archaeological evaluation on two monuments located through lidar assessment within Otterburn Training Area, Northumberland, centred on National Grid Reference 381569 600546. This evaluation was conducted as a community excavation alongside volunteers from the Revitalising Redesdale Landscape Partnership and wounded, Injured and sick military veterans supported by Breaking Ground Heritage. The possible monuments (Site 1 and Site 2) were located to the east of the main camp, south of the Scheduled Monument area of Todlaw Pike, a suspected Bronze Age settlement with associated filed systems and burial cairns.

The evaluation comprised the excavation, investigation and recording of a series of slip trenches, measuring approximately 1 m by 3 m, targeting the outer bank and ditch of each earth work. In addition, a trench measuring 5 m by 5m was positioned within the interior of each earthwork and targeted anomalies identified in the LiDAR data. A topographic and gradiometer survey of the monuments was undertaken as part of a training programme for the volunteers. The survey work did not identify any internal features of interest within the monuments.

Site 1 was comprised of a circular, embanked feature, c.20 m in diameter, comprising a low, grass-covered, circular bank, up to c.0.60 m high x up to 4 m wide with some raised possible internal features centred on NGR NY 89699 95583. The excavation works demonstrated that the feature contained a well-built stone and earth bank in the south and east of the monument, which became very ephemeral to the north and west. Within the centre of the monument a rough kerbstone wall around a rubble deposit may be the covering for a central burial but time limits meant this could not be fully investigated. Other internal features included a bank of redeposited natural material. Two flint artefacts, potentially dating to the Early Neolithic were recovered, although neither were from secure contexts. Evidence for military training during the 20th century was demonstrated through the presence of two .303 rifle cartridges within the topsoil in the centre of the monument.

Site 2 was comprised of a circular, embanked feature c.30 m in diameter, comprising a low moss and grass covered stone bank c.0.30 m high, enclosing a flat internal area centred on NGR NY 89714 95531. The excavation works demonstrated that the monument was made up of a rough drystone bank of cobbles and rocks, with a probable internal kerb of larger flat stones, which may have originally been stood upright. An entrance was present in the north-east of the monument, with the stone bank ending in rounded terminals also faced with kerbstones. The bank and the kerb were placed directly on the old land surface, which was directly on top of the natural substrate, suggesting that the area had been scrapped back prior to the construction of the monument. No internal features were found, and no artefactual evidence was recovered from Site 2.

The evaluation achieved its main aim of investigating the two lidar anomalies located by the Revitalising Redesdale project. It demonstrated that the anomalies were of archaeological interest and answered some of the research questions on their construction and form. Due to the keyhole nature of the evaluation, a full understanding of the monuments, any internal features and their phasing was not possible within these excavations. The lack of artefactual evidence meant that any dating of the monuments was reliant on environmental samples taken from the probable old land surface dating to before their construction, and on their form as monuments.

In addition to these excavations, the works included providing training in archaeological skills to the volunteers. Workshops on geophysical survey, metric survey and osteology were completed over the course of the two weeks, as well as developing ‘soft skills’ of the volunteers through coaching from Wessex Archaeology staff.

Acknowledgements

Wessex Archaeology would like to thank Landmarc Support Services Limited, for commissioning the archaeological evaluation, in particular Jonathan Pounder. Wessex Archaeology is also grateful for the advice of Chris Jones (Northumberland National Park Authority archaeologist), Phil Abramson and Alex Sotheran (DIO archaeologists), Richard Bennett and Matt Smith (Breaking Ground Heritage), Karen Collins (Revitalising Redesdale Landscape Partnership) and to all the military veterans and community volunteers for their cooperation and contribution on site.

Exercise Lidar Truth, Otterburn, Northumberland

Archaeological Evaluation

1 INTRODUCTION

1.1 Project background

1.1.1 Wessex Archaeology were commissioned by Landmarc Support Services Ltd (hereafter "the Client'), to produce a report for their archaeological evaluation within Otterburn Training Area, Northumberland (**Figure 1**), centred on National Grid Reference (NGR) 381569 600546, hereafter "the Site'.

1.1.2 A review of 1 m density Lidar data of the Training Area carried out by volunteers as part of Revitalising Redesdale's Lidar Landscapes project identified a pair of circular earthworks, likely to be of prehistoric date, at Todlaw Pike on the Otterburn Training Area (**Figure 1**). The features are located close to a large prehistoric cairnfield and settlement at Todlaw Pike (Scheduled Monument Number 1015531).

1.1.3 The evaluation comprised the excavation, investigation and recording of a series of slip trenches, measuring approximately 1 m by 3 m, targeting the outer bank and ditch of each earthwork. In addition, a trench measuring 5 m by 5m was positioned within the interior of each earthwork and targeted anomalies identified in the LiDAR data.

1.1.4 Fieldwork was led by a small team from Wessex Archaeology, with the bulk of the excavation staff comprising volunteers from local community groups (Revitalising Redesdale Landscape Partnership) and veterans (Breaking Ground Heritage). Volunteers were engaged by WA and the Heritage Co-ordinator for the Revitalising Redesdale Landscape Partnership.

1.2 Scope of the report

1.2.1 The purpose of this report is to provide a detailed description of the results of the evaluation, to interpret the results within a local, regional or wider archaeological context and assess whether the aims of the evaluation have been met.

1.2.2 The presented results will provide further information on the archaeological resource within the Otterburn Training Area and facilitate an informed decision with regard to the requirement for, and methods of, any further archaeological investigation and/or protection.

1.1 Location, topography and geology

1.1.1 The Site is located within Otterburn Training area (OTA) and is 10km to the north west of Otterburn. OTA itself is a 23,000 ha. upland estate and a major UK training area predominantly used for artillery firing and field firing by infantry, with the majority of OTA lying within Northumberland National Park.

1.1.2 The Site itself is mainly located on rough land *c.*150 m to the east of the main base and barracks.

1.1.3 The underlying geology is mapped as Tyne Limestone Formation - Limestone, Sandstone, Siltstone and Mudstone. Sedimentary Bedrock formed approximately 331 to 339 million years ago in the Carboniferous Period. Local environment previously dominated by shallow carbonate seas' (British Geological Survey 2020). No superficial deposits are mapped in the immediate area, although there are deposits of Peat (Peat. Superficial Deposits formed up to 3 million years ago in the Quaternary Period. Local environment previously dominated by organic accumulations') nearby (ibid.).

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

2.1 Introduction

2.1.1 The name of Otterburn means otter stream, a stream frequented by otters (Old English "otor" + "brunna"). Otterburn lies in west Northumberland in the Northumberland National Park. It has a long history, much of it associated with defence from prehistoric times to the present day. The remote and inaccessible nature of much of the parish, together with the presence of the army's Otterburn Training Area, has led to exceptional preservation of some prehistoric and later settlements and field systems. A selection of records of the archaeology and historic environment of Otterburn is available online at Keys to the Past (http://www.keystothepast.info/). A summary of the archaeological and historical background, based on the records referred to, is provided below.

2.2 Prehistoric to Romano- British

2.2.1 There are a number of rich prehistoric sites in the vicinity and the earliest remains in the parish are Neolithic. The finds include a piece of pottery and some stone tools, such as worked flint, polished stone axe and axehead. The sites are particularly notable for the area such as a number of cup marked stones, HER N340 Bellshiel Law Cairns which comprises of over 15 cairns in varying states of preservation and HER N331 Bellshiel Law long cairn.

2.2.2 The oldest structures are Bronze Age and they are mainly ritual monuments and cairns in the area. Many of these remains lie in places where people reused the same places in the Iron Age Roman and medieval periods, such as on Barracker Rigg. Here, a round cairn lies amongst remains of a Roman period settlement and field system. At Todlaw Pike, a round cairn and enclosed cremation cemetery have been discovered, and another round cairn cemetery stands on Levey Bog. Many more round cairns have been discovered across the parish, suggesting there was a great deal of activity here in the Bronze Age. Few bronze objects have been discovered, but those that have include a spearhead and axehead.

2.2.3 The oldest settlements in the parish are Iron Age. Two different types of settlement have been found in Otterburn: defended settlements on Colwell Hill and Fawdon Hill and an unenclosed hut circle settlement on Todlaw Pike. The first settlement is encircled by three ramparts and ditches, while the latter sits unprotected amidst its field system of cairnfields and small rectangular plots. None of these settlements seems to have been used in the Roman period and a series of small farmsteads appear to have been established instead. For example at Woodhill East, Wood Hill, Greenchesters, Little Crag and Barracker Rigg. On Fairney Cleugh there are at least four Roman farmsteads and one of the most extensive cord rig field systems in the county. The Roman army built two roads through this area: the High Rochester to Bridge of Aln road and Dere Street.

2.3 Medieval

2.3.1 Otterburn also lay on medieval route ways, such as the Elsdon to Gamelspath road. One of the most notable medieval events in the parish was the Battle of Otterburn, fought in 1388 between the Scots and the English. The dangers of living so close to the Scottish border

meant that some people built defensive buildings called tower houses, such as at Otterburn Tower Hotel and Greenchester. There appear to have been few villages in the area at this time although Roman farmsteads on Barracker Rigg and near Shittleheugh were reoccupied at this time, and there may have been a village at Heatherwick, Davyshiel and Branshaw.

2.4 Post- medieval

2.4.1 In the 16th and 17th century, Otterburn lay in the midst of Border reiver country. Those who could afford it built defensive farmhouses, now called bastles. Some of these buildings have survived, albeit in ruins, at Shittleheugh, Branshaw and Girsonfield. A circular stone feature located close to the site is currently identified as a stack stand west of Silloans (HER N355) but has similarities to the prehistoric ring feature being investigated in this project.

2.4.2 The 18th century brought a more peaceful way of life to the area and people began to build less defensive homes, such as Monkridge Hall, The Vicarage, Old Town Farmhouse and Overacres, whose gate piers are all that survive. Later, Otterburn Hall was built as a county retreat for Lord James Douglas. The parish registers record many farmsteads in the parish, including Potts Durtrees, Hopehead East, Hopeshield West and Hopefoot. People also adopted new ideas in farming that came from the Agricultural Revolution at this time and a new, planned farm, was built at Otterburn Hall Farm.

2.4.3 The boundaries of landownership seem to have been formalised at this time and a series of boundary stones were erected from Rigg Moss to White Crag, Black Hill to Todlaw Pike, Cowey's Cairn to Cooper Stones and elsewhere. Transport links were improved in the late 18th century when the Jedburgh to Newcastle turnpike opened. Some early 19th century milestones still stand alongside the road (A696) at Shittleheugh Bridge and north of Otterburn. Alongside farming, other economic activities were established, including a woollen mill at Otterburn, coal mining near Hopefoot, a tile kiln at Garretshields, corn mills at Davyshiel and Troughend, and lime burning at Greenchesters. The spiritual side of life was also provided for with a Presbyterian chapel, Church of St John the Evangelist and Quaker burial ground.

2.5 Modern

2.5.1 The modern village grew up around a coaching inn and Otterburn Tower. It was enlarged in the 1950s with the addition of Brierley Gardens, a council estate which was expanded in the 1970s. The village further expanded in the 1990s and 2000s with the new housing development on former farm land at Willow Green.

2.5.2 More recently, Otterburn has been adopted by the Ministry of Defence as a training area and military remains from the 20th century are becoming important monuments in their own right, such as the target operator bunkers north of Hopehead.

2.6 Previous investigations

2.6.1 The first comprehensive archaeological survey of the Training Area was carried out by the Conservation Group of Otterburn Estate and the Field Research Group of the Society of Antiquaries of Newcastle upon Tyne between 1975 and 1977. Directed by Beryl Charlton, this survey resulted in the production of a gazetteer and review of archaeological remains on the estate (Charlton & Day 1977; Charlton 1996). There is an abundance of archaeological sites of most periods in the Training Area, ranging from Neolithic burial monuments to Roman forts, medieval farmsteads and post-medieval industrial sites, all of which suggest that the area was considerably more densely populated than in recent times.

2.6.2 Following MoD proposals for the 'Options for Change' project, archaeological surveys and evaluations were undertaken at a number of locations in the Training Area in 1995 to 1997, in order to assess the potential archaeological significance of specific areas affected by the road-widening proposals. These investigations were undertaken jointly by Lancaster University Archaeological Unit and The Archaeological Practice, University of Newcastle upon Tyne. The evaluations identified a number of areas where the survival of significant archaeological remains would be threatened by the proposed developments (LUAU/NUAP 1996, 1997).

2.6.3 In 1996, an excavation was carried out on the Dour Long Cairn which gives us some insight into these prehistoric monuments in the area. In this case the long cairn was, in fact, a chambered cairn with subsequent modifications into the Early Bronze Age (Waddington 1998).

2.6.4 Subsequently, in 2002, Archaeological Services undertook excavation on a number of sites threatened by development for the AS90/MLRS Project, as well as further topographic survey and historic building recording (Archaeological Services 2004; 2005a).

2.6.5 Additional archaeological works, consisting of watching brief, evaluation and excavation, were carried out by Archaeological Services during the construction works for the AS90/MLRS Project at the Otterburn Training Area between 2003 and 2005 (Archaeological Services 2005b).

2.6.6 In 2017 Wessex Archaeology carried out an excavation relating to a presumed Roman marching camp at Burdhopecrag (Scheduled Monument Ref: 1011392) which revealed a Roman rampart and ditch as well as a Post- medieval rough cobbled surface and ditch (Wessex Archaeology 2017).

2.6.7 In 2019 Wessex Archaeology carried out excavations on three undated features on Bellshiel's Rig, within the western part of the OTA. These excavations examined a circular bank feature bearing similarities to a Bronze Age Ring Cairn, an earth and stone mound suspected to be a clearance cairn and a linear ditch and bank earthwork. All features were suspected to post-date the Late Iron Age (LIA)/Roman period, with the former land surface below the clearance cairn dated to the LIA (Wessex Archaeology 2019).

2.6.8 A community archaeology project for the Revitalising Redesdale Landscape Partnership led by Paul Frodsham has identified and validated over 1,000 new sites through assessment of Lidar imagery within the Northumberland National Park between 2018-2019 (Frodsham 2020), including the two sites under investigation.

Table 1: Gazetteer of sites in HER within 1 km

HER ID	Site_name	EASTING	NORTHING	COMPILER
23456	Carrick Heights field system remains	390800	595600	Liz Williams
9616	Cross	390900	595100	Liz Williams
8164	Bronze Age spearhead found on Daveyshiel Moor	389000	597000	Liz Williams
8238	Hopehead (East)	389479	596770	Liz Williams

HER ID	Site_name	EASTING	NORTHING	COMPILER
8239	Ruined farmstead	389300	596600	Liz Williams
9623	Unenclosed settlement, field system and cairnfield on Todlaw Pike	390090	595840	Liz Williams
9624	Todlaw Pike North, unenclosed settlement	390320	596160	Liz Williams
8242	Site of a building at Denehead	389400	595800	Liz Williams
22660	Architectural fragment recorded at Davyshiel Farm	388980	596480	Liz Williams
9625	Cairnfield at Tod Law	390160	595560	Liz Williams
9661	Greencleugh Pike field	390600	597300	Liz Williams
8175	Bronze Age round cairn on Todlaw Pike	389970	595850	Liz Williams
9627	Green Stitchel, cairns	390000	596400	Liz Williams
8211	Boundary stones	389850	595980	Liz Williams
9628	Green Stitchel, cairns	390300	596700	Liz Williams
9629	Bruce's Knowe, cairn	390400	595600	Liz Williams
8179	Bronze Age enclosed cremation cemetery on Todlaw Pike	389900	596020	Liz Williams
9630	Greencleugh Pike, cairns	390500	597300	Liz Williams
8250	Hillhead (Davyshiel Hill) farmstead	389800	596100	Liz Williams
9632	Leighton Hill, cairns	391500	595200	Liz Williams
9667	Black Hill to Todlaw Pike boundary stones	390200	596800	Liz Williams
14641	Royal Observer Corps Monitoring Post	390940	595040	Liz Williams
8218	Ruined buildings	389700	596400	Liz Williams
8189	Hole lazy beds	389000	597200	Liz Williams

3 AIMS AND OBJECTIVES

3.1 General aims

3.1.1 The general aims (or purpose) of the evaluation, in compliance with the CIfA' *Standard and guidance for archaeological field evaluation* (CIfA 2020a), were:

- To provide information about the archaeological potential of the site; and
- To inform either the scope and nature of any further archaeological work that may be required; or the formation of a mitigation strategy (to offset the impact of the development on the archaeological resource); or a management strategy.

3.2 General objectives

3.2.1 In order to achieve the above aims, the general objectives of the evaluation were:

- To determine the presence or absence of archaeological features, deposits, structures, artefacts or ecofacts within the specified area;
- To establish, within the constraints of the evaluation, the extent, character, date, condition and quality of any surviving archaeological remains;
- To place any identified archaeological remains within a wider historical and archaeological context in order to assess their significance; and
- To make available information about the archaeological resource within the site by reporting on the results of the evaluation.

3.3 Site-specific objectives

3.3.1 Following consideration of the archaeological potential of the site and the regional research framework (http://www.nerrf.net/project-documents.html), the site-specific objectives of the evaluation were:

- To provide volunteers from the local community and wounded, injured and sick (WIS) veterans from the military community with a high-quality experience of archaeological fieldwork by the implementation of 'on-the job' training in archaeological fieldwork techniques
- To determine the relationship of the two earthworks to the wider prehistoric landscape and specifically to the Scheduled Monument located nearby; and
- To provide artefactual or environmental remains suitable for the accurate dating of these features.

4 METHODS

4.1 Introduction

4.1.1 All works were undertaken in accordance with the detailed methods set out within this WSI.

4.1.2 The evaluation comprised the excavation, investigation and recording of a series of slip trenches, measuring 1m by 3m, targeting the outer bank and ditch of each earth work. In addition, a trench measuring 5 m by 5m was positioned within the interior of each earthwork and will target anomalies identified in the LiDAR data (**Figure 1**).

4.1.3 Trenches were extended or their positions changed to investigate anomalies identified during the course of fieldwork following discussions and agreement with all stakeholders.

4.2 Site access

4.2.1 Access to the Site is restricted and was arranged through the Client. No MOD security clearance was be required to work on the project. All additional staff and volunteers were escorted from the entrance to the training camp to the excavation area by the lead WA member of staff. No other parts of the OTA were accessed.

4.2.2 All staff and volunteers had a WA induction detailing site-specific safety risks and rules prior to entering the Site, as well as a range briefing on UXO safety from the Training Safety Manager at OTA.

4.2.3 Access to the excavation area was limited to existing walkways and driving routes. Pedestrians or vehicles did not deviate from these routes so as to avoid any damage to the local ecology.

4.3 Health and safety

4.3.1 Health and Safety considerations were of paramount importance in conducting all fieldwork. Safe working practices overrode archaeological considerations at all times.

4.3.2 All work was carried out in accordance with the *Health and Safety at Work etc. Act* 1974 and the *Management of Health and Safety Regulations* 1992, and all other relevant Health and Safety legislation, regulations and codes of practice in force at the time.

4.3.3 All work was carried out in accordance with the site-specific health and safety and operational rules outlined by Landmarc and the MOD as well as a WA Risk Assessment. The Risk Assessment was read and signed by all staff and volunteers on the excavation.

4.3.4 WA supplied a copy of their Health and Safety Policy and a Risk Assessment to the Client before the commencement of any fieldwork.

4.3.5 All personnel were expected to attend a Range Safety Briefing before commencing work on the site.

4.3.6 The excavation areas had been checked for UXO by base personnel prior to works commencing and was not considered a significant UXO risk due to its proximity to the base and barracks. WA however provided a UXO identification guide to be reviewed by all staff and volunteers prior to works commencing.

4.3.7 No materials were used during the excavation that require COSHH registration.

4.4 Setting out of the trenches

4.4.1 All trenches were set out in the positions shown in Figure 1, based on the positions outlined in the WSI (Wessex Archaeology 2020). The trench locations were tied in to the Ordnance Survey (OS) National Grid and Ordnance Datum (OD) (Newlyn), as defined by OSGM15 and OSTN15.

4.5 Excavation methods

4.5.1 WA provided supervisory staff to work alongside up to twenty volunteers from local archaeological groups and veterans. The excavation was carried out with hand tools only.

4.5.2 Topsoil and subsoil were stored separately on either side of the excavation area. Spoil was stored neatly at a minimum distance of 1 m from the edge of the excavation area. Turf was stacked green side to green side, brown side to brown side.

4.5.3 Archaeological features and deposits were investigated and stratigraphically excavated by hand. The percentage of any feature or group of features to be excavated was dependent on a number of factors. These include the achievement of the aims and objectives, the significance or potential of the archaeological features/deposits, the stratigraphic record, and health and safety considerations.

4.5.4 The trenches were fully backfilled at the end of the excavation, with subsoil and topsoil being replaced in the correct order, preceded by any large stones. The turf was replaced by hand and stamped down.

4.6 Recording

4.6.1 All exposed archaeological deposits and features were recorded using Wessex Archaeology's pro forma recording system.

4.6.2 A complete drawn record of excavated archaeological features and deposits was made. This included sections, drawn to appropriate scales (generally 1:20 or 1:50 for plans, 1:10 for sections) and tied to the OS National Grid. The OD heights of all principal features were calculated (as defined by OSGM15 and OSTN15) and the levels added to the drawings. Trenches were planned using a combination of GNSS survey and rectified photogrammetric models.

4.6.3 A full photographic record was made using digital cameras equipped with an image sensor of not less than 10 megapixels. This recorded both the detail and the general context of the principal features and the site as a whole. Photographs of each monument and the wider area were taken prior to any excavation taking place. Digital images were subject to managed quality control and curation processes which embed appropriate metadata within the image and ensure long term accessibility of the image set. Photographs were also taken of all areas, including access routes, to provide a record of conditions prior to and on completion of the evaluation.

4.7 Survey

4.7.1 The real time kinematic (RTK) survey of all trenches and features was carried out using a Leica GNSS connected to Leica's SmartNet service. All survey data was recorded in OS National Grid coordinates and heights above OD (Newlyn), as defined by OSGM15 and OSTN15, with a three-dimensional accuracy of at least 50 mm.

4.7.2 The detailed gradiometer survey was undertaken using two Bartington Grad-01-1000L gradiometers spaced 1 m apart and mounted on a non-magnetic frame carried in front of the surveyor. Data were collected with an effective sensitivity of 0.03 nT at a rate of 10 Hz, producing intervals of 0.15 m along transects spaced 2 m apart.

4.7.3 A 20 x 20 m grid of transects were laid out south-west of trench 2 using a Leica GNSS connected to Leica's SmartNet service. This grid was walked by the WA staff and volunteers.

4.7.4 Data from the survey were subjected to minimal correction processes. These comprise a zero-mean traverse function (±5 nT thresholds) applied to correct for any variation between the two Bartington sensors used, and a de-step function to account for variations in traverse position due to varying ground cover and topography. These two steps were applied throughout the survey area, with no interpolation applied.

4.8 Monitoring

4.8.1 The DIO archaeologists monitored the evaluation on behalf of the MoD.

4.9 Reinstatement

4.9.1 On completion of the excavation, the Site was reinstated and conformed to the existing earthwork profiles adjacent to the excavation area. The reinstatement utilized the site turf, topsoil and subsoil.

4.10 Finds

4.10.1 Appropriate strategies for the recovery, processing and assessment of artefacts and environmental samples were in line with those detailed in the WSI (Wessex Archaeology 2020). The treatment of artefacts and environmental remains was in general accordance with: *Guidance for the collection, documentation, conservation and research of archaeological materials* (CIfA 2014b)

4.11 Environmental sampling

4.11.1 All sampling was undertaken following Wessex Archaeology's in-house guidance, which adheres to the principles outlined in Historic England's guidance (English Heritage 2011 and Historic England 2015).

4.11.2 Bulk environmental soil samples, for the recovery of plant macrofossils, wood charcoal, small animal bones and other small artefacts, were taken as appropriate from well-sealed and dateable contexts or features.

4.11.3 Samples were of an appropriate size – typically 40 litres for the recovery of environmental evidence from dry contexts, and 10 litres from waterlogged deposits.

5 STRATIGRAPHIC EVIDENCE

5.1 Introduction

5.1.1 The following section presents the results of the evaluation with archaeological features and deposits discussed by period.

5.1.2 In total, 14 of the 15 excavated trial trenches contained archaeological features and deposits. Detailed descriptions of individual contexts are provided in the trench summary tables (**Appendix 1**). **Figure 1** shows the location of the trenches over both sites, overlain on the preceding lidar survey results. **Figure 2** provides detail of the archaeological deposits associated with site 1, while **Figure 3** provides detail of those associated with site 2. **Figure 4** presents the sections relating to site 1, while **Figure 5** presents those relating to site 2. **Figure 6** shows the results of the geophysical survey undertaken.

5.2 Soil sequence and natural deposits

5.2.1 The natural substrate within the area varied between either a yellow/grey sandy clay with some dark mottling or exposed limestone bedrock. In several places this layer had dark streaks within it which continued to a depth of 0.2 m. It is thought that these are the result of the exposed soil drying out and cracking, allowing organic material to enter the cracks. This layer was not reached in all trenches. Directly on top of this layer was a thin dark brown sandy silt with possible organic material, forming a hard layer up to 0.05 m thick which was interpreted as an old land surface (104, 205, 404, 504, 604, 704, 803, 906, 909, 1005, 1105,

1204, 1305, 1404 and 1503). This was encountered in the majority of trenches was suspected to be the land surface relating to the use of the monuments.

5.2.2 All trenches contained a mid pinkish brown silty sand podzol/subsoil (102, 202, 302, 402, 502, 602, 702, 802, 902, 1002, 1102, 1202, 1302, 1402 and 1502), which was suspected to have built up over the old land surface since the monuments fell out of use. The lack of an earlier subsoil below the old land surfaces would suggest that the area of the monuments was scraped clean down to the natural substrate before their construction.

5.2.3 Both sites were covered with rough turf and rooting within a dark blackish brown sandy silt topsoil (101, 201, 301, 401, 501, 601, 701, 801, 901, 1001, 1101, 1201, 1301, 1401 and 1501). The rooting was very dense across this layer, although where rocks were close to the land surface, the grass gave way to moss.

5.3 Site 1

Trench 1

5.3.1 Trench 1, measuring 3.7 x 1.6 m and located in the northern part of the monument, contained no evidence for bank material (**Figure 2**). Following the removal of the sub-soil layer 1002 down to the old land surface 1003 two possible stakeholes (1004 and 1006) were found (**Plate 1**). These were small (0.1 m diameter, up to 0.15 m deep) and may have only been rooting/animal burrows. No obvious structure could be seen and it is not thought that they constitute a palisade or similar structure to delineate the edge of the monument. A flint flake, possibly part of an Early Neolithic leaf-shaped arrowhead, was found within subsoil 10, suggesting that there was activity in the area during this period.

Trench 2

5.3.2 Trench 2, measuring 5.2 x 1.3 m and located in the eastern part of the monument, contained a section of earth and stone bank (**Figure 2; Plate 2**). Bank 205 was made up of sub-angular and sub-rounded stones up to 0.5 x 0.2 x 0.2 m within a matrix of pinkish brown clayish sand. The internal structure of the bank was not clearly defined, but it may have once had external and internal revetment walls of more densely packed stones with a looser core containing more earth. The upper layer of bank 203 would therefore have been eroded and slumped material (**Figure 4; Plate 3**). The bank was sat on former land surface 204. The whole bank, including slumped material was 5 m wide and up to 0.6 m tall above the old land surface.

Trench 3

5.3.3 Trench 3, measuring 5 x 1 m and located in the eastern part of the monument, contained a section of earth and stone bank (**Figure 2; Plate 4**). Bank 304 was made up of sub-angular and sub-rounded stones up to 0.5 x 0.2 x 0.2 m within a matrix of pinkish brown clayish sand. An eroded/less compact upper bank material 303 had a darker more soily matrix. The base of the bank was not reached in this trench but it demonstrated that the bank in the east and south-east of the monument was built up at least 0.6 m from the original land surface and was up to 4.8 m wide at this point.

Trench 4

5.3.4 Trench 4, measuring 3.8 x 1 m and located in the southern part of the monument, contained a section of low earth and stone bank (**Figure 2; Plate 5**). Bank 403 was made up of a low rise of pinkish brown clayish sound containing sub-angular and sub-rounded stones up to 0.3 x 0.2 x 0.2 m (**Figure 4; Plate 6**). The bank was noticeably narrower and less built up than sections excavated within trenches 2 and 3, and it is unlikely that erosion had played

a part in reducing it's overall size. The bank material was on top of the old land surface 404, which was sampled for palaeoenvironmental evidence.

Trench 5

5.3.5 Trench 5, measuring 4.2 x 1 m and located in the southwestern part of the monument, contained a section of low earth and stone bank (**Figure 2; Plate 7**). Bank 503 was made up of a low rise of pinkish brown clayish sound containing sub-angular and sub-rounded stones up to 0.3 x 0.2 x 0.15 m.

Trench 6

5.3.6 Trench 6, measuring 4.6 x 1 m and located in the western part of the monument, contained a very low section of earth bank (**Figure 2; Plate 8**). Bank 603 was made up of a very thin dark pinkish brown clayish sand overlying the old land surface 604, which lay directly over the natural substrate (**Plate 9**).

Trench 7

5.3.7 Trench 7, measuring 4.5 x 1.1 m and located in the western part of the monument, contained minimal evidence of bank material (**Figure 2; Plate 10**). A very thin possible bank material was identified (703) and comprised a dark pinkish brown clayish sand overlying the old land surface 704, which lay directly over the natural substrate.

Trench 8

5.3.8 Trench 8, measuring 5.8 x 1.8 m and located in the north-western part of the monument, contained no evidence for bank material (**Figure 2; Plate 11**). Subsoil 802 directly overlay old land surface 804, which lay directly over natural substrate 803. The old land surface was sampled for palaeoenvironmental evidence.

Trench 9

5.3.9 Trench 9, measuring 5 x 4 m and located within the centre of Site 1 (**Figure 2**), was excavated to investigate the potential for internal features within the monument. It was located over the western edge of an internal bank feature, as well as covering the central point of the monument. Excavation demonstrated that the internal bank was made up of redeposited natural material 903. To the west of this was a wide, shallow cut (904) from which the material may have been excavated. Cut 904 was filled with a soft dark organic accumulation fill 905. This fill contained two .303 rifle cartridges and it was thought that the feature might be related to 20th century military training, although this is far from certain. Within the south-west corner of the trench a possible kerb wall 907 of block stones was located, forming a rough quarter circle around a possible rubble cairn 908. The rubble cairn material 908 was made up of sub-angular and angular limestone with a pale pinkish yellow sand matrix, which appeared to be broken up natural substrate. The edging kerb wall (907) was two stones thick, with the stones either on edge or on bed. The stones were up to 0.35 x 0.3 x 0.15 m in size and the wall described one quarter of a circle. Only one quarter of this feature was exposed, and the rubble material removed to reveal a possible stone filled cut truncating old land surface 909. This may be a central burial within the monument, however time did not allow for further investigation at this point. Both land surface deposits 906 and 909 were sampled for palaeoenvironmental evidence. A flint flake was found within the subsoil 902 within the north-eastern part of the trench.

5.4 Site 2

Trench 10

5.4.1 Trench 10, measuring 4 x 3 m, was located on the northern side of the circular bank of the monument (**Figure 3**) on a terminus of the stone bank. The trench contained a drystone bank of sub-angular and sub-rounded stones up to 0.2 x 0.2 x 0.1 m and measuring up to 1.2 m in width. Stone bank 1003 contained a series of large flat stones (1004) measuring up to 1.3 x 0.6 x 0.2 m along the internal side, which may have formed an upright internal kerb for the feature (**Plate 15**). Both stones were placed on former land surface 1005 (**Plate 16**), although there was a small amount of subsoil (1002) present under stones 1004, suggesting they may have fallen or been pushed over following the abandonment of the monument. No sockets or cuts were present for these large internal stones, and so if they had been upright then they would have been placed on edge.

Trench 11

5.4.2 Trench 11, measuring 3.6 x 1 m, was located on the eastern side of the circular bank of the monument (**Figure 3**). The trench contained rough drystone bank 1103, made up of sub-angular and sub-rounded stones up to 0.3 x 0.3 x 0.15 m and measuring up to 1.2 m in width. The bank had an internal kerb wall of larger flattish stones (1104) on its western side, measuring up to 0.6 x 0.4 x 0.25 m (**Figure 5; Plate 17**). One of these stones was still in situ, while the other appeared to have fallen to the inside of the monument (**Plates 18** and **19**). Subsoil 1102 overlay the edges of drystone bank 1103, with both forming over old land surface 1105, which was sampled for palaeoenvironmental evidence. The internal kerb stones did not have any evidence for sockets or cuts into the old land surface they sat on, and so were likely designed to be free standing.

Trench 12

5.4.3 Trench 12, measuring 3 x 1 m, was located on the southern side of the circular bank of the monument (**Figure 3**) and contained drystone bank 1203 , measuring up to 1.2 m in width and made up of sub-angular and sub-rounded stones measuring up to 0.3 x 0.3 x 0.15 m (**Plate 20**). This bank did not obviously have any internal kerb stones on its northern side, although there was a suggestion of some disturbance to the stone bank. A single possible external kerb stone was identified on the southern side of the bank during hand excavation, demonstrating that the stones had been placed on former ground surface 1204 (**Plate 21**). Subsoil 1202 was slightly paler than elsewhere, suggesting more hillwash content, which also formed some of the matrix over the stone bank. As this trench was the furthest downslope, the presence of more hillwash material is not surprising.

Trench 13

5.4.4 Trench 13, measuring 3 x 1 m, was located on the western side of the circular bank of the monument (**Figure 3**) and contained a drystone bank (1303) up to 1.2 m in width made up of sub-angular and sub-rounded stones measuring up to 0.3 x 0.3 x 0.15 m. The bank contained an internal kerb (1304) comprising a single large flattish stone on edge and still *in situ* (**Plates 22** and **23**). This stone may have begun to topple over, although it was prevented from falling completely flat by the build-up of sub-soil 1302.

Trench 14

5.4.5 Trench 14, measuring 3.5 x 2.5 m, was located within the north-eastern facing entrance to the monument, on one terminus of the stone bank (**Figure 3**). The trench focused on investigating whether any cut features were present within the immediate surroundings of the terminus, as well as confirming that the stone back did terminate. Stone bank 1403 had a roughly rounded terminus and an inner kerb of large upright stones (**Plates 24** and **25**).

The trench did not fully expose the stone bank material of smaller stones as seen in other trenches, as it only clipped the edge of the feature, however the section suggested that the larger stones did retain a bank of smaller stones (**Figure 5**). The stones of the bank were placed upon former ground surface 1404, which was sampled for palaeoenvironmental evidence, and had subsoil 1402 built up around them. No cut features were identified within the old ground surface.

Trench 15

5.4.6 Trench 15, measuring 3 x 2 m and located within the centre of Site 2 (**Figure 3**), was excavated to investigate the potential for internal features within the monument. Excavation found no features cut into former land surface 1503 (**Plate 26**), which was recorded at 0.3 m bgl and sampled for palaeoenvironmental evidence.

5.5 Geophysical survey

5.5.1 The results of the survey were negative with no buried archaeology identified (**Figure 6**).

6 FINDS EVIDENCE

6.1.1 The only finds recovered of any archaeological significance are two pieces of worked flint (two brass cartridges found in context 905 are not discussed further here).

6.1.2 The flint came, respectively, from subsoil in Trench 1 (layer 102) and topsoil in Trench 9 (layer 901). The piece from Trench 1 is a retouched fragment which has been identified as part of an arrowhead; it appears to have been burnt. Flaking scars cover the surface, suggesting this is more likely to be a leaf-shaped or barbed-and-tongued arrowhead rather than other types (such as chisel) on which more abrupt edge retouch might be expected. Although a firm identification is difficult given the size of the fragment, it seems more likely that this is from an Early Neolithic leaf arrowhead.

6.1.3 The second piece, from Trench 9, is a small broken flake, and has also been burnt. The piece is not particularly diagnostic but would not be inconsistent with a Neolithic date.

7 ENVIRONMENTAL EVIDENCE

7.1 Introduction

7.1.1 Ten bulk sediment samples were taken from buried soils of presumed Bronze Age chronology and were processed for the recovery and assessment of the environmental evidence. A 20ml subsample was also taken from each of these samples for assessing the potential analysis of pollen.

7.2 Aims and Methods

7.2.1 The purpose of this assessment is to determine the potential of the site for the preservation of environmental evidence and the potential of the environmental remains preserved at the site to address project aims and to provide data valuable for wider research frameworks. The nature of this assessment follows recommendations set up by Historic England (Campbell et al. 2011).

7.2.2 The larger bulk sediment samples were subsampled to 10 litres for processing, taking an equal amount from each sample bucket with the remainder kept in storage. The sample from the bank material was 0.8 litres in volume. The samples were processed by standard flotation methods on a Siraf-type flotation tank; the flot retained on a 0.25 mm mesh, residues fractionated into 5.6 mm and 0.25 mm fractions. The flots and residues were stored

in water in airtight containers; larger flots and residues were subsampled down to 500ml using the grid method. The coarse fractions (>5.6 mm) were sorted by eye and discarded. The environmental material extracted from the residues was added to the flots. The grid method was used to split large flot and residues into smaller subsamples when appropriate. The fine residue fractions and the flots was/were scanned using a stereo incident light microscopy (Leica MS5 microscope) at magnifications of up to x40 for the identification of environmental remains. Different bioturbation indicators were considered, including the percentage of roots, the abundance of modern seeds and the presence of mycorrhizal fungi sclerotia (e.g. *Cenococcum geophilum*) and animal remains, such as burrowing snails, or earthworm eggs and insects, which would not be preserved unless anoxic conditions prevailed on site. The preservation and nature of the charred plant and wood charcoal remains, as well as the presence of other environmental remains such as terrestrial and aquatic molluscs and animal bone was recorded. Preliminary identifications of dominant or important taxa are noted below, following the nomenclature of Stace (1997). Abundance of remains is qualitatively quantified (A*** = exceptional, A** = 100+, A* = 30-99, A = >10, B = 9-5, C = <5) as an estimation of the minimum number of individuals and not the number of remains per taxa.

7.3 Results

7.3.1 The bulk sediment samples produced generally large flots that were dominated by fibrous vegetative plant parts and roots. Non-vegetative macrofossils were sparse, with small numbers of insect remains and small amounts of mature wood charcoal that was occasionally iron coated. Preservation was by waterlogging and in variable condition.

7.3.2 Only four samples produced waterlogged non-woody plant remains. Deposits 804 and 504 both contained small numbers of *Juncus* sp. (rushes), which are commonly found in still or slow flowing water and the shallow edges of bodies of freshwater, including streams, ponds or lakes, and seeds of Poaceae (grasses), which can inhabit a wide range of habitats. Deposit 303 (bank material) contained only small numbers of rush seeds, whilst deposit 1404 produced only small numbers of seeds of grasses.

7.4 Conclusions

7.4.1 The deposits on site have some potential for the preservation of waterlogged environmental evidence and further sampling. However, non-woody macrofossils and insects are rare, with most evidence being vegetative and degraded, with abundance of roots, and not suitable for radiocarbon dating.

7.4.2 There is potential in the pollen subsamples taken from the buried soil bulk samples to provide improved information on the prehistoric environment.

7.5 Task list

Table 2: Task list table

Task ID	Task	Resource	Duration
1	Environmental Archive Admin (discarding unprocessed/unsorted samples/residues not for analysis/retention)	ES	1
2	Pollen sample preparation (5 samples)	Ext.	£240

3	Pollen assessment (5 samples)	Techn. Spec.	1.5
4	Analysis of Pollen (No. of samples TBC depending on assessment)	Techn. Spec. (1 day/sample)	0-5
5	Overview and Palaeo-environmental Summary	SPO	.5
6	Environmental Management	SPO	.5

8 CONCLUSIONS

8.1 Summary

8.1.1 The evaluation achieved its main aim of investigating the two lidar anomalies located by the Revitalising Redesdale project. It demonstrated that the anomalies were of archaeological interest and answered some of the research questions on their construction and form. Due to the keyhole nature of the evaluation, a full understanding of the monuments, any internal features and their phasing was not possible within these excavations. The lack of artefactual evidence meant that any dating of the monuments was reliant on environmental samples taken from the probable old land surface dating to before their construction, which did not recover any material suitable for radiocarbon dating.

8.2 Discussion

8.2.1 Site 1 was investigated through eight trenches around its perimeter and one larger trench within the centre, located to investigate a raised area offset from the central point of the circle, as well as the central point itself. The eight slit trenches succeeded in locating the outer bank of the monument, demonstrating that it differed greatly in size and construction material. The trenches within the eastern and south-eastern sides of the monument demonstrated that the bank here was a large, wide stone and earth bank, potentially made up of two parallel revetment walls with a rubble and soil infill. Over the course of time this bank material had slumped and deflated to become slightly less defined. Despite this, it was still considerably more extant than the bank within the southern and western sides of the feature, which had either been far more heavily truncated or had never been built to the same size as that on the east. Along the northern side it was difficult to define any bank material at all, suggesting that there may have been a north or north-east entrance.

8.2.2 Within the centre of the monument, an area of compacted rubble enclosed by a possible kerb was located. The rubble was removed to uncover a possible cut containing larger stones which may be a burial. As only one quarter of this feature was uncovered it was decided to not excavate further at this stage. The raised feature to the east, forming a possible internal bank, was made up of redeposited natural, but it was unclear whether this was the result of 20th century military training or part of the original construction and/or use of the monument.

8.2.3 Two pieces of flint were found within the trenches on Site 1, although neither were in sealed contexts. Both have been identified as being potentially of Neolithic date, with one possibly being a broken leaf-shaped or barbed-and-tongued arrowhead. The two .303 rifle cartridges were found within the central trench, suggesting that some military training had been completed within the immediate area.

8.2.4 Site 2 was investigated using five trenches around the perimeter, including two on the termini of the stone bank, and one internal trench. The perimeter trenches demonstrated

that the monument was made up of a rough drystone bank of cobbles and rocks, with a probable internal kerb of larger flat stones which may have been stood upright on edge. Examples remaining partially upright were found within two of the trenches, while the remaining three all had examples lying flat inside the stone bank, which may have been due to them falling or being pushed over. The two trenches on the termini of the stone bank showed that this kerb also faced the rounded termini but did not continue on the external face of the wall. No cut features were found, suggesting that if the kerb stones were originally upright that they would have been freestanding.

8.2.5 No internal features were located within the central trench, although this did only cover a very small area of the monument. Similarly, no cut features were found within the areas excavated close to the bank termini at the entrance. It should be noted that the lidar does not confirm whether a second entrance might be present within the ring of the bank, nor is it definite that the bank is continuous outside of the excavated trenches, which were deliberately placed at points where the bank was best defined on the surface. Further excavation would be required to answer these questions.

8.2.6 No artefacts were recovered from the trenches within Site 2. None of the environmental samples taken contained material suitable for radiocarbon dating, although they do contain some potential for the preservation of waterlogged environmental material.

8.2.7 The excavations demonstrated that the Lidar imagery was correct in identifying archaeological potential at each site. The purposes, dating and site typology for each monument is still unclear, particularly given the lack of *in situ* dating evidence for either. Parallels of a sort for the stone bank/internal kerb feature at Site 2 can be found at the site of a kerb circle at Blawearie, near Wooler further north-east in Northumberland, where a circle of kerb stones was excavated during the 1990s (Hewitt & Beckensall 1996). This feature, reused as a cist cemetery during the Early Bronze Age, was demonstrated to have a potentially ritual function earlier in prehistory, and while its size is less than half that of the circle at Site 2, it does offer an interesting parallel in form.

8.2.8 Further excavation is certainly recommended for both sites; in particular to ascertain whether a central feature, possible a burial, is present within Site 1; and to further investigate the potential for internal features and a south-eastern entrance in Site 2. The search for *in situ* dating evidence at both locations will be of vital importance, none having been recovered during these excavations. The excavations in 2020 were small scale, and restricted in many ways due to the implementation of health & safety measures to protect staff and volunteers from Covid-19. It is hoped that future excavations can be more extensive in order to discover more about these newly found monuments.

9 ARCHIVE STORAGE AND CURATION

9.1 Museum

9.1.1 The archive resulting from the evaluation is currently held at the offices of Wessex Archaeology in Edinburgh. The Great North Museum has agreed in principle to accept the archive on completion of the project, under a museum-specific accession code. Deposition of any finds with the museum will only be carried out with the full written agreement of the landowner to transfer title of all finds to the museum.

9.2 Preparation of the archive

9.2.1 The archive, which includes paper records, graphics, artefacts, ecofacts and digital data, will be prepared following the standard conditions for the acceptance of excavated

archaeological material by the Great North Museum, and in general following nationally recommended guidelines (SMA 1995; CIfA 2014c; Brown 2011; ADS 2013).

9.2.2 All archive elements will be marked with the **site/accession code**, and a full index will be prepared. The physical archive currently comprises the following:

- 1 cardboard box of artefacts
- 1 file of paper records and A3/A4 graphics;

Digital archive

9.2.3 The digital archive generated by the project, which comprises born-digital data (eg site records, survey data, databases and spreadsheets, photographs and reports), will be deposited with a Trusted Digital Repository, in this instance the Archaeology Data Service (ADS), to ensure its long-term curation. Digital data will be prepared following ADS guidelines (ADS 2013 and online guidance) and accompanied by full metadata.

9.3 Selection policy

9.3.1 It is widely accepted that not all the records and materials (artefacts and ecofacts) collected or created during the course of an archaeological project require preservation in perpetuity. These records and materials will be subject to selection in order to establish what will be retained for long-term curation, with the aim of ensuring that all elements selected to be retained are appropriate to establish the significance of the project and support future research, outreach, engagement, display and learning activities, ie the retained archive should fulfil the requirements of both future researchers and the receiving Museum.

9.3.2 The selection strategy, which details the project-specific selection process, is underpinned by national guidelines on selection and retention (Brown 2011, section 4) and generic selection policies (SMA 1993; WA's internal selection policy) and follows CIfA's 'Toolkit for Selecting Archaeological Archives'. It should be agreed by all stakeholders (Wessex Archaeology's internal specialists, external specialists, local authority, museum) and fully documented in the project archive.

9.3.3 In this instance, given the relatively low level of finds recovery, the selection process has been deferred until after the fieldwork stage was completed. Project-specific proposals for selection are presented below. These proposals are based on recommendations by Wessex Archaeology's internal specialists and will be updated in line with any further comment by other stakeholders (museum, local authority). The selection strategy will be fully documented in the project archive.

9.3.4 Any material not selected for retention may be used for teaching or reference collections by Wessex Archaeology.

Finds

9.3.5 The brass cartridges recovered are of no archaeological significance and will be discarded. The worked flint, even though unstratified or poorly stratified, should be retained as of some archaeological significance, and adding to the background of Neolithic finds in the area.

Palaeoenvironmental material

9.3.6 Unprocessed samples are recommended for discard, unsorted flot and residue subsamples may be discarded after any recommended analysis has been completed but sorted fractions should be retained for further reference.

Documentary records

9.3.7 Paper records comprise site registers (other pro-forma site records are digital), drawings and reports (Written Scheme of Investigation, client report). All will be retained and deposited with the project archive, along with any printouts of digital data required by the Museum.

Digital data

9.3.8 Given the very limited results of the fieldwork, it is recommended that only selected digital data are deposited with ADS, an approach commensurate with the scale and significance of the project. Deposition will involve the uploading of the site report (which will contain all details of site location, contexts and finds, and selected photographs) via OASIS only.

9.4 Security copy

9.4.1 In line with current best practice (eg, Brown 2011), on completion of the project a security copy of the written records will be prepared, in the form of a digital PDF/A file. PDF/A is an ISO-standardised version of the Portable Document Format (PDF) designed for the digital preservation of electronic documents through omission of features ill-suited to long-term archiving.

9.5 OASIS

9.5.1 An OASIS (online access to the index of archaeological investigations) record (http://oasis.ac.uk/pages/wiki/Main) has been initiated, with key fields completed (Appendix 3). A .pdf version of the final report will be submitted following approval by the NNPA Archaeologist on behalf of the LPA. Subject to any contractual requirements on confidentiality, copies of the OASIS record will be integrated into the relevant local and national records and published through the Archaeology Data Service (ADS) ArchSearch catalogue.

10 COPYRIGHT

10.1 Archive and report copyright

10.1.1 The full copyright of the written/illustrative/digital archive relating to the project will be retained by Wessex Archaeology under the *Copyright, Designs and Patents Act 1988* with all rights reserved. The client will be licenced to use each report for the purposes that it was produced in relation to the project as described in the specification. The museum, however, will be granted an exclusive licence for the use of the archive for educational purposes, including academic research, providing that such use conforms to the *Copyright and Related Rights Regulations 2003*. In some instances, certain regional museums may require absolute transfer of copyright, rather than a licence; this should be dealt with on a case-by-case basis.

10.1.2 Information relating to the project will be deposited with the Historic Environment Record (HER) where it can be freely copied without reference to Wessex Archaeology for the purposes of archaeological research or development control within the planning process.

10.2 Third party data copyright

10.2.1 This document and the project archive may contain material that is non-Wessex Archaeology copyright (eg, Ordnance Survey, British Geological Survey, Crown Copyright), or the intellectual property of third parties, which Wessex Archaeology are able to provide for limited reproduction under the terms of our own copyright licences, but for which copyright itself is non-transferable by Wessex Archaeology. Users remain bound by the

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APPENDICES

Appendix 1 Trench summaries

NGR coordinates and OD heights taken at centre of each trench; depth bgl = below ground level

Trench No 1	Length 3.70 m	Width 1.60 m	Depth 0.30 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
101		Topsoil and turf	Dark blackish brown silty sand with rooting and small sub-angular rocks inclusions	0.0
102		Subsoil	Mid pinkish brown clayish sand with occasional sub-angular and sub rounded rocks inclusions	0.15
103		Old land surface and natural	Mottled orange, yellow and brown sandy clay with organic material within upper part- probable old land surface inclusions	0.3
104	105	Stakehole	Circular stakehole with steep, straight sides and a v-shaped base. Length: 0.10 m. Width: 0.10 m. Depth: 0.15 m.	0.4
105	104	Fill	Dark blackish brown sandy silt	0.3
106	107	Stakehole	Circular stakehole with steep, straight sides and a v-shaped base. Length: 0.07 m. Width: 0.07 m. Depth: 0.05 m.	0.4
107	106	Fill	Dark blackish brown sandy silt	0.3

Trench No 2	Length 5.20 m	Width 1.30 m	Depth 0.70 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
201		Topsoil and turf	Dark blackish brown sandy silt with rooting and turf.	0.0
202		Subsoil	Mid pinkish brown sandy clay with occasional sub-angular rocks	0.15
203		Bank material	Mid pinkish brown clayish sand with large sub-angular and sub rounded stones. unworked inclusions	0.15
204		Old land surface	Mottled orange, yellow and brown sandy clay with organic material within upper part- probable old land surface inclusions	0.7
205		Bank	Pale to mid pinkish yellow with brown patches clayish sand with silt patches with large sub-angular and sub rounded stones. unworked inclusions	0.4

Trench No 3	Length 5 m	Width 1.10 m	Depth 0.60 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
301		Topsoil and turf	Dark blackish brown sandy silt with rooting and turf.	0.0
302		Subsoil	Mid pinkish brown sandy clay with occasional sub-angular rocks	0.2
303		Bank material	Mid pinkish brown clayish sand with frequent sub-angular and sub rounded stones inclusions	0.2
304		Uneroded bank	Pale to mid pinkish yellow with brown patches clayish sand with silt patches with large sub-angular and sub rounded stones. unworked inclusions	0.35

Trench No 4	Length 3.80 m	Width 1 m	Depth 0.30 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
401		Topsoil and turf	Dark blackish brown sandy silt with rooting and turf.	0.0
402		Subsoil	Mid pinkish brown sandy clay with occasional sub-angular rocks	0.2
403		Bank material	Pale to mid yellowish brown sandy clay with small number of sub-angular and sub-rounded stones inclusions	0.2
404		Old land surface	Mottled orange, yellow and brown sandy clay with organic material within upper part- probable old land surface inclusions	0.3

Trench No 5	Length 4.20 m	Width 1 m	Depth 0.30 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
501		Topsoil and turf	Dark blackish brown sandy silt with rooting and turf.	0.0
502		Subsoil	Mid pinkish brown sandy clay with occasional sub-angular rocks	0.2
503		Bank	Pale to mid yellowish brown sandy clay with small number of sub-angular stones inclusions	0.2
504		Old land surface	Mottled orange, yellow and brown sandy clay with organic material within upper part- probable old land surface inclusions	0.3

Trench No 6	Length 4.60 m	Width 1 m	Depth 0.30 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
601		Topsoil and turf	Dark blackish brown sandy silt with rooting and turf.	0.0
602		Subsoil	Mid pinkish brown sandy clay with occasional sub-angular rocks	0.2
603		Bank material	Pale to mid yellowish brown sandy clay	0.2
604		Old land surface	Mottled orange, yellow and brown sandy clay with organic material within upper part- probable old land surface inclusions	0.3

Trench No 7	Length 4.50 m	Width 1.10 m	Depth 0.30 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
701		Topsoil and turf	Dark blackish brown sandy silt with rooting and turf.	0.0
702		Subsoil	Mid pinkish brown sandy clay with occasional sub-angular rocks	0.2
703		Bank material	Pale to mid yellowish brown sandy clay	0.3
704		Old land surface	Mottled orange, yellow and brown sandy clay with organic material within upper part- probable old land surface inclusions	0.2

Trench No 8	Length 5.30 m	Width 1.80 m	Depth 0.20 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
801		Topsoil and turf	Dark blackish brown sandy silt with rooting and turf.	0.0
802		Subsoil	Mid pinkish brown sandy clay with occasional sub-angular rocks	0.2
803		Natural	Mid yellowish grey sandy clay	0.4
804		Old land surface	Mottled orange, yellow and brown sandy clay with organic material within upper part- probable old land surface inclusions	0.2

Trench No 9	Length 5 m	Width 4 m	Depth 0.30 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
901		Topsoil and turf	Dark blackish brown sandy silt with rooting and turf.	0.0
902		Subsoil	Mid pinkish brown sandy clay with occasional sub-angular rocks	0.15

Trench No 9	Length 5 m	Width 4 m	Depth 0.30 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
903		Redeposited natural	Mid pinkish brown sandy clay with sub-angular rocks inclusions	0.15
904		Shallow cut	Irregular shallow cut with shallow, concave sides and a flat base. Length: 3.00 m. Width: 2.00 m. Depth: 0.10 m.	0.3
905		Accumulation fill	Dark blackish brown silty sand with rooting inclusions	0.15
906		Old land surface	Mottled orange, yellow and brown sandy clay with organic material within upper part- probable old land surface inclusions	0.3
907		Kerb wall of cairn	unworked stones	0.2
908		Rubble cairn	Pale cream / yellow clayish sand with 50-70% angular stone rubble inclusions	0.15
909		Old land surface	Inside of kerb 907	0.3

Trench No 10	Length 3 m	Width 4 m	Depth 0.30 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
1001		Topsoil and turf	Dark blackish brown sandy silt with rooting and occasional sub rounded stones inclusions	0.0
1002		Subsoil	Mid pinkish brown clayish sand with occasional sub-angular rocks inclusions	0.2
1003		Drystone bank	Grey and brown sub-angular and sub rounded stones	0.2
1004		Internal kerb	Grey and brown stones	0.2
1005		Old land surface	Mottled orange, yellow and brown sandy clay with organic material within upper part- probable old land surface inclusions	0.3

Trench No 11	Length 3.60 m	Width 1 m	Depth 0.30 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
1101		Topsoil and turf	Dark blackish brown sandy silt with rooting and turf.	0.0
1102		Subsoil	Mid pinkish brown sandy clay with occasional sub-angular rocks	0.2
1103		Drystone bank	Grey and brown sub-angular and sub rounded stones	0.2
1104		Internal kerb	Grey stone	0.2

Trench No 11	Length 3.60 m	Width 1 m	Depth 0.30 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
1105		Old land surface	Mottled orange, yellow and brown sandy clay with organic material within upper part- probable old land surface inclusions	0.3

Trench No 12	Length 3 m	Width 1 m	Depth 0.40 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
1201		Topsoil and turf	Dark blackish brown sandy silt with rooting and turf.	0.0
1202		Subsoil	Mid pinkish brown sandy clay with occasional sub-angular rocks	0.2
1203		Drystone Bank	Grey and brown sub-angular and sub rounded stones	0.2
1204		Old land surface	Mottled orange, yellow and brown sandy clay with organic material within upper part- probable old land surface inclusions	0.4

Trench No 13	Length 3 m	Width 1 m	Depth 0.30 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
1301		Topsoil and turf	Dark blackish brown sandy silt with rooting and turf.	0.0
1302		Subsoil	Mid pinkish brown sandy clay with occasional sub-angular rocks	0.2
1303		Drystone bank	Grey and brown sub-angular and sub rounded stones	0.2
1304		Internal kerb	Grey stone	0.1
1305		Old ground surface	Mottled orange, yellow and brown sandy clay with organic material within upper part- probable old land surface inclusions	0.3

Trench No 14	Length 3.50 m	Width 2.50 m	Depth 0.30 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
1401		Topsoil and turf	Dark blackish brown sandy silt with rooting and turf.	0.0
1402		Subsoil	Mid pinkish brown sandy clay with occasional sub-angular rocks	0.2
1403		Drystone bank	Grey and brown sub-angular and sub rounded stones	0.2

Trench No 14	Length 3.50 m	Width 2.50 m	Depth 0.30 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
1404		Old land surface	Mottled orange, yellow and brown sandy clay with organic material within upper part- probable old land surface inclusions	0.3

Trench No 15	Length 3 m	Width 2 m	Depth 0.30 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
1501		Topsoil and turf	Dark blackish brown sandy silt with rooting and turf.	0.0
1502		Subsoil	Mid pinkish brown sandy clay with occasional sub-angular rocks	0.2
1503		Old land surface	Mottled orange, yellow and brown sandy clay with organic material within upper part- probable old land surface inclusions	0.3

Appendix 2 Environmental data

Table 2: Assessment of the environmental evidence

Context	Sample	Vol (l)	Flot (ml)		Sub-sample	Roots	Charred plant remains	Charcoal > 2mm (ml)	Charcoal	Other (type and abundance)	Vegetative parts (excluding roots)	Uncharred Other	Invertebrates
804	101	10	500 - 25% assessed		0.25 <4mm residue	20%	-	2	Mature, some mineral coating	-	A***	B- *Juncus* sp., Poaceae	Indet insect parts (C)
1404	102	10	500 - 25% assessed		0.25 <4mm residue	30%	-		-	-	A***	C - Poaceae	Indet insect parts (C)
1404	103	10	500 - 25% assessed		0.25 <4mm residue	20%	-	-	-	-	A***	-	Indet insect parts (C)
404	104	10	500 - 25% assessed		0.25 <4mm residue	30%	-	-	-	-	A***	-	Earthworm eggs
504	105	10	500 - 25% assessed		0.25 <4mm residue	30%	-	-	-	-	A***	C - *Juncus* sp., Poaceae	Indet insect parts (C), Earthworm eggs
906	106	10	500 - 25% assessed		0.25 <4mm residue	25%	-	-	-	-	A***	-	Earthworm eggs
1503	107	10	250 - 50% assessed		0.25 <4mm residue	35%	-	2.5	Mature	-	A***	-	-
1105	108	10	250 - 50% assessed		0.25 <4mm residue	15%	-	-	-	-	A***	-	Indet insect parts (C)
909	109	8	500 - 25% assessed		0.25 <4mm residue	35%	-	-	-	-	A***	-	
303	110	0.8		25	1 <4mm residue	20%, E	-	2	Mature	-	A***	A - *Juncus* sp.	Indet insect parts (C), earthworm eggs

Key: Scale of abundance: A*** = exceptional, A** = 100+, A* = 30-99, A = 30-10, B = 9-5, C = <5.

Appendix 3 OASIS record

OASIS ID: wessexar1-398394

Project details

Project name	Exercise Lidar Truth, Otterburn
Short description of the project	Archaeological evaluation of features identified on LiDAR near Todlaw Pike on the Otterburn Training Area.
Project dates	Start: 07-09-2020 End: 31-12-2020
Previous/future work	Yes / Yes
Any associated project reference codes	221931 - Contracting Unit No.
Type of project	Field evaluation
Site status	National Park
Current Land use	Grassland Heathland 1 - Heathland
Monument type	RING CAIRN Late Prehistoric
Monument type	CURB CIRCLE Late Prehistoric
Significant Finds	FLINT Early Neolithic
Methods & techniques	"Geophysical Survey","Measured Survey","Sample Trenches","Targeted Trenches"
Development type	Not recorded
Prompt	Research
Position in the planning process	Not known / Not recorded
Solid geology	TOURNAISIAN AND VISEAN (
Drift geology	BOULDER CLAY AND MORAINIC DRIFT
Techniques	Magnetometry

Project location

Country	England
Site location	NORTHUMBERLAND TYNEDALE OTTERBURN Exercise Lidar Truth, Otterburn
Study area	3 Hectares
Site coordinates	381965 600546 381965 00 00 N 600546 00 00 E Point
Height OD / Depth	Min: 140m Max: 160m

Project creators

Name of Organisation	Wessex Archaeology
Project brief originator	Defence Infrastructure Organisation
Project design originator	Wessex Archaeology
Project director/manager	Chris Swales

Project supervisor	Ben Saunders
Type of sponsor/funding body	Defence Infrastructure Organisation
Name of sponsor/funding body	Defence Infrastructure Organisation

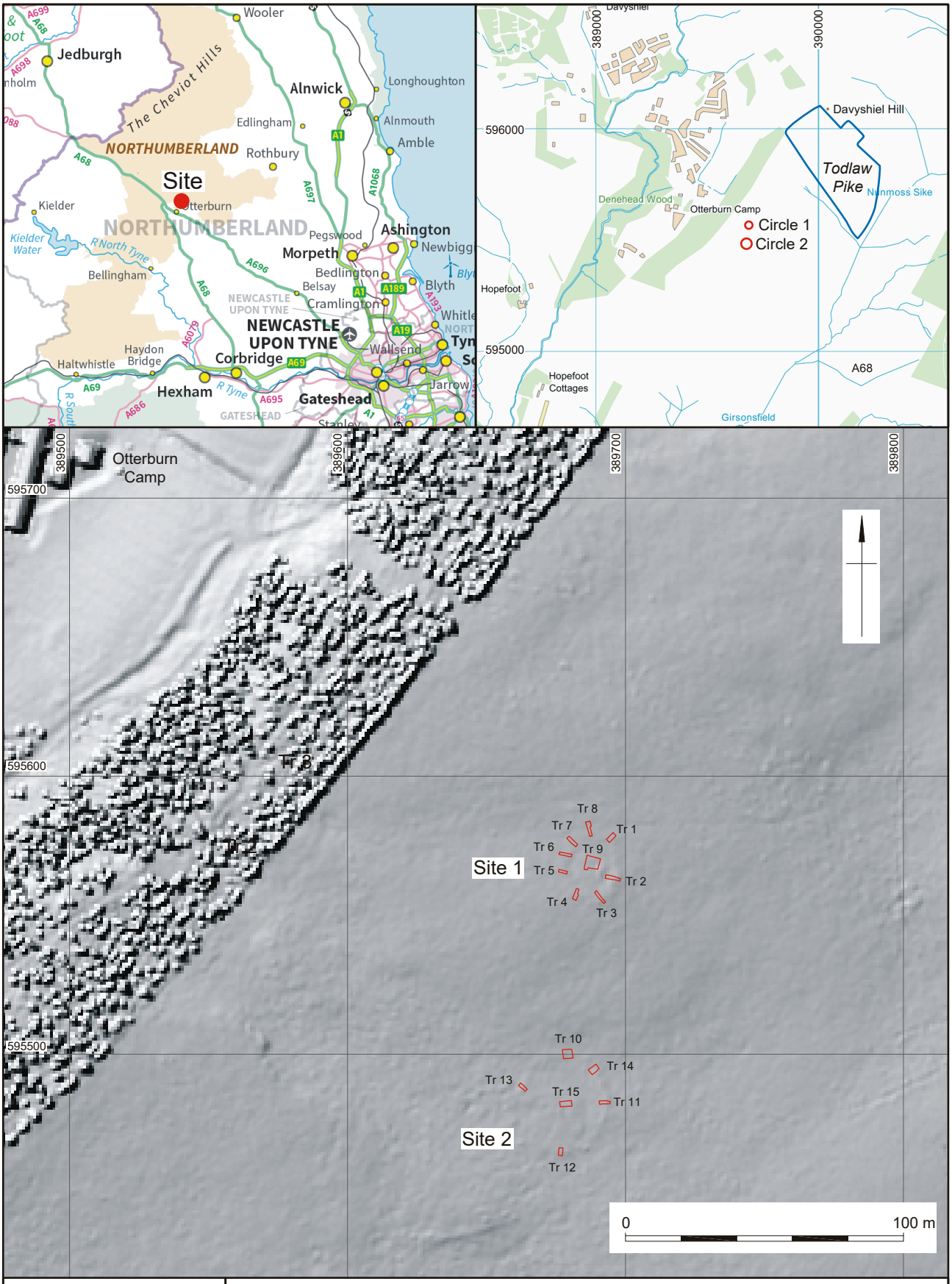
Project archives

Physical Archive recipient	Great North Museum, Newcastle upon
Physical Contents	"Worked stone/lithics"
Digital Archive recipient	ADS
Digital Archive ID	WA_221931
Digital Contents	"Stratigraphic","Survey"
Digital Media available	"Database","GIS","Geophysics","Images raster / digital photography","Spreadsheets","Survey","Text"
Paper Archive recipient	Great North Museum, Newcastle upon Tyne
Paper Contents	"Stratigraphic","Survey"
Paper Media available	"Diary","Unspecified Archive"

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	Exercise Lidar Truth, Otterburn, Northumberland Archaeological Evaluation
Author(s)/Editor(s)	Saunders, B
Other bibliographic details	221931.03
Date	2020
Issuer or publisher	Wessex Archaeology
Place of issue or publication	Edinburgh
Description	Digital report

Entered by	Ben Saunders (b.saunders@wessexarch.co.uk)
Entered on	28 October 2020



Scheduled Monument

Evaluation trench

Coordinate system: OSGB36 (OSTN15/OSGM15)

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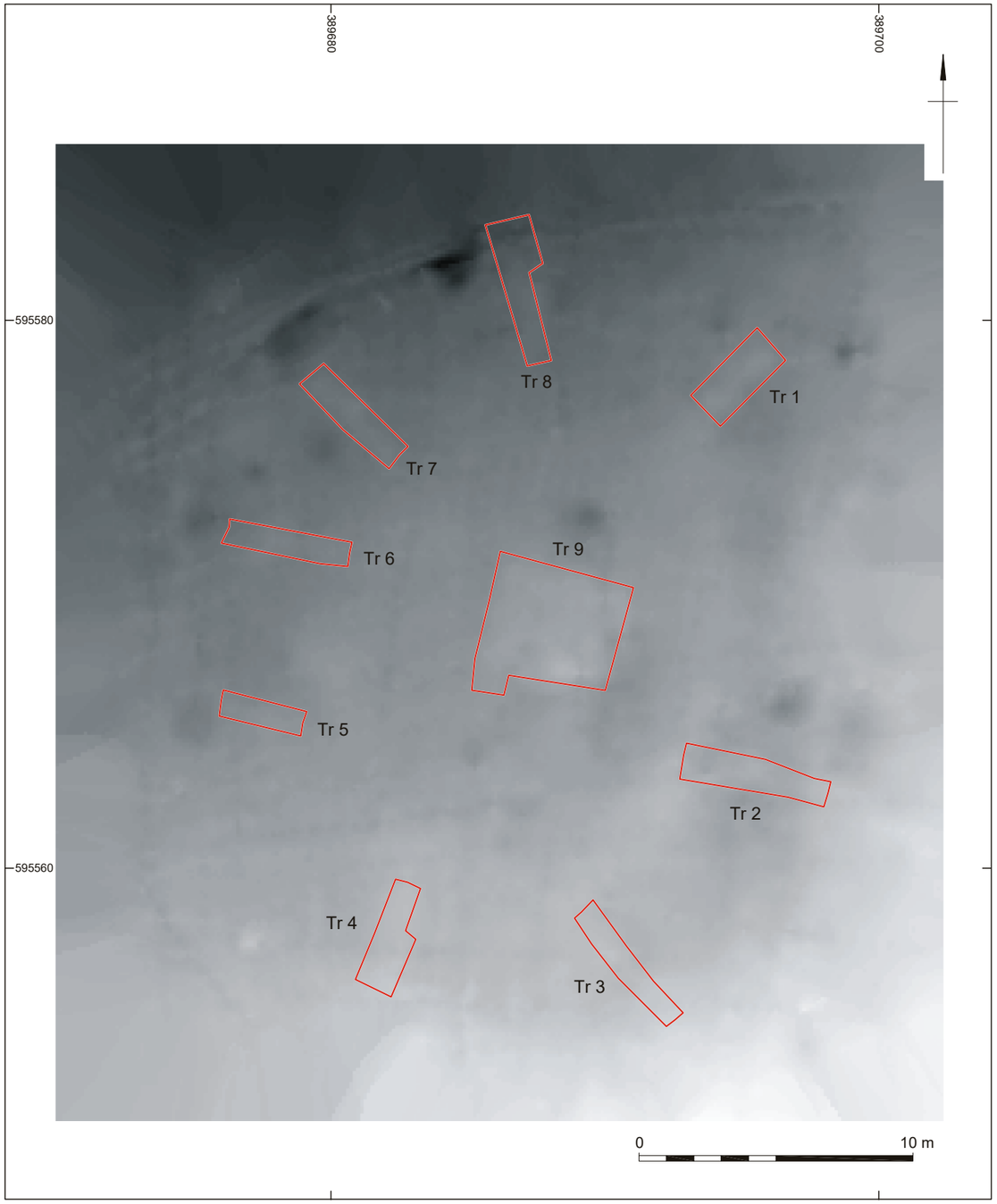
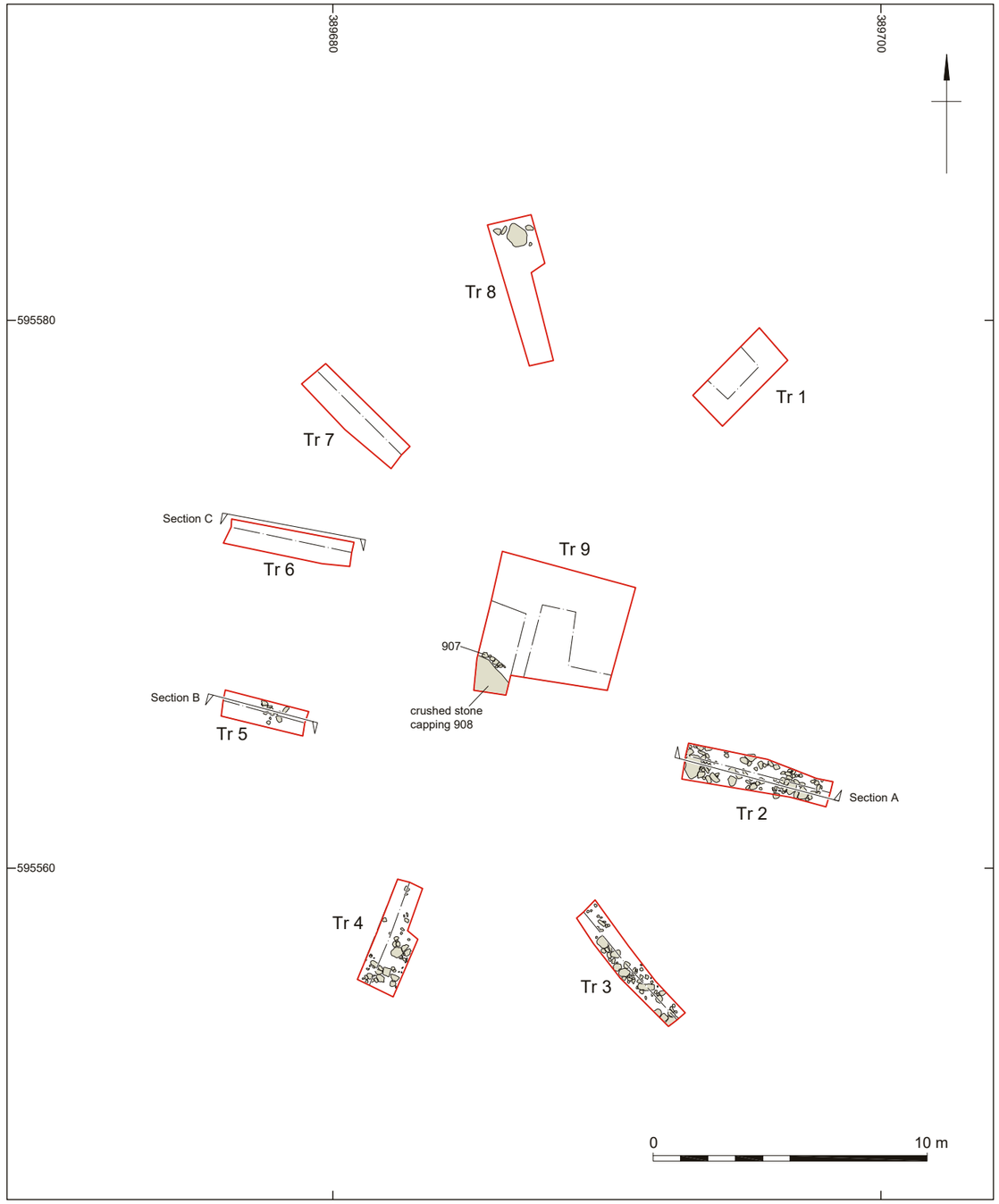
Site location and trench layout

Figure 1



A: Site 1 LiDAR



B: Site 1 trench plan

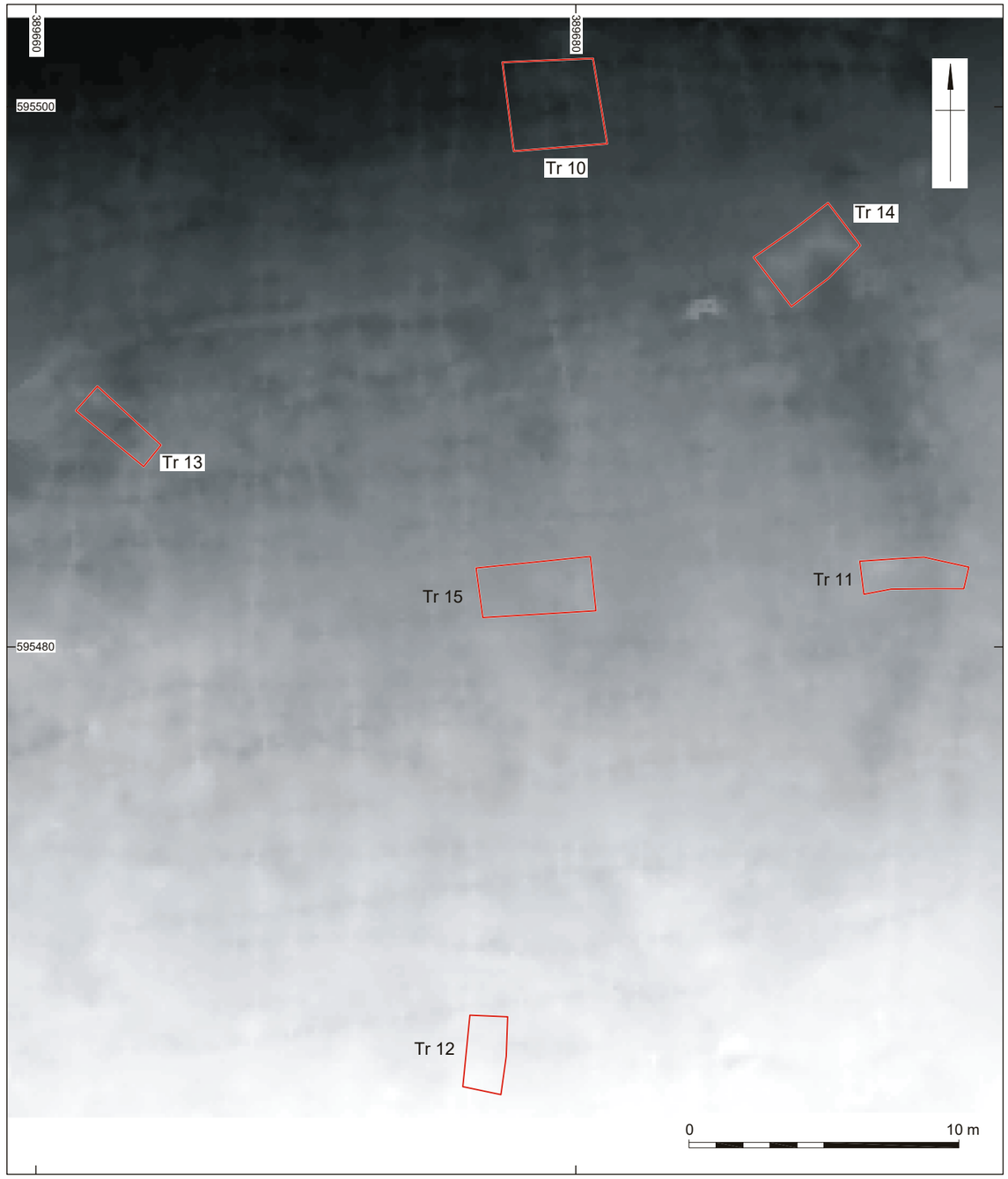
Coordinate system: OSGB36 (OSTN15/OSGM15)

Evaluation trench
Slot
Stone

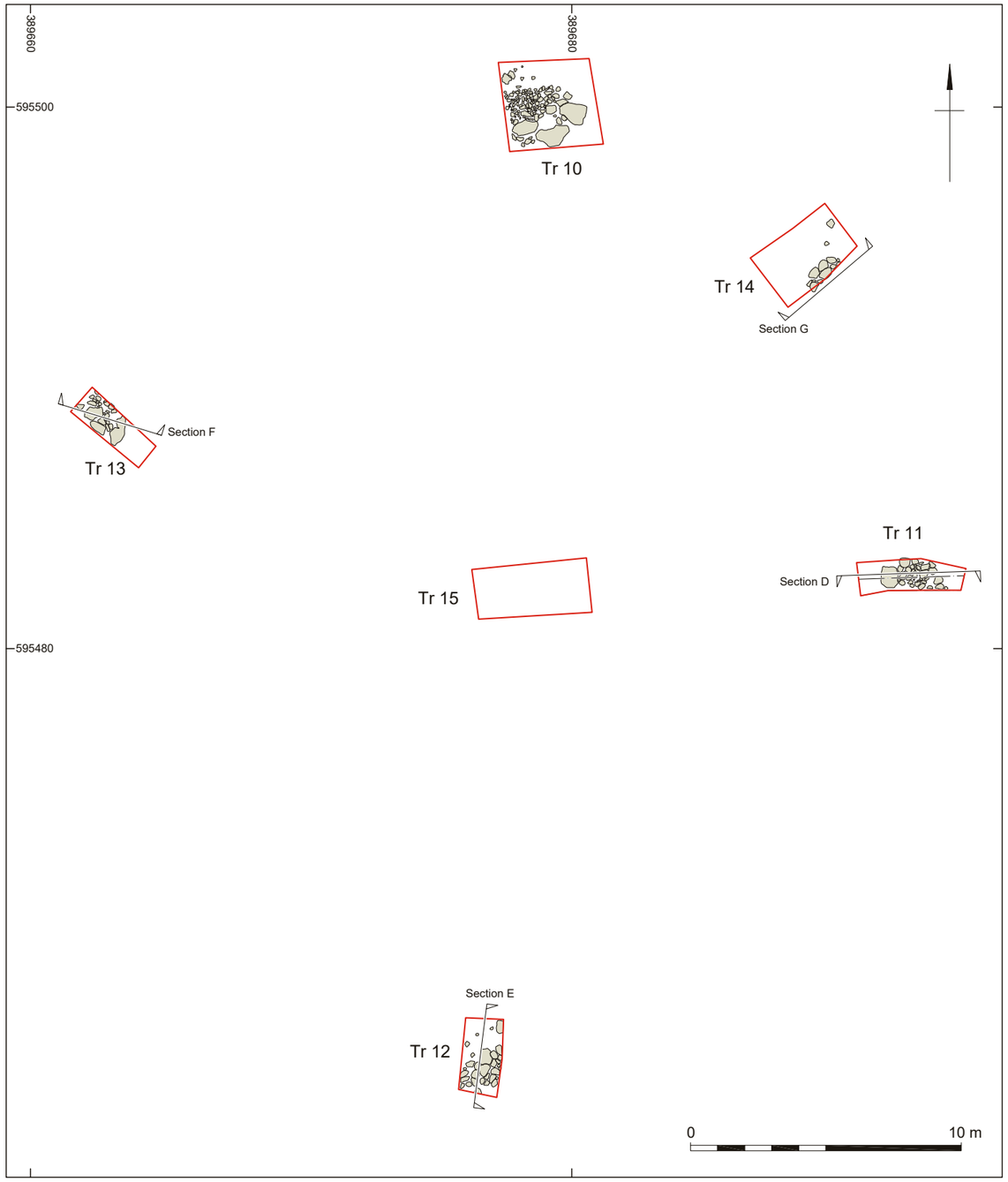
Date:	15/10/2020	Revision Number:	0
Scale:	1:200 at A3	Illustrator:	KL
Path:	Y:\PROJECTS_Edinburgh\221931\Graphics_Office\Rep figs\eval\2020_10_15\		

Trenches 1–9 on site 1

Figure 2



A: Site 2 LiDAR



B: Site 2 trench plan

Coordinate system: OSGB36 (OSTN15/OSGM15)

Evaluation trench
Slot
Stone

Date:	15/10/2020	Revision Number:	0
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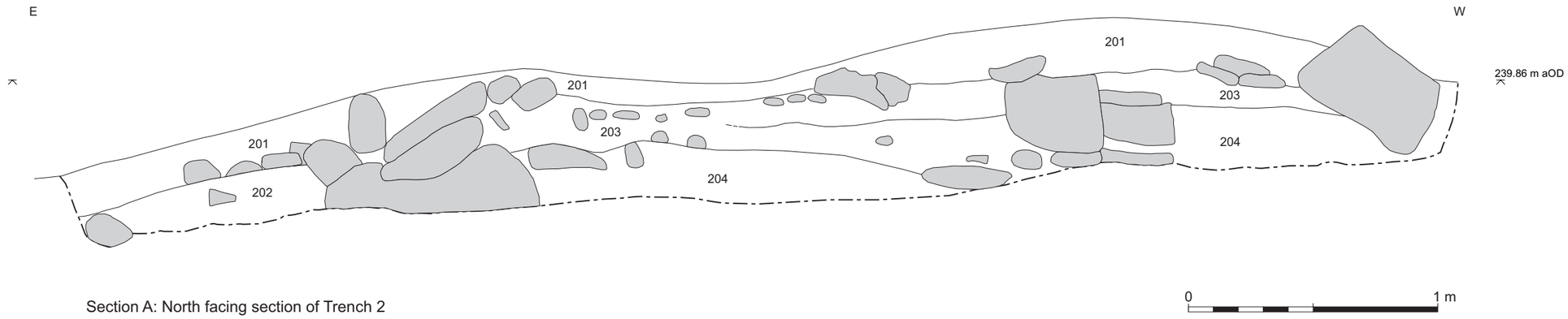
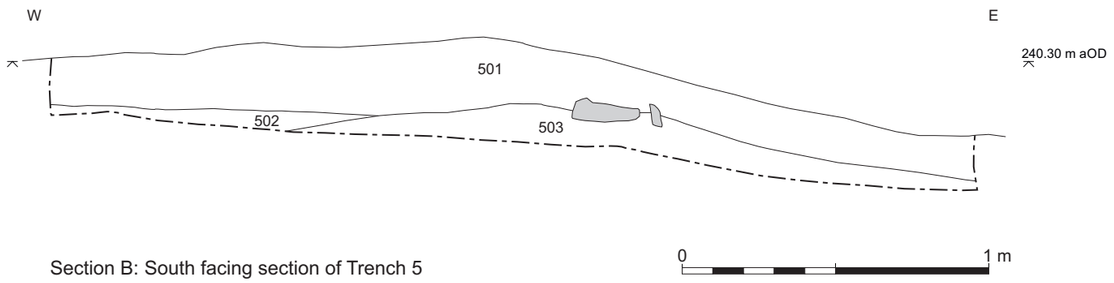
Trenches 10–15 on site 2

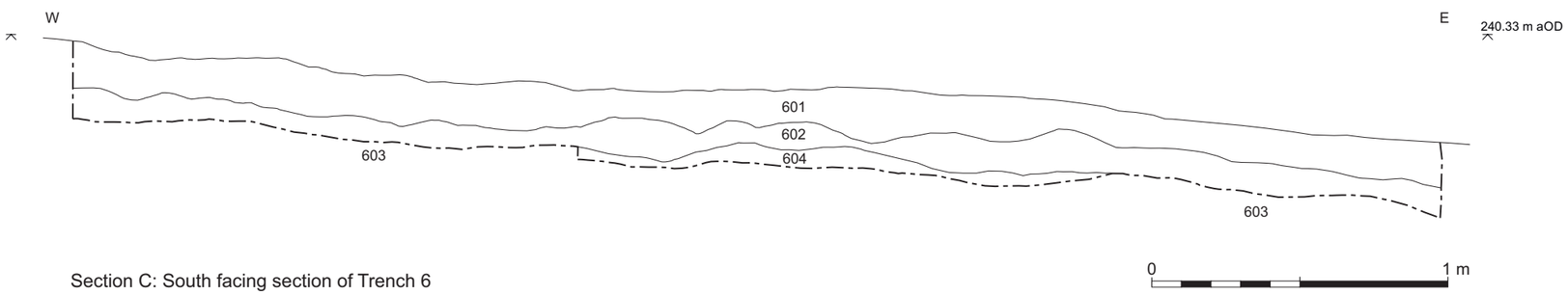
Figure 3



Section A: North facing section of Trench 2



Section B: South facing section of Trench 5



Section C: South facing section of Trench 6

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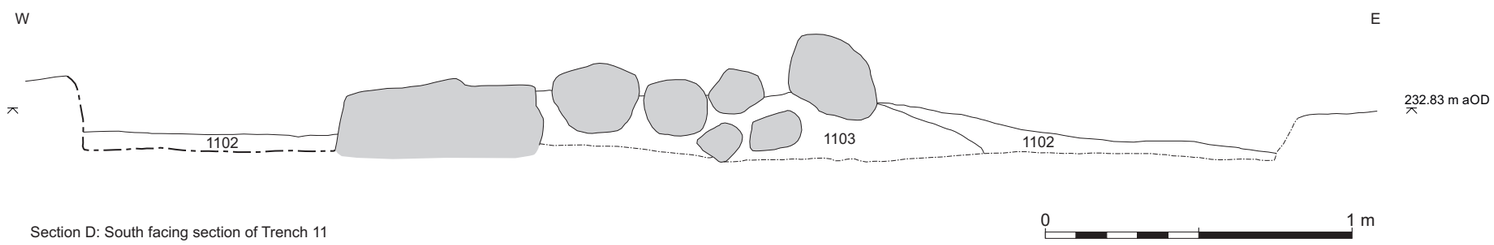
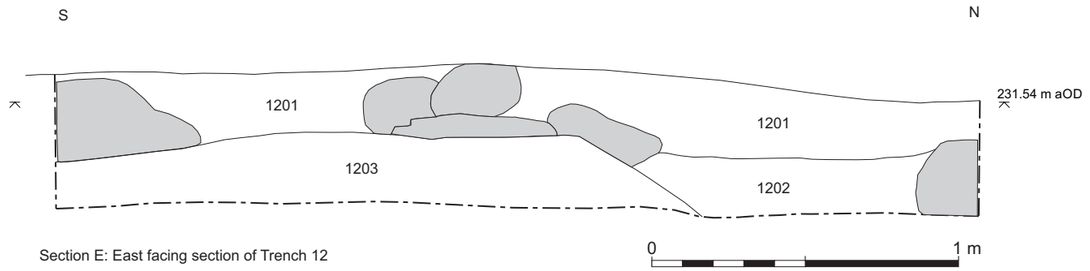
Sections on site 1

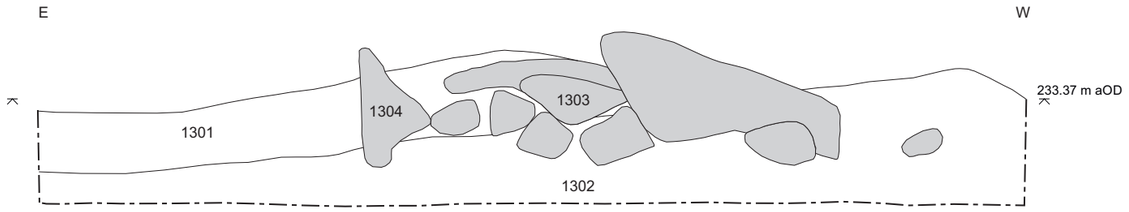
Figure 4



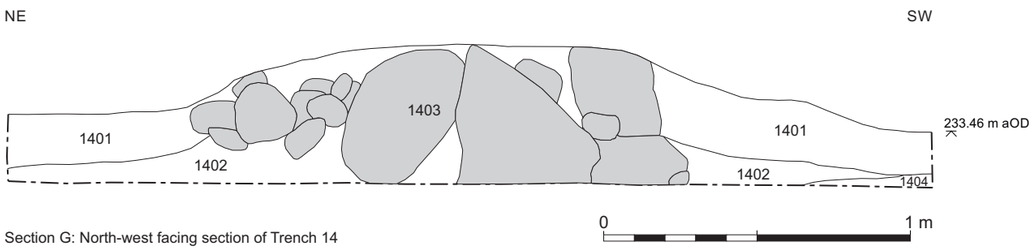
Section D: South facing section of Trench 11



Section E: East facing section of Trench 12



Section F: North facing section of Trench 13



Section G: North-west facing section of Trench 14

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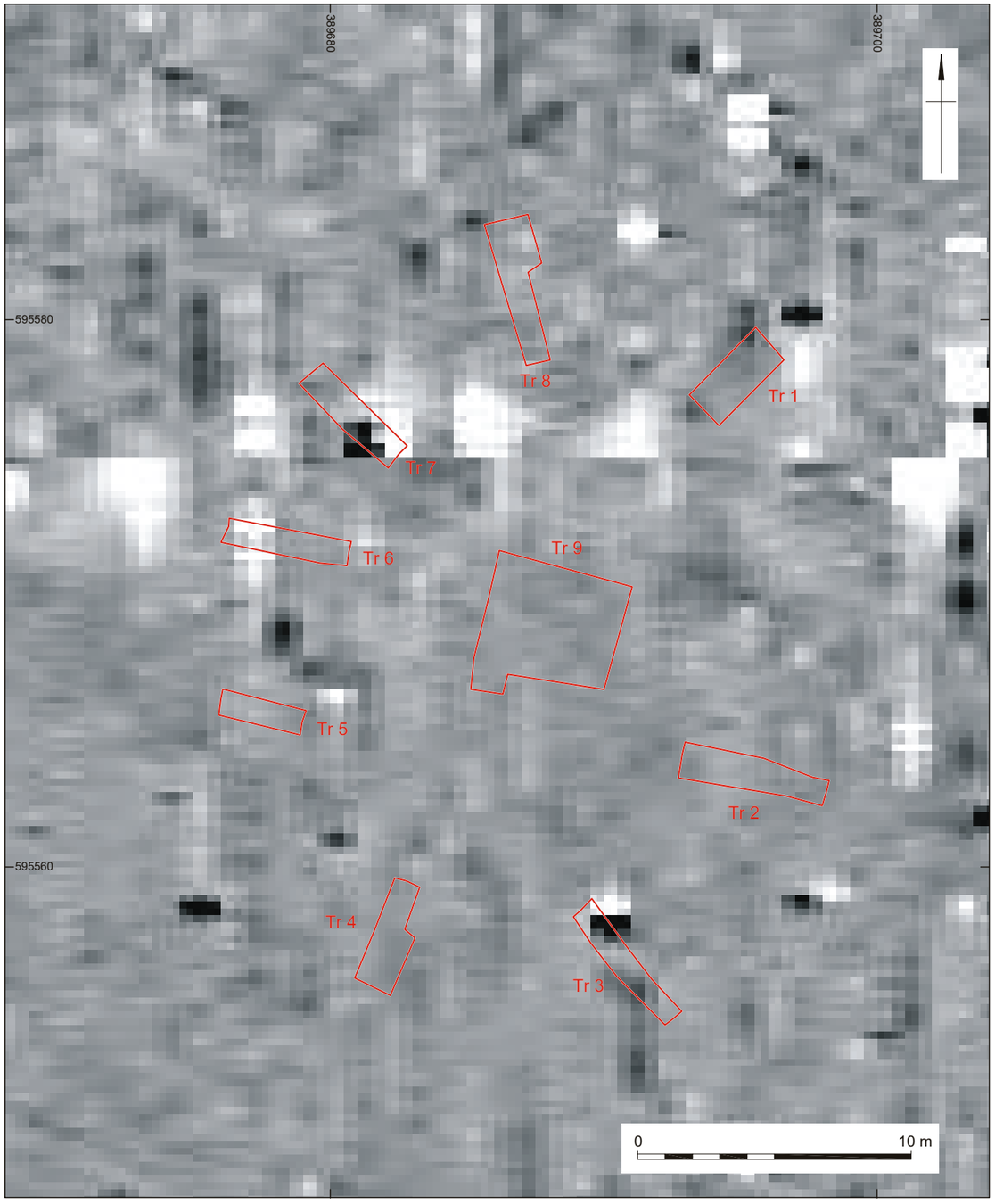
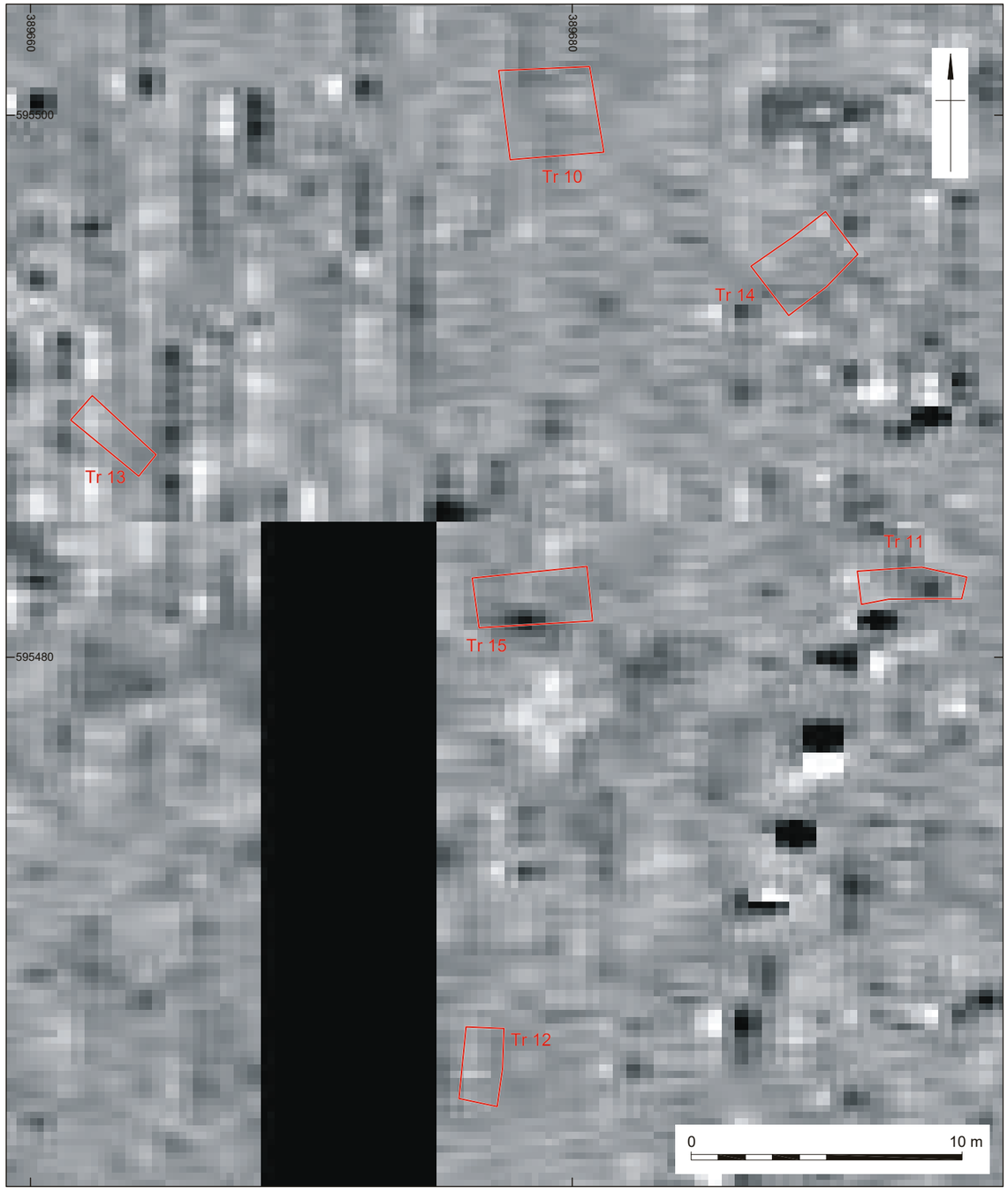
Sections on site 2

Figure 5



A: Trenches 1–9 on site 1



B: Trenches 10–15 on site 2

Coordinate system: OSGB36 (OSTN15/OSGM15)

Evaluation trench

+3

-2

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Path:	Y:\PROJECTS_Edinburgh\221931\Graphics_Office\Rep figs\eval\2020_10_15\		

Plate 1: Trench 1 full ex from the south-west

Plate 2: Trench 2 after removal of 201 showing bank material 203 from the east

Date:	20/10/2020	Revision number:	0
Scale:	n/a	Layout:	KL
Path:	Y:\PROJECTS_Edinburgh\221931\Graphics_Office\Rep figs\eval\2020_10_15		

Plate 3: Trench 2 half section through bank material 203 from the west

Plate 4: Trench 3 half section through bank material 303 from the north-west

Date:	20/10/2020	Revision number:	0
Scale:	n/a	Layout:	KL
Path:	Y:\PROJECTS_Edinburgh\221931\Graphics_Office\Rep figs\eval\2020_10_15		

Plate 5: Trench 4 after removal of 401 showing bank material 403 from the south

Plate 6: Trench 4 half section through bank material 403 from the west

Date:	20/10/2020	Revision number:	0
Scale:	n/a	Layout:	KL
Path:	Y:\PROJECTS_Edinburgh\221931\Graphics_Office\Rep figs\eval\2020_10_15		

Plate 7: Trench 5 half section through bank material 503 from the south

Plate 8: Trench 6 after removal of 601 showing possible bank material 603 from the west

Date:	20/10/2020	Revision number:	0
Scale:	n/a	Layout:	KL
Path:	Y:\PROJECTS_Edinburgh\221931\Graphics_Office\Rep figs\eval\2020_10_15		

Plate 9: Trench 6 half section through bank material 603 from the east

Plate 10: Trench 7 half section through think subsoil 702 from the south-east

Date:	20/10/2020	Revision number:	0
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Plate 11: Trench 8 after removal of 801 from the east

Plate 12: Trench 9 slot through redeposited natural 903

Date:	20/10/2020	Revision number:	0
Scale:	n/a	Layout:	KL
Path:	Y:\PROJECTS_Edinburgh\221931\Graphics_Office\Rep figs\eval\2020_10_15		

Plate 13: Trench 9 kerb wall 908 and rubble deposit 907 within centre of circular monument from the east

Plate 14: Trench 9 kerb wall 908 after removal of rubble deposit 907 from the north

Date:	20/10/2020	Revision number:	0
Scale:	n/a	Layout:	KL
Path:	Y:\PROJECTS_Edinburgh\221931\Graphics_Office\Rep figs\eval\2020_10_15		

Plate 15: Trench 10 with extension after full removal of 1001 showing stone bank 1003 and large kerbstones 1004 from the east

Plate 16: Trench 10 after removal of 1002 showing stone bank 1003 on natural 1005 from the north

Date:	20/10/2020	Revision number:	0
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Path:	Y:\PROJECTS_Edinburgh\221931\Graphics_Office\Rep figs\eval\2020_10_15		

Plate 17: Trench 11 after removal of 1101 showing stone bank 1103 and kerbstones 1104 from the west

Plate 18: Trench 11 after removal of 1101 showing stone bank 1103 and kerbstones 1104 from the south

Date:	20/10/2020	Revision number:	0
Scale:	n/a	Layout:	KL
Path:	Y:\PROJECTS_Edinburgh\221931\Graphics_Office\Rep figs\eval\2020_10_15		

Plate 19: Trench 11 half section through stone bank 1103 from the south-east

Plate 20: Trench 12 after removal of 1201 showing stone bank material 1203 from the west

Date:	20/10/2020	Revision number:	0
Scale:	n/a	Layout:	KL
Path:	Y:\PROJECTS_Edinburgh\221931\Graphics_Office\Rep figs\eval\2020_10_15		

Plate 21: Trench 12 half section through stone bank material 1203 from the west

Plate 22: Trench 13 after removal of 1301 showing stone bank material 1303 and large kerbstone 1304 from the north-east

Date:	20/10/2020	Revision number:	0
Scale:	n/a	Layout:	KL
Path:	Y:\PROJECTS_Edinburgh\221931\Graphics_Office\Rep figs\eval\2020_10_15		

Plate 23: Trench 13 after removal of 1301 showing stone bank material 1303 and large kerbstone 1304 from the south-east

Plate 24: Trench 14 after removal of 1401 showing stone bank terminus 1403 from the north-west

Date:	20/10/2020	Revision number:	0
Scale:	n/a	Layout:	KL
Path:	Y:\PROJECTS_Edinburgh\221931\Graphics_Office\Rep figs\eval\2020_10_15		

Plate 25: Trench 14 after removal of 1402 showing stone bank terminus 1403 on old land surface 1404 from the west

Plate 26: Trench 15 after removal of 1503 from the north

Date:	20/10/2020	Revision number:	0
Scale:	n/a	Layout:	KL
Path:	Y:\PROJECTS_Edinburgh\221931\Graphics_Office\Rep figs\eval\2020_10_15		

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FS 606559