

WHITE CASTLE

The evaluation of an upstanding
prehistoric enclosure in
East Lothian

David Connolly, Murray Cook
and Hana Kdolska



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with a contribution by
Anne Clarke



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White Castle: The evaluation of an upstanding prehistoric enclosure in East Lothian

David Connolly, Murray Cook and Hana Kdolska

1. Abstract

This volume describes the results of a four year programme of research between 2010 and 2013 carried out by Rampart Scotland at White Castle, an upstanding later prehistoric enclosure in East Lothian, Parish of Garvald and Barra. The monument is a Scheduled Monument (HES SM756) and Scheduled Monument Consent was obtained in advance of fieldwork (ref AMH/756/1/1), in addition, a Section 42 Consent (ref AMH/756/1/1) was obtained in advance of the geophysical survey. Despite being mapped and later surveyed for over the past 200 years, it has never been examined by excavation prior to the present project's interventions, which makes White Castle the first such site to be sampled in the Lammermuirs to date. The programme of survey and evaluation revealed that the main activity dated to the second half of the first millennium BC and focussed on an evolving enclosure sequence whereby the design and visual impact appeared more important than defence. It seems probable that the site's economy was concerned with controlling access to grazing and the final phase of activity on site appears to combine these twin factors: impressing visitors and stock control. While maintenance of White Castle's enclosure system was abandoned in the closing centuries BC, it is unlikely that the area was also deserted and there is limited evidence for two later phases of activity on site around the Medieval and Early Modern Periods.

2. Introduction

In recent years, there has been a significant increase in the excavation and survey of Scottish hillforts and enclosures, aiming to remedy the general dearth of evidence for their use and chronology (Ralston 2015, 203). To an extent, East Lothian may be regarded as an exception to the above pattern and has long been argued to be the best studied area in mainland Scotland (Ralston *et al* 1983, 164; Harding 2001; Lelong and MacGregor 2008, 239-269). The final publication of Broxmouth has served to cement this position (Armit and MacKenzie 2013) and indeed the authors argue that East Lothian is one of the best studied areas of temperate Europe (*op cit* 513). However, as this publication hopes to demonstrate, this assumption cannot be applied to the sites known as hillforts or enclosures. Indeed, Scotland's online national historic environment record, CANMORE, lists a potential 379 prehistoric 'forts' and 'enclosures' in East Lothian, of which only 18 sites have been subject to modern excavation that produced radiometric dates (see Appendix 1 and Section 5.2.5). Prior to this study, none of the sites in the Lammermuirs had been sampled, let alone dated (Haselgrove 2009a), which, given the proposed pastoral function of the Lammermuirs and the necessary interrelationships between lowland and upland settlement in the first millennium BC (Macinnes 1982, 59; Armit and Ralston 2003, 179), is a regrettable omission.

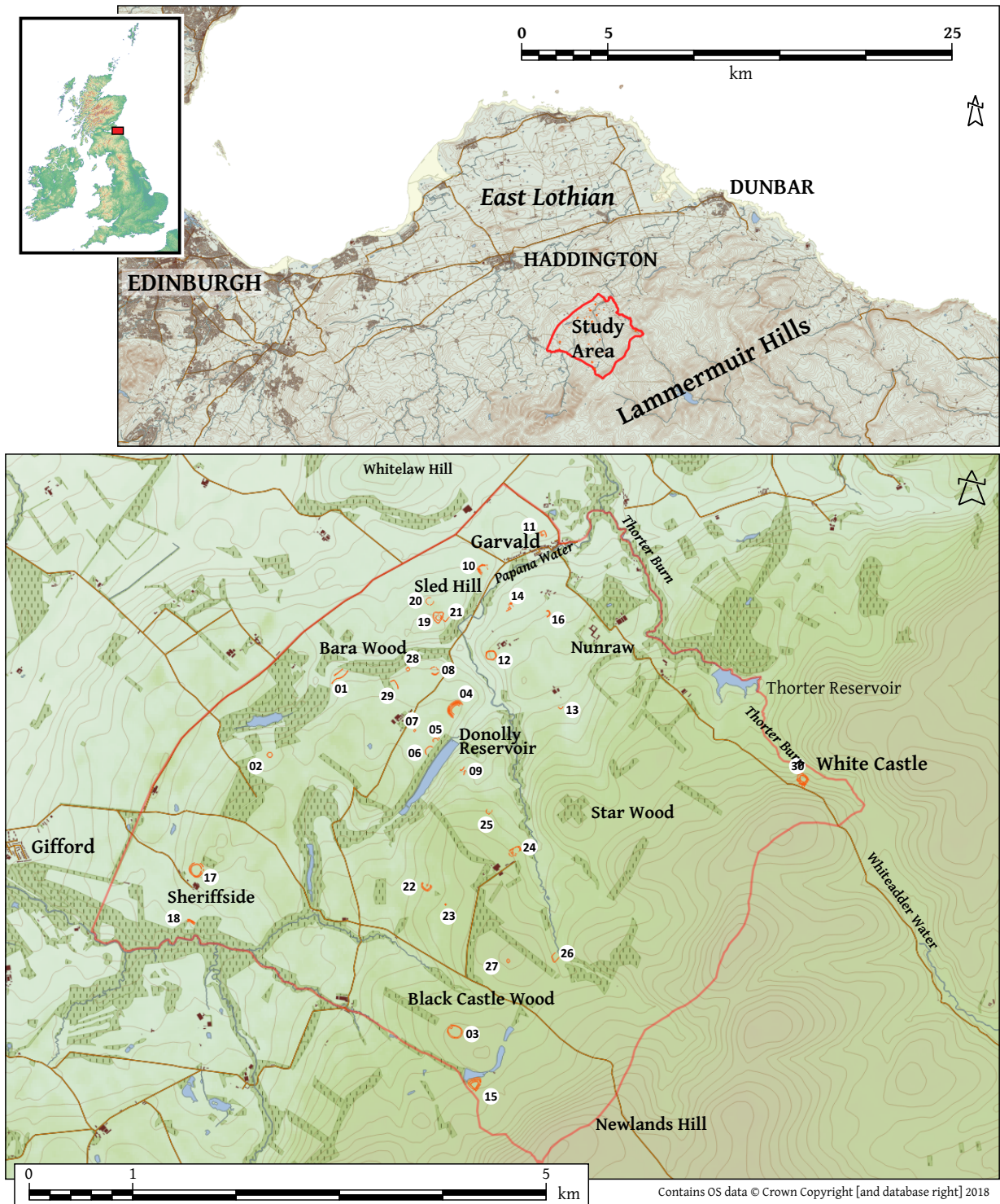
This small sample size of new data is partially a result of current planning policy (PAN 2/2011), which presumes preservation *in situ* of known sites, such as hillforts, as the preferred option, consequently minimising the volume of new data produced. Concurrently, in more peripheral areas, such as the Lammermuirs, there has never been the same development pressure as on the lower lying areas of East Lothian, which provided significant volumes of data from mitigation excavation (e.g. Harding 1982; Lelong and MacGregor 2007). It is argued that such a position risks fossilising interpretations and models as one does not know what one does not know, i.e. any model needs to be tested by new fieldwork (Cook 2012a).

It was in this context that the *Hillforts of East Lothian Project* was conceived and Rampart Scotland formed. Its prime aim was simple: to increase the volume of data on hillforts from East Lothian, with a particular focus on the Lammermuirs. The information obtained from these exercises would be used to critique and refine the existing models from East Lothian. In order to advance this broad aim, a study area on the northern fringes of the Lammermuirs was defined from Garvald in the east to Gifford in the west (Figure 1). Within this area, all hillforts and enclosures would be subject to a mixture of renewed survey, aerial photographic rectification, geophysical survey and excavation.

Given both the scale of the project, together with the site's status as a Scheduled Monument (HES SM756), any excavation was always going to be limited to dating key stratigraphic features of the site, via targeted key-hole excavation; in effect, the project was essentially an evaluation. The potential drawbacks of such an approach were understood and defined from the start of the project, notably that such an approach dates individual events within a complex site, rather than establishing its overall and more elaborate sequence (Clarke 2001). There is also a clear risk from the restricted observation afforded by a key-hole excavation of failing to comprehend precisely what is being dated and therefore skewing the site's eventual interpretation. However, despite these limitations, such an approach is widely supported as an initial and cost-effective step in producing preliminary region-wide chronology, which can be subsequently refined (Haselgrove *et al* 2001, 5; ScARF 2012, 76, 94).

This publication presents the results of the first phase of the overarching project, comprising excavations at White Castle, which comprised four seasons between 2010 to 2013. To place the data into context, the main text is preceded by observations and assessment of enclosure research and dataset within the study area and the surrounding Lothian region.

In addition, while the terms 'hillfort' and 'fort' have been used above as a convenient shorthand, at present there is no absolute consensus either in terms of function, size or chronology of these sites (Cunliffe 2005, 347; Ralston 2006, 12-24; Armit 2007, 25; Harding 2012, 5-7). Therefore, while recognising this complexity and acknowledging the ongoing discussions, the present publication uses the more neutral term 'enclosure', which is intended as a portmanteau term to describe sites of varied morphology, dates and topographic locations, including both cropmarks and upstanding sites.



- 1: Bara [273365] 2: Bara Wood [56077] 3: Black Castle [56073] 4: Carfrae [56106] 5: Carfrae [145442] 6: Carfrae [90597]
 7: Carfrae [168014] 8: Carfrae [56100] 9: Donolly Reservoir [70826] 10: Garvald [56431] 11: Garvald [56433] 12: Garvald Mains [56095]
 13: Garvald Mains [84835] 14: Garvald Quarry [134471] 15: Green Castle [56084] 16: Nunraw Barns [84838] 17: Sheriffside [56099]
 18: Sheriffside [56101] 19: Sled Hill [56482] 20: Sled Hill [84826] 21: Sled Hill [84834] 22: Snawdon [56088] 23: Snawdon [84843]
 24: Snawdon [167038] 25: Snawdon [167845] 26: Snawdon [313664] 27: Snawdon Hill [167821] 28: Sounding Burn [93487]
 29: Swarnie Cleugh [56094] 30: White Castle [57479]

Figure 1: Location map with extent of study area and known 'enclosed' sites (number in brackets is NMRS UID)

3. Study Area

White Castle was the first site sampled by the Rampart Scotland project within the study area and was selected specifically to best represent the topography of the Lammermuirs and their foothills. The study area is a rough 5 km square, bounded to the southeast by the Lammermuirs and to the northeast and northwest by the Thorter Burn and Newlands Burn respectively. The village of Garvald lies in the northeast corner of the study area, representing an old crossing point and ford over the Papana Water that runs through the settlement (Figure 1, 4.1; Graham 1962, 223-4).

The study area encompasses 30 enclosures, both cropmarks and upstanding monuments, of different shapes and sizes, with a variety of perimeter works, including palisades, ditches and banks, and ranging from univallate to multivallate (Figure 2, Table 1).

The study area was chosen in part because of this diversity of type, size and geographical location, where dating of phases of works or occupation may present a more nuanced understanding of activity and use in a chronological framework.

Table 1: Shapes, types and approximate dimensions of known enclosures within the study area

Id	Name	Canmore	Type	Dimensions	Shape
1	Bara	273365	Fort (possible)	170 x 120 m exterior	bivallate
2	Bara Wood	56077	Palisaded Settlement	50 m diameter	circular
3	Black Castle	56073	Fort	125 x 115 m max	rough circle; bivallate
4	Carfrae	56106	Fort	180 x 90 m max; 100 x 50 m int.	multivallate; D-shaped
5	Carfrae	145442	Palisaded Settlement	45 m diameter	circular
6	Carfrae	90597	Settlement	90 x 30 m	curvilinear
7	Carfrae	168014	Enclosure	23 x 15 m	oval
8	Carfrae	56100	Settlement	70 m diameter	circular
9	Donolly Reservoir	70826	Enclosure (possible)	?	rectilinear
10	Garvald	56431	Enclosure	80 x 100 m	square/rectangular
11	Garvald	56433	Enclosure, Souterrain (possible)	90 x 90 m	rough square
12	Garvald Mains	56095	Fort	90 x 90 m	rough square
13	Garvald Mains	84835	Palisaded Enclosure	50 m diameter	sub circular
14	Garvald Quarry	134471	Enclosure/Roundhouse	12 m diameter; 17 x 23 m	circular/rectilinear
15	Green Castle	56084	Fort	75 by 65 m	triangular; bivallate
16	Nunraw Barns	84838	Palisaded Enclosure	60 x 40 m	oval/sub-rectangular
17	Sheriffside	56099	Enclosure	100 m int.; 140 m ext. dia.	curvilinear
18	Sheriffside	56101	Fort	120 x 70 m	multivallate
19	Sled Hill	56482	Enclosure	100 x 100 m	irregular
20	Sled Hill	84826	Palisaded Enclosure	75 m diameter	circular
21	Sled Hill	84834	Timber Structure	60 x 3m	rectangular
22	Snawdon	56088	Enclosure (possible), Fort	110 x 65 m	bivallate
23	Snawdon	84843	Enclosure (possible roundhouse)	12 m diameter	circular
24	Snawdon	167038	Fort	130 x 75 m	multivallate
25	Snawdon	167845	Palisaded Enclosure	50 x 45 m	sub-rectangular
26	Snawdon	313664	Enclosure	60 m across	sub-rectangular
27	Snawdon Hill	167821	Settlement	35 x 25 m	sub-rectangular
28	Sounding Burn	93487	Settlement (possible)	33 m diameter	circular
29	Swarnie Cleugh	56094	Enclosure	80 x 45 m	sub-rectangular
30	White Castle	57479	Fort	125 x 100 m external	

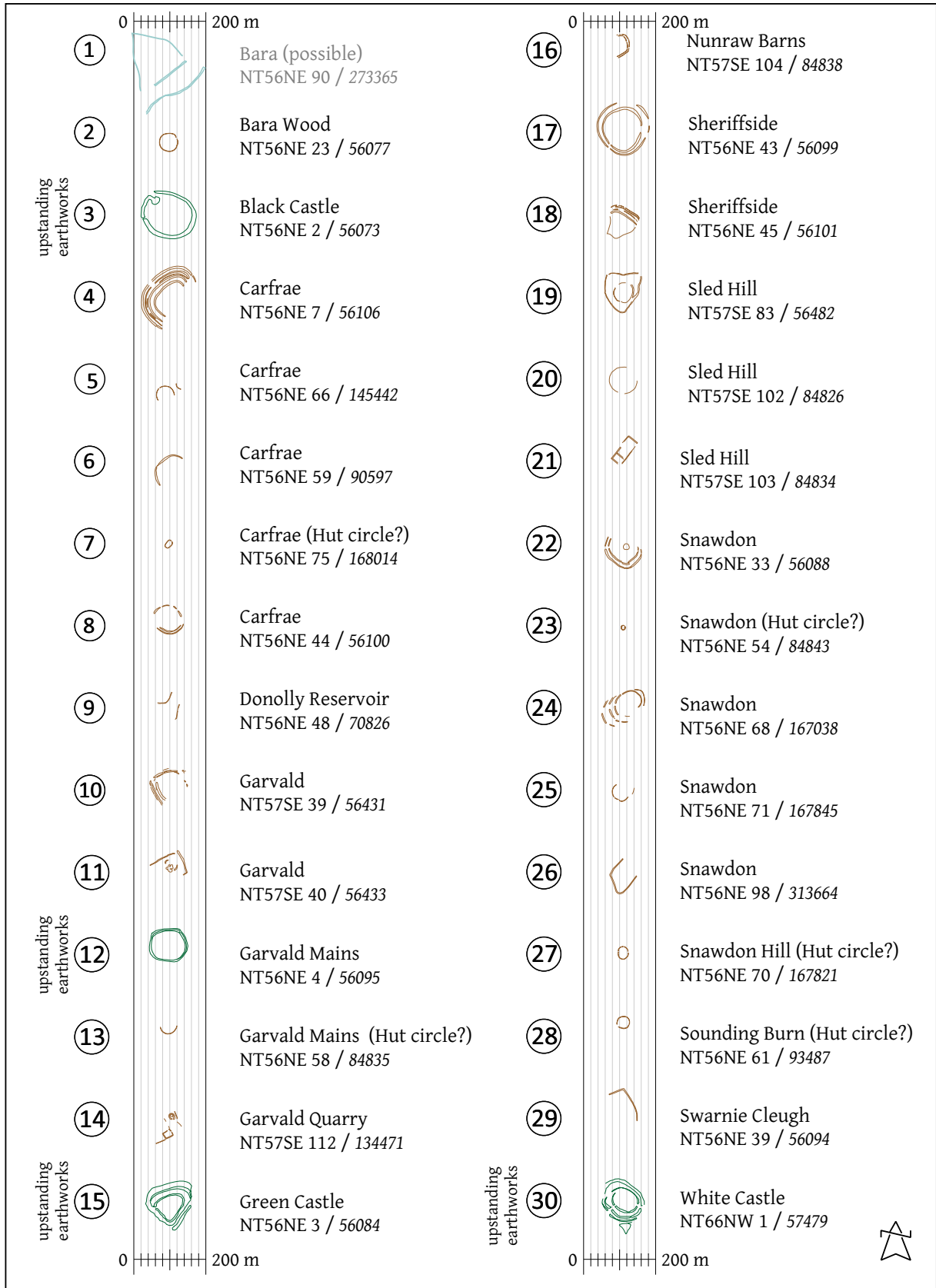
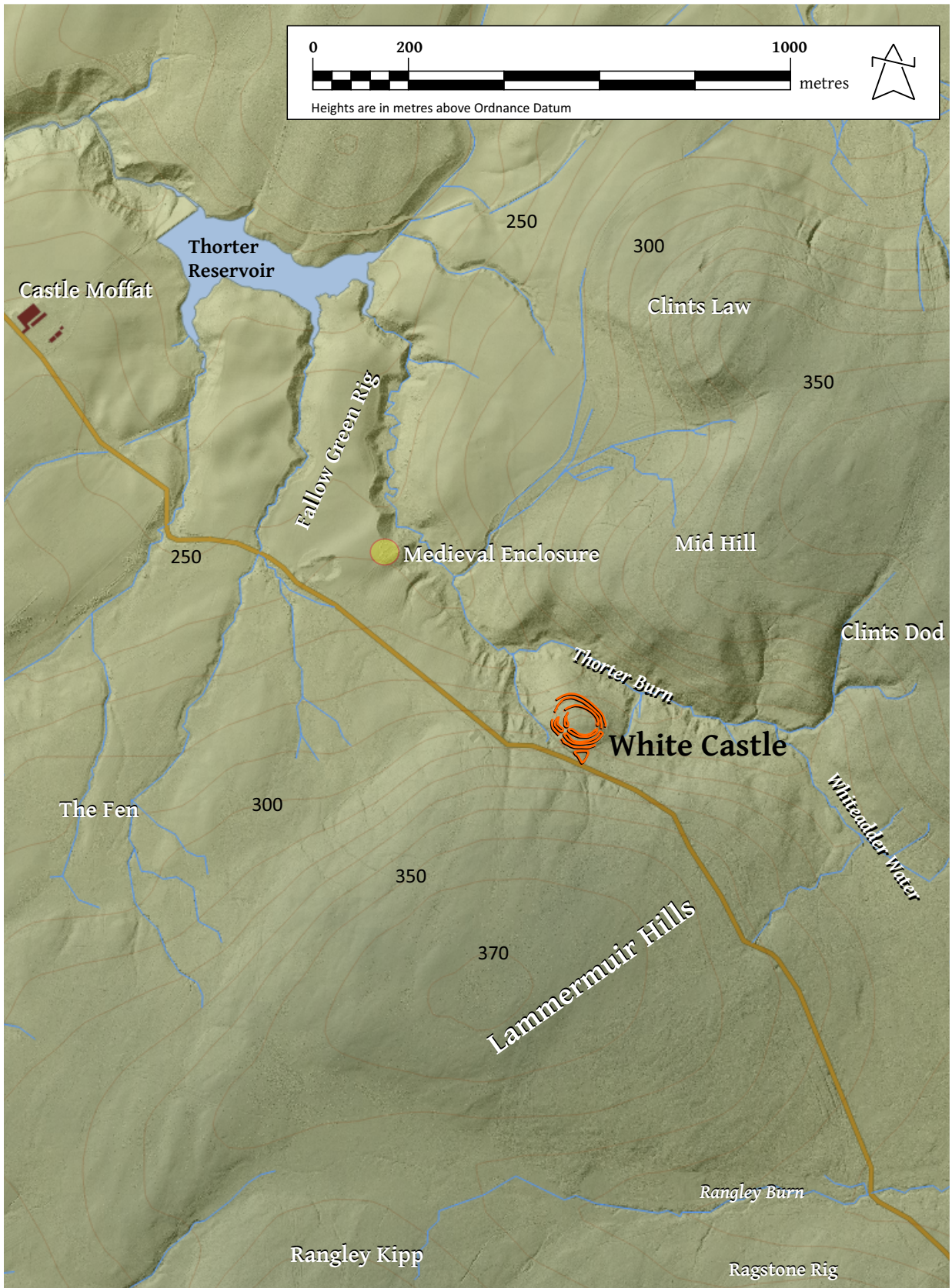


Figure 2: Enclosed sites within study area to same scale



Contains OS data © Crown Copyright [and database right] 2018 and Environment Agency LIDAR Composite December 2011

Figure 3: White Castle within immediate landscape setting.

4. White Castle Location

White Castle, Garvald, East Lothian (NGR NT 6135 6860; Figure 3) is located immediately to the north of an unnamed road that runs from Garvald southeast through the Lammermuirs. The site occupies a natural spur projecting northwards from a higher hill and is defined by water courses to three sides (Figure 7). The easiest line of approach is from the south across a shallow saddle that forms a natural causeway. The larger hills to the north and south of the spur create a landscape framework to the knoll when viewed from the lower-lying ground to the northwest. The vegetation cover is a mixture of grass, heather, blaeberrries and bracken and the current landowners use it to graze cattle and sheep (Figure 4).



Figure 4: Oblique aerial view to northwest over White Castle to the Lothian Plain and Fife beyond. Traprain Law is visible to top right, with North Berwick Law beyond. (© Skyscape Survey)

The site has impressive and commanding views across the Lothian Plain from the eastern edge of the Pentlands to Berwick Law, as well as clear views across the Firth of Forth to Fife (Figure 4). Given this panorama, the site is used as a viewing platform by people travelling across the Lammermuirs, which has caused significant linear erosion across the ramparts creating Openings 3, 7 and 13 (Figure 7). Based on the 1894 Ordnance Survey Map (25-inch Haddingtonshire), this attrition seems to have been happening since at least the nineteenth century (Figure 5).

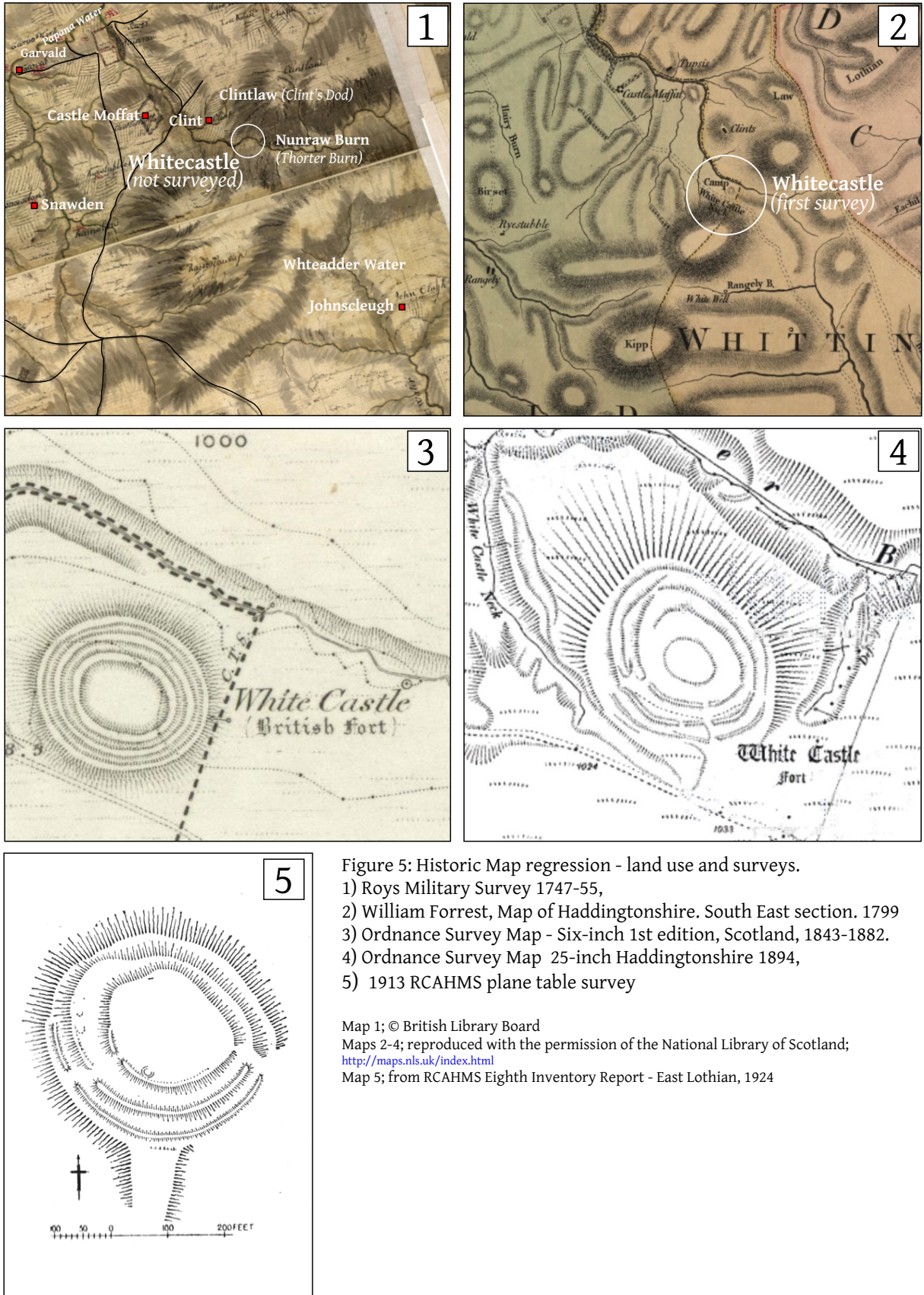


Figure 5: Historic Map regression - land use and surveys.
 1) Roys Military Survey 1747-55,
 2) William Forrest, Map of Haddingtonshire. South East section. 1799
 3) Ordnance Survey Map - Six-inch 1st edition, Scotland, 1843-1882.
 4) Ordnance Survey Map 25-inch Haddingtonshire 1894,
 5) 1913 RCAHMS plane table survey

Map 1; © British Library Board
 Maps 2-4; reproduced with the permission of the National Library of Scotland;
<http://maps.nls.uk/index.html>
 Map 5; from RCAHMS Eighth Inventory Report - East Lothian, 1924

5. Archaeological Background

5.1 White Castle in early maps and accounts

Although the military surveyor William Roy depicted a number of native enclosures in his work *Military Antiquities of Northern Britain* (1793) and on his map of Lowland Scotland (1747-1755, C.9.b 8-4c; compiled 1752-55), including, for instance, the coastal multivallate site of 'Roond Point' (Kilspindie Golf Course, Aberlady; Canmore ID 55085), all the upstanding enclosed sites within the present study area were omitted (Figure 4).

However, despite its apparent visibility, the exclusion of White Castle should not be seen as in any way significant, given that the addition of native sites (enclosures) to Roy's maps was a highly selective process; perhaps, the site may have been overgrown by the thick bracken, currently a major problem during the summer months, or the enclosure was simply not considered strategically important. The exclusion could also relate to the loss of the importance of the Whiteadder routeway by this time.

Therefore, the earliest known written record of White Castle is Reverend Nisbet's entry in the Statistical Account of Scotland (OSA 1791-99, vol.13, 361-2), which was recounted, word for word, by Reverend Sangster in the subsequent New Statistical Account (NSA 1834-45, vol. 2, 96). In his report on 'the antiquities of the Parish of Garvald and Bara, County of Haddington' Nisbet (*ibid*) states that:

'...Adjoining the Lammer-moore Hills are situated the ruins of Whitecastle in the eastern boundary of the parish. In the ages of violence and hostility this fortification was of considerable importance, as it guarded a path from the Merse and England...'

Although his descriptions (*ibid*) of five enclosures in the area (White Castle, Garvald Mains, Carfrae, Green and Black Castle) are commendable first notices of prehistoric enclosures in the area, his detail is variable, with limited information about White Castle and its morphology. His equation of the site with violence and defence is akin to the invasion and military concepts in vogue at the time and well into the twentieth century (Collis 1981, 66; Oswald *et al* 2006, 65; Armit 2007, 25-29), though his interpretation of White Castle as controlling the main route through the Lammermuirs is in accord with the present authors' thinking.

Apart from the OSA and NSA notices, White Castle also appears in cartographic sources – first on Armstrong's map (1773) as 'White castle nick', with its ramparts portrayed as a double circle on the oblique view. The White Castle Nick, refers specifically to the deep gully directly to the west of the site, rather than the site itself. This is followed by the site's depiction as a 'camp' on a successive series of Haddingtonshire county maps– the earliest being Forrest's Map of Haddingtonshire (South East Section, created 1799, published 1802), where it appears as 'White Caftile Nick' camp and is depicted as a double irregular circle, analogous to the 1773 Armstrong map, which it clearly used as a source (Figure 5). White Castle is next recorded in Thomson's *Atlas of Scotland* (county map of Haddington; created 1822; published 1832), illustrated as a simple single circle under the denomination of 'White Castle Nick' Camp, again likely influenced by Forrest's 1802 map. In contrast, the 1824 Map of the County of Haddington (Sharp, Greenwood and Fowler 1825, right side) shows White Castle as a double circle, evidently indicating banks (ramparts). Although no detail is given on either of these maps, the depiction of White Castle's location is reasonably accurate in relation to other sites in the vicinity, such as Castle Moffat or Johns Cleugh, as well as its topographical setting and association with the route through the Lammermuirs (current tarmaced road).

These early cartographic attempts are followed by more detailed depictions on subsequent Ordnance Survey (OS) maps. For instance, on the 1855 first edition OS map of Haddington (6-inch map; surveyed 1853; published 1855), White Castle appears as *'British Fort'*, portrayed with three oval banks, but otherwise lacks significant detail (Figure 5). The lack of accuracy or detail regarding plans of archaeological monuments was a common defect of the initial OS maps, as already lamented by D. Christison in the late 1800s (1887, 14; 1898: vi-vii). This was somewhat improved on the second edition OS map (OS 25-inch map, surveyed 1892, published 1894; Figure 5), which captures the majority of White Castle's morphological detail, and is similar to the 1913 plan by RCAHMS (Canmore: catalogue number: DP 006939; RCAHMS 1924, 35, No.52, fig. 71; Figure 5). The RCAHMS survey also added three internal features (not identified on the OS maps): two between Ramparts 1 and 2 on the western side and a third on the southern side overlying Rampart 1, but omitted further ones, which were recorded subsequently by the authors (Figure 5).

Arguably, despite ignoring internal features and failing to recognise the SE entrance to the site, the 1894 OS map is more faithful to the character of the earthworks visible today, than the RCAHMS version, especially regarding the layout of banks and slopes. For instance, it correctly depicts the erosional hollow across the three ramparts caused by visitor pressure, which was not recorded by the RCAHMS survey (Figure 5). Correspondingly, the RCAHMS plan also fails to note Terrace 4, located between Ramparts 1 and 2, which is hinted at in the 1894 OS map (Figure 5). However, given its date of creation (1913) and the concomitant established recording practices, the survey cannot be judged by the modern standards (cf. Halliday 2016, 53-55).

The RCAHMS staff (archaeologists K. A. Steer and R. W. Feachem) briefly re-visited White Castle in June 1954, as part of the Marginal Land Survey (1950-1959), undertaken as a direct response to the post-War land development threats to a number of archaeological sites (Geddes 2013). Altogether, 40 sites were visited in East Lothian at this time (RCAHMS 1954-56; Canmore Catalogue Number WP 000773), mostly enclosures, however the value of this survey is variable, with mainly brief notes and only a few basic plans of specific sites produced. Explicitly, White Castle's entry (inventory no. 52) suggests that the existing RCAHMS 1913 plan (RCAHMS 1924, 35, No.52, fig. 71; Figure 5) was adequate, except for the lack of evidence of the depicted hut circles, which should therefore be removed from the plan. It also notes that the ramparts are made of *'...dry walls standing on the ditch upcast...'*, which are comparable with the site of Kidlaw (RCAHMS 1954-6, Inventory No.52 & 259). Both statements are erroneous and either suggest that the site conditions were not conducive to detailed survey– the site was visited on 4th of June 1954, with likelihood of extensive bracken cover– or that the time on site was limited (or likely a combination of the two factors). As also observed in relation to other Royal Commission surveys elsewhere at the time (Halliday 2016, 43, 46), the aim then was to record general situation and character, rather than accurate survey of the enclosing works.

Without diminishing the achievements of the multitude of earlier researchers discussed above, the latest topographic survey carried out by the authors between 2010 and 2014, is the most accurate depiction of the site to date.

Finally, despite the multiple early notices and maps that included White Castle, there is no recorded excavation, prior to the White Castle project – excepting a watching brief on a pipe trench in the site's immediate environs, which produced negative results (Ralston 1973, 64).

5.2 Enclosed sites of East Lothian: Available Data Set

5.2.1 Introduction

As observed above, prior to this project, White Castle had received only limited archaeological attention. The same applies for other prehistoric enclosures within the project's study area, none of which had been excavated at the outset of this project. As discussed in this section, this is not a unique situation within East Lothian (e.g. Armit 1999, 73), Scotland as a whole (Hingley 1992, 32; Armit 2005, 43; Davies 2007, 266, 270; Kokeza 2008, 4) or beyond (e.g. Oswald *et al* 2006, 44) and has been the case for a considerable time. Indeed, in 1966 Feachem observed that 'a lot of survey and little excavation had taken place' on Scottish hillforts (1966, 60), a sentiment regularly recapped since (e.g. Haselgrove and McCullagh 2000, 1, 5; ScARF 2012, 76-7; Halliday 2015, 287; Ralston 2015, 203). Correspondingly, where excavations have taken place, the focus is generally on the defences and limited in scale, with limited investigations of interiors (e.g. Armit 2005, 51; Ralston 2006, 20). Nevertheless, despite the lack of excavations, it is worth commenting briefly on the available evidence for the East Lothian as a whole.

5.2.2 Review of research of prehistoric enclosed sites in East Lothian

East Lothian and the wider southeast of Scotland, had at one time been considered 'one of the best studied areas of temperate Europe' (Ralston *et al* 1983, 164) and the area of East Lothian in particular has benefited from a significant volume of rescue and research excavation of prehistoric enclosures especially in the 1970s and 1980s, continuing into to the early 1990s (Harding 1982; 2001; Armit and McKenzie 2013, 11-13). The projects at the time (Table 2) were characterised by large-scale operations, driven by development pressures and generous public funds (Harding 1979, 6; Haselgrove and McCullagh 2000, 1, 5; Dunwell 2007, 4), which heralded a new era of enclosure research in East Lothian.

Table 2: Excavated East Lothian enclosures between the 1970s and early 1990s.

Site	Date of excavation	Select Publications
Broxmouth	1977-78	Hill 1979; 1982a; 1982b; Armit and McKenzie 2013
Dryburn Bridge	1978-79	Triscott 1982; Dunwell 2007
St Germain's	1978-82	Watkins 1982: 106; Alexander and Watkins 1998
Castle Park, Dunbar	1987-93	Perry 2000
Traprain Law	1984-86	Strong 1984; 1986
Fisher's Road East and West, Port Seton	1994-95	Haselgrove and McCullagh 2000

However, the significance of these projects was considerably lessened due to the substantial delay in final analyses and publications, particularly of the three key projects– Broxmouth, Dryburn Bridge and St Germain's (Armit 1999, 72-3; Haselgrove and McCullagh 2000, 1, 5).

The growing volume of published works on enclosed sites in Southern Scotland, and East Lothian in particular, is slowly beginning to change the outlook on these monuments. Nonetheless, the research is still regionally limited, with some areas characterised by a complete dearth of modern excavations, including previously the Lammermuirs or a significant portion of the Scottish Borders (Peebles, Halliday pers comm; Kokeza 2008, 4), although this disbalance is now being addressed by some notable projects (see Whiteadder: Historic Heart of the Lammermuirs Project, 2020).

The renewed research since the beginning of the present century included both developer-funded excavations, notably the A1 upgrade (Lelong and MacGregor 2007), and research driven projects – such as the Traprain Law Environs Project (TLEP), this focused on investigation of cropmark sites in the vicinity of Traprain Law (Haselgrove 2009a). The latter site was also periodically investigated as part of smaller scale works initiated by repeated threat and damage to the site by fire (Hunter 1996; 2005, 56-7; 2006: 61-2; Rees and Hunter 2000, 413; Armit *et al* 2002; 2005; 2006; Hunter and Dunwell 2003, 62).

5.2.3 Refining chronology of East Lothian enclosures

Collectively, the impact of the above projects on the increased understanding of the prehistoric enclosures in the region can be seen particularly in the construction of a more reliable chronology for the site type. Explicitly, the larger volume of absolute dates now available from across East Lothian's enclosures (Appendix 1) and the subsequent application of Bayesian analyses to some of these sites, notably Broxmouth (Hamilton *et al* 2013), allows for more refined (re)interpretations of the sequencing of individual sites, even for those belonging to the notorious 'Hallstatt plateau' (800–400 BC), previously the insurmountable obstacle of Iron Age (IA) research (e.g. Hamilton *et al* 2013; 2015, 643, 646-47).

Moreover, the availability of more reliable dates from these excavations also substantially contributed to the replacement/re-appraisal of the established Hownam Sequence (Armit 1999, 68-70), which previously extrapolated stratigraphy from 'hillfort' excavations in the Borders (Piggott 1948, 1958) on other enclosed sites in Southern Scotland. Piggott's scheme was itself substantially influenced by evidence from the Southern English sites and the 'ABC' scheme proposed by C. Hawkes (1931; Armit 1999, 65) and the Hownam sequence was to serve as a model for development of prehistoric IA enclosures in the southeast Scotland for almost 40 years (Armit 1999, 65, 68). The neat development, propagated by the model (i.e. palisaded enclosure – univallate defences – multivallation – unenclosed settlement) was already being questioned by the early 1980s in the light of modern excavations and, crucially, the availability of radiocarbon dates, which indicated more complex site sequences and longer durations to individual phases (Armit 1999, 68-70).

A number of works have taken advantage of the radiometric dates resulting from the above projects to suggest an overarching chronology for East Lothian's enclosures (e.g. Harding 2001; Lelong 2007; Haselgrove 2009b, 225-231, table 227; Reader 2012, 243-254, 264-70, 343-5; Haselgrove 2015, 130-1). Principally, the proposed sequence for the development of prehistoric enclosures in East Lothian is characterised by a dearth of early Iron Age (EIA) evidence (cf. Lelong 2007, 239, 244; Haselgrove 2009, 229), with many (if not most) of the manifold cropmark enclosures, representative of the East Lothian enclosure record, likely dating to mid to late first millennium BC (Lelong 2007, 239, 244). Haselgrove (2009b, 229) considers the possibility that, based on the evidence of long-term occupation and the sequence of rebuilding identified at Broxmouth and Dryburn Bridge, the key reason for the apparent lack of EIA sites may be the differential longevity of sites– with fewer but long-term occupied sites in the EIA, as opposed to the mid to late IA or the preceding Late Bronze Age (LBA) periods.

Traprain Law is the most notable example of this phenomenon, with only limited evidence of EIA activity recovered from the site (Armit *et al.* 2002; Armit 2005, 48; Armit *et al* 2006, 604; Erdrich *et al* 2000,

441, 452), as opposed to both the Late Bronze Age (LBA) and Roman Iron Age (RIA) periods (note also that the outer defences were recently dated to middle IA (Armit & McKenzie 2013, 512). However, EIA evidence has been found on other sites, such as Dryburn Bridge (bearing in mind the dating problems on the site noted by Dunwell 2007, 98), Foster Law (Hamilton and Haselgrove 2009, 203) or Broxmouth (Haselgrove 2009b, 229), which argues for more complexity to the overall pattern.

Further key findings from available C_{14} dates pertain to the apparent disuse of many enclosed sites, or elements of their defences in the Late Iron Age (LIA), as identified on a number of sites– for instance Knowes, Eweford cottages, St Germain's, Broxmouth, Foster Law, East Linton; Gilmerton house or Chesters (*ibid*). Again, there are obvious exceptions to the general pattern that dispute the wholesale abandonment of enclosed sites by the time of the RIA or prior, previously proposed from largely English sites' evidence (e.g. Cunliffe 2005, 401-6; Brown 2009, 180-2; Cook 2013a). For instance, Fishers Road East and West both originated in the closing centuries BC and continued to be occupied into the RIA (Scott 2000, 181-2; Haselgrove and Lowther 2000, 172).

Correspondingly, other enclosures in East Lothian appear to have been built anew or re-occupied in the opening centuries AD, such as Whittingehame Tower (Haselgrove et al 2009, 41) or Traprain Law (Armit et al. 2002; Armit 2006). The settlement pattern changed again by the late RIA– with noticeable reduction of enclosure numbers in the area; the only confirmed enclosed sites occupied after the early third century AD being Traprain Law (Armit *et al* 2002; Armit 2006, 606); Castle Park, Dunbar (Perry 2000, 28-9; 312-13 and Table 28) and Whittingehame Tower (Haselgrove 2009, 230-1; Hamilton and Haselgrove 2009, 203).

Arguably the most crucial but also disputed discovery is the suggestion that at least some of the multitude of East Lothian enclosures have their origins in the Late Bronze Age (LBA), as suggested for some sites in wider Scotland (e.g. Rideout *et al* 1992, 66, 139; Armit 2005, 47) and elsewhere in Britain (e.g. Brown 2009, 31-33). This has been proposed for the three enclosures excavated as part of TLEP– i.e. Whittingehame Tower, East Linton and Standingstone (Hamilton and Haselgrove 2009, 203; Cowley 2009, 222)– as well as Traprain Law (Armit et al. 2002, 1-2, 8-10; 2006, 604-5).

While the latter is in many ways an exceptional site within the East Lothian enclosure corpus, the interpretation of the three TLEP sites as originating in the LBA has not avoided criticism (Sharples 2011). Reviewing the site sequences from TLEP, Sharples (2011) argues that the LBA dates likely relate to the preceding open settlement and the origins of the enclosures should therefore be sought in the IA. This has certainly been considered for Broxmouth, where Middle Bronze Age (MBA) and LBA dates were also recovered from several samples and interpreted as probably residual or as statistical outliers (Armit *et al* 2013, 25; Hamilton *et al* 2013, 192, 198, 201).

Although the published evidence from TLEP (Hamilton and Haselgrove 2009, 187-188, 192-193, tables 9.2 and 9.3; Haselgrove 2015, 133, note 9) suggests a controlled sampling and selection strategy, more research is clearly required to resolve these outstanding issues. For the moment, the evidence from TLEP excavations implies that some of the sites which tend to be assigned to the IA on morphological grounds alone may feasibly be of LBA origin (Cowley 2009, 212, 222).

In contrast to the above debate, there seems to be more consensus as to the roots of rectilinear and single ditched enclosures, widely acknowledged as predominantly originating in the LIA (c. 200 BC – AD 200) (Hamilton and Haselgrove 2009, 203; Cowley 2009, 212; Reader and Armit 2013, 481). Available research data from excavations and survey elsewhere in Scotland and Northern England (Jobey 1960; Maxwell 1970, 1983; Haggarty and Haggarty 1983, 30, 40; Johnston 1994, 233; RCAHMS 1997, 155) seem to confirm this pattern, while sites of this type excavated in East Lothian, i.e. Fishers Road East and West (Haselgrove and Lowther 2000, 172; Scott 2000, 181-2) also tend to have origins in the LIA.

5.2.4 Enclosure morphology

Indisputably, the key characteristic of the East Lothian prehistoric enclosure record, as highlighted by previous research (Cowley 2009, 208; Reader 2012; Armit and Reader 2013, 482-3), and evident from a cursory review of the existing data-set (HES CANMORE Records), is the sheer variety of cropmark enclosure morphology in the area. This apparent diversity cannot be easily accommodated within the existing basic regional or nationwide classification system of enclosures (i.e. curvilinear, rectilinear and multivallate), let alone fitted within a specific period (Cowley 2009, 207-8; ScARF 2012, 77).

Drawing on the existing classifications defined by RCAHMS and similar studies elsewhere (e.g. Whimster 1989; Stoertz 1997), Rachel Reader subdivided the East Lothian (including parts of Berwickshire) enclosure corpus into further sub-categories (Reader 2012, 145; Armit and Reader 2013, 482-3) in order to gain more refined insights into prehistoric enclosure patterns. Drawing from the premise that the multiple rectilinear sites are later in the sequence (i.e. LIA), she notes that palisades seem to be a feature of the EIA, as later rectilinear enclosures do not generally include these (Armit and Reader 2013, 483). She also highlights the tendency of enclosed sites in the study area to be single ditched, less than 0.5ha in size and curvilinear (Reader 2012, 232-3) and the preponderance of western-orientated entrances at multiple-ditched sites (22%), closely followed by SSW orientations (19%) (Reader 2012, 195).

Equally, she draws attention to the multiple ditched sites' tendency to have more than one entrance, which she interprets as reflecting the longevity of use, together with their larger size (*ibid*). However, in regards to the entrance orientations, it is worth noting that Reader's data-set assumed that White Castle had no third, northwest facing, entrance (Armit and McKenzie 2013, 480), the existence of which has been since confirmed by the excavations (Figure 5).

Both TLEP (Haselgrove 2009a) and Broxmouth Project (Reader 2012; Armit and Reader 2013) emphasise the ultimate shortcomings of the existing region or nationwide classification system of the enclosures and also highlight the obvious problems with using typology to cross-date sites from different areas and regions (Cowley 2009, 207, 212; see also ScARF 2012, 77). Although, using typology as a chronologically diagnostic tool cannot be disregarded altogether, this should only be used as the initial step in a research framework, which has to be subsequently tested by excavation (e.g. Welfare 1978; Cowley 2009, 207; ScARF 2012, 77).

5.2.5 Enclosure Statistics

The character of the prehistoric enclosures and the state of their research within the wider area of East Lothian was summarised in the previous section, however it is also essential to briefly comment on the scale of the existing dataset. As of 2017, HES CANMORE Records listed more than 400 enclosed sites in East Lothian, including all categories of possible prehistoric enclosures – ranging from forts to palisaded enclosures and settlements. Disregarding sites with no detail or some dubious characteristics, results in some 379 likely prehistoric enclosed sites, including 306 enclosures and 73 forts. The latter figure can be compared with the most recent review of East Lothian 'hillforts' (enclosed sites) as part of the UK wide *Atlas of Hillforts Project* (2012-2016), which lists 89 sites classified as 'hillfort' in East Lothian (Ralston and Lock 2017). The differences in numbers are due to the diverse criteria used by RCAHMS/HES and Atlas of Hillfort researchers, which highlight as yet unresolved issues concerning the classification systems employed in current research (see also above). For example, 'The Murrays' (Canmore ID 83095) is classified as a settlement by the RCAHMS/HES, and as a hillfort (level terrain fort) in the Atlas of Hillforts (Atlas of Hillforts Project, 2017).

Out of this corpus of 379 likely prehistoric enclosures, 38 sites (or 10.05%), have been sampled by modern excavation methods, with 18 (4.75%) producing radiometric dates (Appendix 1). Note, these

calculations include the two sites (White Castle and Sheriffside) investigated as part of the Hillforts of East Lothian Project, the only enclosures excavated within the study area and the Lammermuirs until 2019 (see Whiteadder: Historic Heart of the Lammermuirs Project, 2020). These statistics clearly highlight the general lack of modern enclosure research, as identified by other studies in Scotland (cf. Cowley 2009, 207-8; Kokeza 2008, 4; Reader 2012, 153; 244; Reader 2012) and areas of England (Oswald *et al* 2006, 44).

5.2.6 East Lothian Summary

It is clear from the present review that while there are significant volumes of prehistoric settlement (enclosures) data from East Lothian they exclude specific areas– i.e. the Lammermuirs. In addition, the dataset clearly shows that with the possible exceptions of the LIA rectilinear enclosures and the tendency of palisades to be earlier, there are no chronologically diagnostic forms of enclosures. This is particularly the case with the many predominantly curvilinear enclosures found across Scotland, with potential date ranges spanning millennia (from the LBA, but many showing use, reuse or construction across the later first millennium BC and AD (e.g. Harding 2004, 84, Ralston 2006, 10; Cowley 2009, 208).

The sheer variety of likely prehistoric enclosure types within East Lothian identified from the review and by prior research (e.g. Haselgrove 2009b, 228; Armit and Reader 2013: 482-3) is mirrored across Scotland (Scarf 2012, 77) and wider Europe (Ralston 2006, 12-17). As succinctly expressed by Cowley (2009, 212), the main characteristic of enclosures from the mid to later first millennium BC is a variety of forms, with presumed highly personalised/individual site functions and histories.

Certainly, even if there were such diagnostic forms, given the evidence for long durations on some sites (e.g. Broxmouth; Traprain Law), there is no guarantee that any particular site belongs to simply one phase. Excavations tend to reveal more complexity than is apparent from surface observations alone and in most cases the surface remains represent accumulations over several generations, reflecting responses to different pressures and requirements, rather than being built *en masse*.

The aim of the review was not to discuss the complexities of enclosed site (hillfort) classification (see for instance Raftery 2004, 162; Halliday & Ralston 2009, 455), instead, the authors prefer to inspect a variety of different types of enclosed settlement available to study in order to better understand the whole dataset. In concordance with sentiments expressed previously (Welfare 1978; Cowley 2009, 207; ScARF 2012, 77), the authors argue that this aim can only be achieved by more research underpinned by excavation of morphologically distinct sites, and the recovery of suitable dating material (C_{14}), in order to progress beyond the realm of comparative typologies (e.g. Cowley 2009, 207-8; Reader 2012, 153) and develop more refined chronologies and in-depth research questions.



Figure 6: Vertical aerial view of White Castle (© Skyscape Survey).

6. Research Questions

As the scale of excavation at White Castle was limited, the research questions were correspondingly restricted, focussed on mapping, dating and characterising White Castle's key stratigraphic features. The four-year programme of work was iterative in its approach, with each subsequent season building on the previous season's results, but overall it aimed to achieve the following:

- Undertake a new topographic survey of the site, including an assessment of management issues, regarding damage from stock, rabbits, moles and vegetation;
- Characterise and date the broad sequence of enclosing works;
- Examine the nature of the internal features and provide C_{14} dates for some of these;
- Examine the openings in the enclosing works and determine chronology of use where possible;
- Consider how White Castle relates to the current dated sequence in East Lothian and Southeast Scotland.

7. Methodology

7.1 Topographic and Management Survey

The initial topographic survey of the site and its immediate environs was carried out by Becker Geomatics Ltd in 2010, with the results tied into the Ordnance Survey National Grid. The point density was c. 10m spacing, and included the top and bottom of slopes, roads, fences and feature points taken to establish a suitable base plan.

Over the following seasons, an enhancement survey was conducted using a Leica TCR 805 series Total Station with internal data logger. All points were processed through Leica Geo-Office software and attributed on point-type. The survey was processed through Penmap software to produce a maximum resolution contour plot of 10cm intervals.

The survey concentrated on areas where known features were recognisable to add further resolution and in areas where the original 2010 survey had lower density of survey points to provide further detail. Using this methodology, it was possible to add significantly to the visual understanding of the monument, providing further details on the 19 platforms and one rectangular structure, which were recognisable on the surface of the monument, in addition to providing a fully comprehensive contour survey of all banks, ditches and terraces. This subsequent survey (Figure 7), provided a less subjective and more detailed Data Terrain Model (DTM) of the entire site area, which could then be compared with the RCHAMS 1913 plane table survey and interpretation.

In addition, following Historic Scotland's (now Historic Environment Scotland) guidelines on vegetation and animal threats to archaeological sites (Rees and Mills 1999; Dunwell and Trout 1999), the project also monitored the extent of bracken cover and damage caused by burrowing and grazing animals.

Each year spread of bracken cover, rabbit burrows, mole hills and cattle scrapes were mapped and recorded across site using hand-held GPS, camera and visual assessment. The changes in the level of threat and presence/absence of these factors were also noted between each successive season. The tabulated data allowed the authors to build up a picture of how each element evolved by matching this with excavation observations, including measurements of bracken rhizome depths, and the degree of impact on the archaeological layers.

7.3 Geophysical Survey

The resistivity survey was undertaken by the Edinburgh Archaeological Field Society using TR/CIA area ground resistance measuring equipment. The equipment operates in the 'twin' configuration with four probes, with two of the probes mounted on a portable frame 0.5m apart, and comprises one current input and one potential measurement probe. All readings were taken at 1.0m intervals in lanes 1.0m wide in 20m by 20m survey grids, giving a total of 400 measurements in each grid.

The data was downloaded, processed and printed in grey scale, with the black and white limits chosen based upon the highest and lowest ohms readings recorded. As per standard practice, high resistance (well drained areas and bedrock) is represented by black and low resistance (infilled ditches and damp areas) by white.

Continuing the 40 x 60m grid surveyed in 2010, a further six 20m grids were surveyed to the north and west, while additional partial grids were included to the north. Although some of the squares were taken on rampart and terrace slopes, there were no locations where it was not possible to carry out the survey. Correspondingly, the known geology of the site is a greywacke, which had no effect on any of the taken readings.

7.3 Numbering system

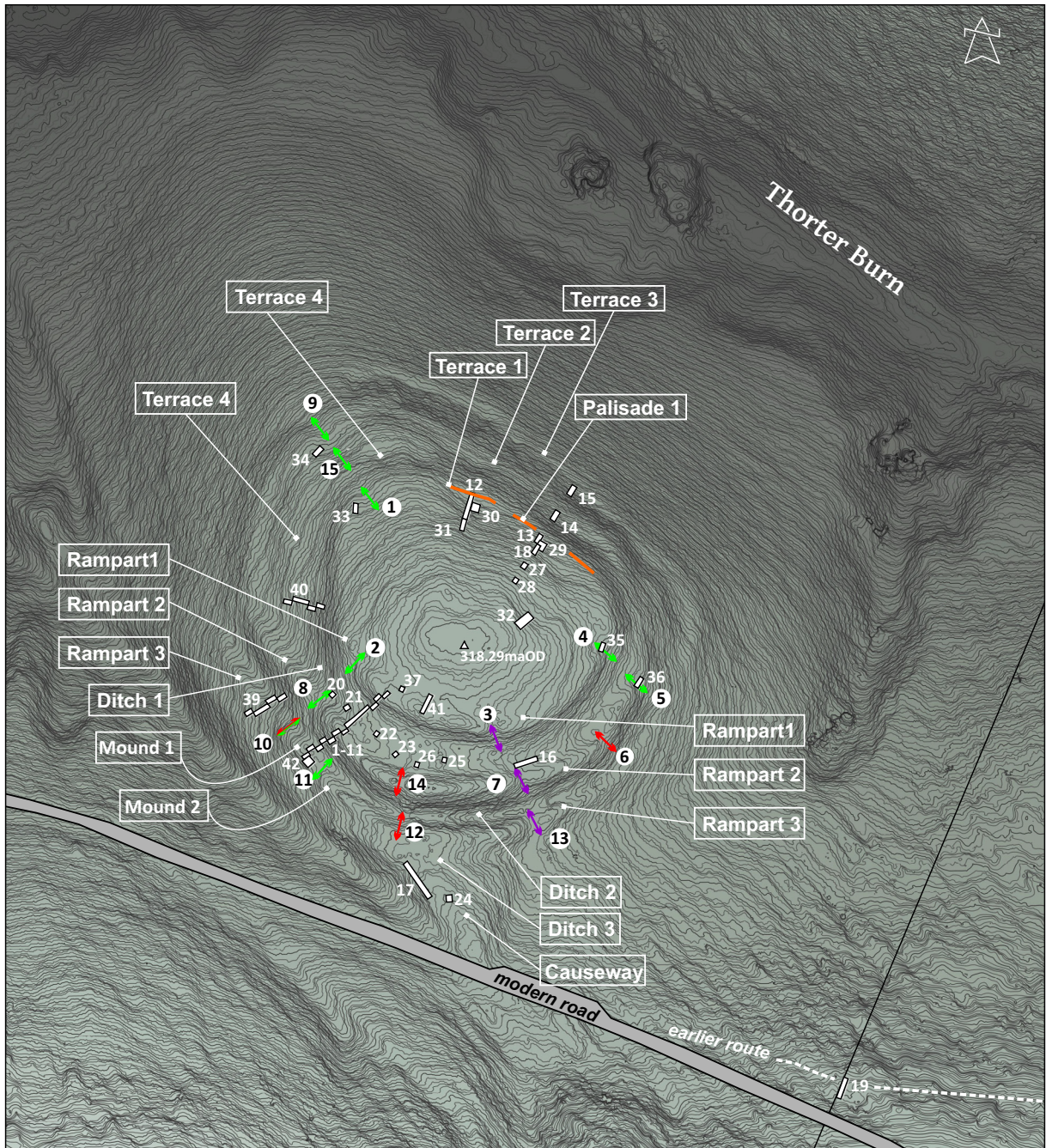
The context numbering relates to the Trench designation; thus Trench 10 includes contexts [10001] to [10999] and Trench 15 contexts [15001] to [15999]. This methodology minimises errors in the context record by having three trailing numerals after the trench number and allows for up to 1000 contexts (far in excess of what may be uncovered in trenches of such character and in such locations). Correspondingly, the initial digit(s) allows for an easy visual association between a particular trench and features uncovered within.

7.4 Excavation

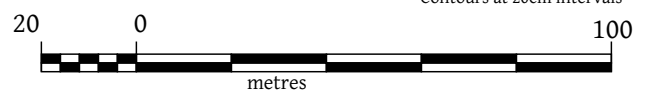
As noted earlier, White Castle is a Scheduled Monument and as such is by definition of National Significance. It is therefore ethically and legally incumbent on any researcher working on such a site to minimise disruption, while maximising the recovery of useful information. To ensure this remained the case, as well as keeping the costs to a minimum, key-hole excavations were undertaken on crucial locations and, where possible, taphonomically secure and unabraded roundwood charcoal samples were recovered for C₁₄ dating to provide a chronologically phased framework for the site.

In total, the excavations at White Castle between 2010 and 2013 deturfed less than 1% of the Scheduled Area and in total, only 0.5% of the whole site was excavated. All excavation was undertaken by hand and in keeping with the CIfA (Chartered Institute for Archaeologists) standards.

Finally, during the excavation of each trench observations were undertaken regarding the presence, depth or absence of bracken rhizomes and animal burrows.



Contours at 20cm intervals



- Trench 32
- Opening (prehistoric) 5
- Opening (livestock) 6
- Opening (unsure) 10
- Opening (visitors) 7

Figure 7: White Castle trench locations and main features

7.5 Digital archive

The digital archive for the White Castle Project consists of all existing primary data concerning the site, and includes JPG scans of plans and sections; photographs in JPG format; context, sample, photo and plan registers in Excel spreadsheets backed up with PDF versions of all primary records; completed illustrations in PDF format; survey data, GIS files, and contour data in .shp, .dxf and .csv point file formats; C₁₄ date certificates and complete reports; and specialist reports in pdf format all in a dated folder depending on the year of fieldwork. The annual Data Structure Reports for each season (Cook *et al* 2010; Cook and Connolly 2011; 2012; 2014) are accessible on the project's website in pdf format (<http://www.rampartscotland.co.uk/index.php/publications/>).

This data will be made available from the Rampart Scotland website and the local Historic Environment Record (HER), as well as deposited, along with a hardcopy, with Historic Environment Scotland (HES) as part of the final physical archive. All finds are subject to the formal Treasure Trove deposition process.

8. Topographic and Geophysical Survey Results

8.1 Site Topography

As detailed in Section 4 the site occupies a spur that extends into the mouth of the valley, dramatically dropping down to the Thorter Burn 40m below, with steep slopes on two thirds of its circuit.

A natural triangular causeway links the site to the southern slope of the valley, however it is clear that this causeway has been flattened along the southwest edge that then slopes to the northeast, providing a route into the site (Figure 7).

The designers of the enclosure made best use of the slopes, by terracing the steep gradients to the west, north and northeast in order to give the impression of ramparts and utilising the natural slope of the White Castle knoll, enhancing it with bank ramparts to the south and southwest with a minimum of effort. The largest, most impressive sections of the site's ramparts face an approach across the causeway to the south.



Figure 8: Viewed from the south, White Castle's location dominates the route into the Lothian plain (© D. Connolly).

The position of the site prevents it being seen from the southeast until the final 500m of the approach, when it becomes framed within the valley mouth, with the Lothian Plain beyond. From the northwest, the knoll dominates the approach up the steep route from the lowlands, and the ramparts, once again utilising the natural topography, maximise the visual impact of the whole site, which imposes itself on anyone who wishes to travel the route through the Whiteadder valley to the south (Figure 8).

The complex sequence of banks, terraces and slopes on the site's northwest flank were fully surveyed and, in the process a new double terraced (TERRACE 4) outwork between the inner and middle circuits was identified (Figure 7). The topographic survey indicates that TERRACE 4 clearly overlies an infilled DITCH 1, which excavation confirmed to run at the base of RAMPART 1 (see Section 9.7).

The topographic survey also identified 20 internal features (Figure 12), 19 of which were sub-circular platform scoops and the final one was a square structure constructed over RAMPART 1 (PLATFORM 17, subsequently referred to as STRUCTURE 17). The dimensions of the platforms are listed in Table 3.

Table 3: Platforms and possible platforms with dimensions identified at White Castle

Platform Number	Maximum (m)	Minimum (m)	Direction from slope
PLATFORM 1	7.70	6.30	Northwest
PLATFORM 2	8.00	7.00	Northeast
PLATFORM 3	4.90	3.70	Northeast
PLATFORM 4	13.20	11.20	Northeast
PLATFORM 5	4.80	3.20	Northeast
PLATFORM 6	5.90	5.60	East
PLATFORM 7	8.40	6.50	Northeast
PLATFORM 8	7.50	6.50	North
PLATFORM 9	7.10	5.80	North
PLATFORM 10	4.50	3.60	Northwest
PLATFORM 11	5.80	5.40	Northwest
PLATFORM 12	6.80	4.80	Northwest
PLATFORM 13	6.90	5.60	West
PLATFORM 14	6.50	6.20	North
PLATFORM 15	11.30	10.20	Northwest
PLATFORM 16	7.90	7.60	West
STRUCTURE 17 (later hut)	7.50	7.00	N/A
PLATFORM 18	9.50	8.20	North
PLATFORM 19	8.50	6.30	Northwest
PLATFORM 20	8.50	7.50	West
Geophysical feature – Possible platforms (see Figure 12, Section 8.3)			
PLATFORM 21	12.20	11.10	Northwest
PLATFORM 22	9.60	7.20	North
PLATFORM 23	8.90	8.10	East
PLATFORM 24	12.20	-	N/A
PLATFORM 25	11.40	-	Northeast
PLATFORM 26	11.00	-	Northeast
PLATFORM 27	9.00	5.80	Northeast

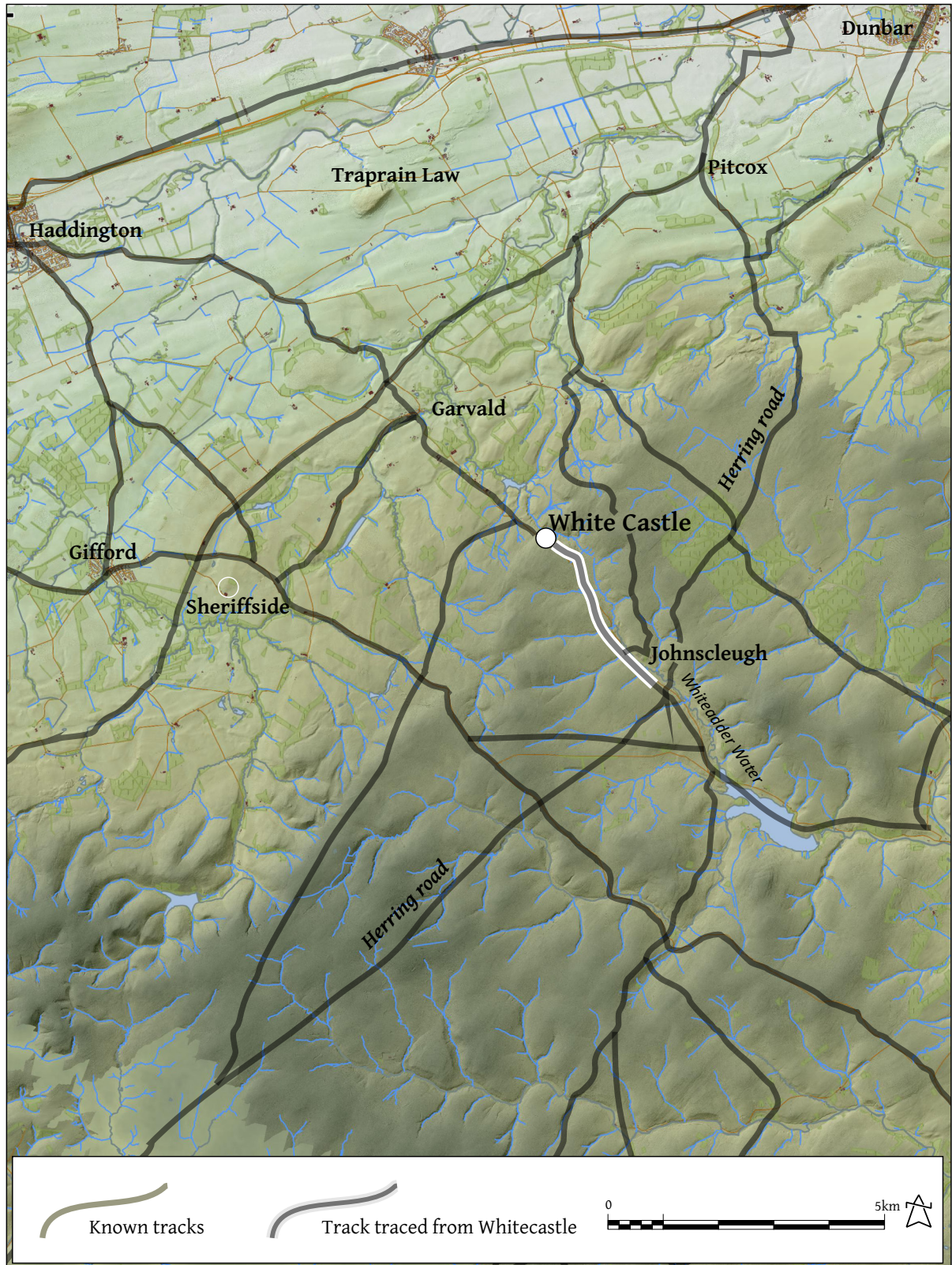
8.2 Topographic Survey–Routeways and Tracks

Survey and excavation revealed the presence of a rutted track (Figure 10 & Figure 30), which formed part of a historic north-south route through the Lammermuirs. This later track was clearly on the line of the route past White Castle and is still visible as a surface feature. It was traced on foot for a further 2 km through the Whiteadder valley to the southeast and previously much further beyond (Graham 1962, 224-6). For a full discussion of the earlier routeways see Section 11.9.

The existing track feature was also investigated in Trench 19 (see Section 9.24), approximately 100m to the southeast of the site. Unfortunately, the present modern road and layby overlie the junction between the causeway and the old route making investigation of this crucial junction impossible (Figure 9).

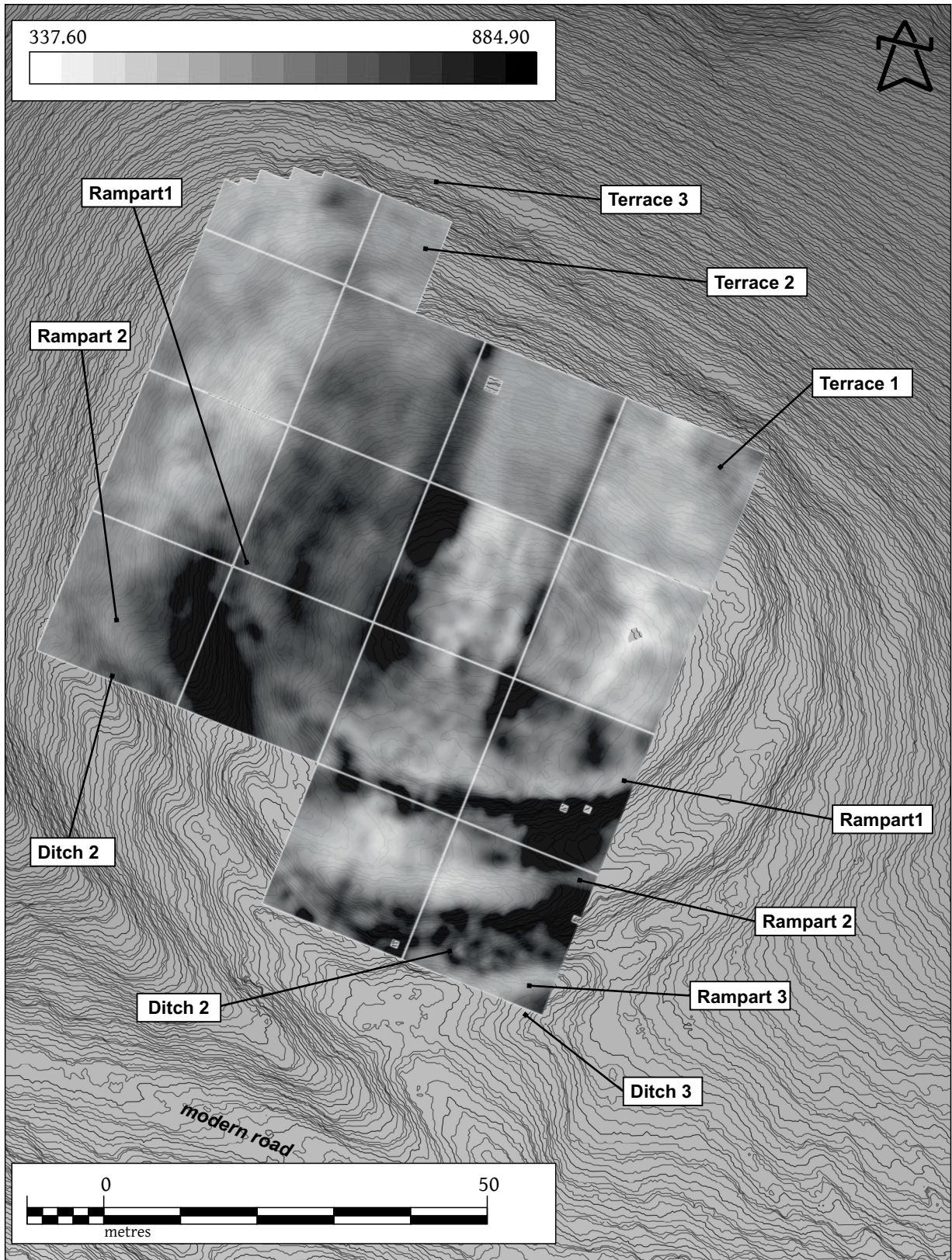


Figure 9: Viewed from the White Castle, the line of older track from south leading to the causeway (right) is easily discernible below the line of the modern tarmac road (© D. Connolly).



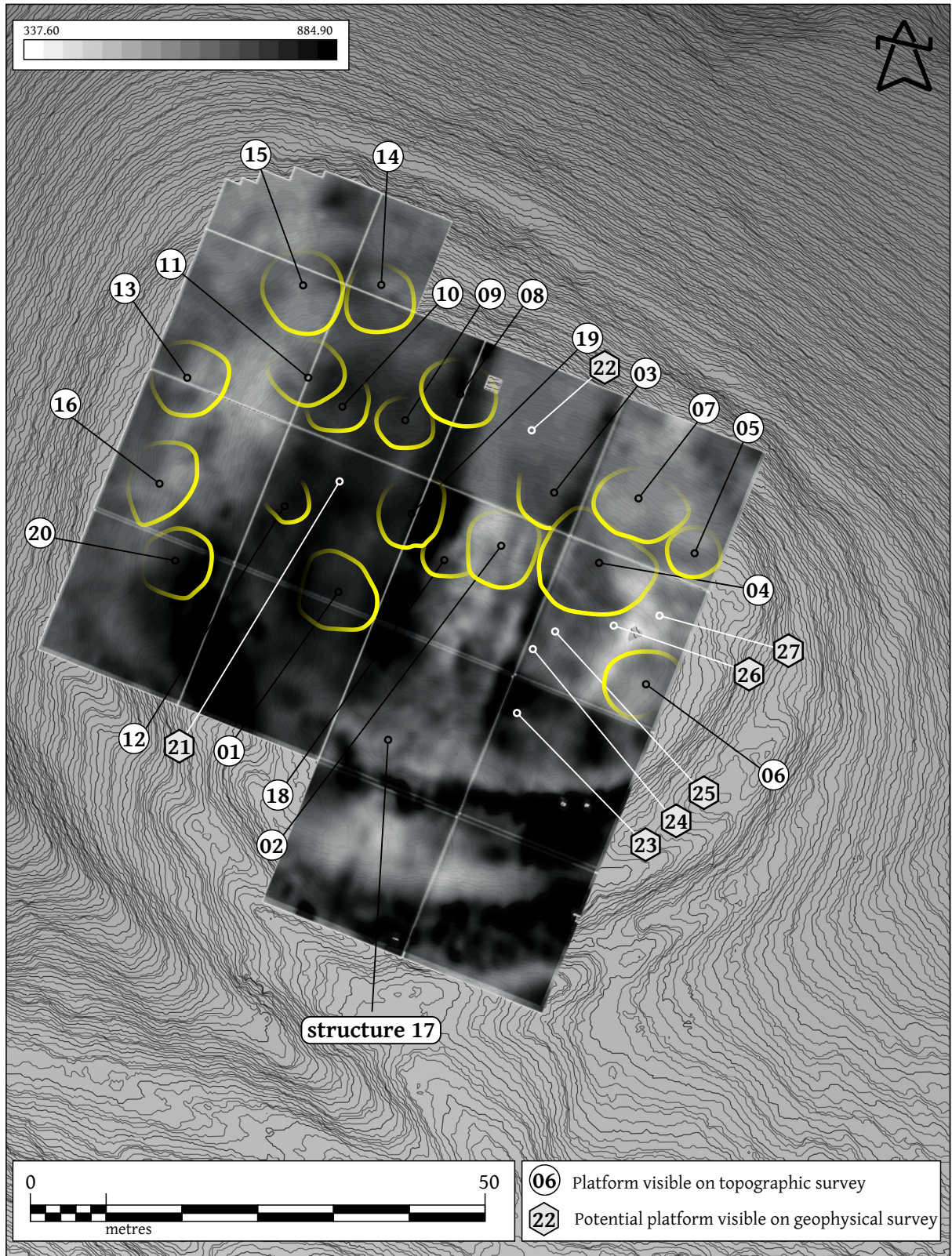
Contains OS data © Crown Copyright [and database right] 2018 and Environment Agency LIDAR Composite December 2019

Figure 10: Known and extrapolated ancient tracks and drove roads adapted from Graham 1959, Figure 2



contours at 20cm intervals

Figure 11: Results of geophysical ground resistance survey with 20m grid squares



contours at 20cm intervals

Figure 12: Geophysical plot with known platforms (yellow) and potential platforms indicated

8.3 Geophysical survey – potential platforms

The interpretation of results from the ground resistance survey, carried out within the Inner and middle enclosure circuits (Figure 11), led to identification of likely locations for seven additional platforms (21-26) without any obvious surface manifestation (Figure 12). This was achieved by analysing the readings from known platforms and comparing these to the results from the rest of the site. The results within the innermost circuit indicate the potential for more intensive contemporary use or a much deeper chronology to the site.

8.4 Assessment of the site management issues



Figure 13: View of the extensive bracken overgrowth covering the site in summer months

8.4.1 Bracken

The assessment of management issues with regards to bracken cover noted that evidence for bracken was found across the entire site, even in those areas where the survey recorded no surface presence (see Cook and Connolly 2014, Figure 3), as also observed elsewhere (e.g. Gerrard 2014, Figure 13). The depth of rhizome penetration was to an extent dependent on the underlying material, however it was most clearly manifested as root mats at a depth of between 0.10 to 0.50m below the surface; best seen in Trenches 10, 12, 30 (Figure 7: White Castle Trench and main features). Similar bracken rhizome penetration, up to a maximum of 0.40m, an associated impact on underlying archaeology has been observed elsewhere in Britain, although the degree of penetration was generally dependent on the underlying deposits (e.g. Crow 2004, 49; Gerrard 2014). In the case of White Castle, stony surfaces seemed to prevent deeper penetration of the rhizome system, although even in less stony areas the depth of the root mat never exceeded 0.50m, as noted in sections overlying the ditches in Trenches 4, 10, 11, 39 and 40. However, it is clear that the site has been subject to long term issues from a variety of sources, causing the homogenisation of certain deposits to a depth of up to 0.50m.



Figure 14: Bracken root mat disturbing underlying deposits

8.4.2 Visitor and animal attrition

The survey and excavations confirmed large-scale topographic scarring and opening of new gaps in banks, which were not part of the original design of the fort. These included OPENINGS 6, 11, 12 and 14, as well as the narrow visitor route (OPENINGS 3, 7 and 13), which has been in existence from at least the nineteenth century (see 2nd Edition OS map 1894; Figure 5; Figure 15).

Cattle and sheep tracks, especially where they crossed upstanding banks, though unsightly, had little overall impact on underlying layers. Some damage was caused by small animals, mainly rabbits and moles, which caused localised disturbances that will likely destabilise the slopes over time.



Figure 15: Visitor track through ramparts to southwest leading to modern carpark

9. Excavation Results

9.1 Pre-enclosure

Four pre-enclosure objects were recovered from the excavations (see Section 5): a Neolithic horseshoe scraper (SF 2011.01), a Bronze Age barbed-and-tanged arrowhead (SF2011.14) and two lithic flakes (SF 2010.02; SF 2012.15). These artefacts indicate earlier phases of activity, however the precise nature of this cannot be closely defined; with the possibility remaining that these could have been brought to the site as aesthetically pleasing objects. Additionally, charcoal indicating pre-enclosure activity was recovered from the cores of RAMPARTS 1 and 2.

9.2 Enclosing works

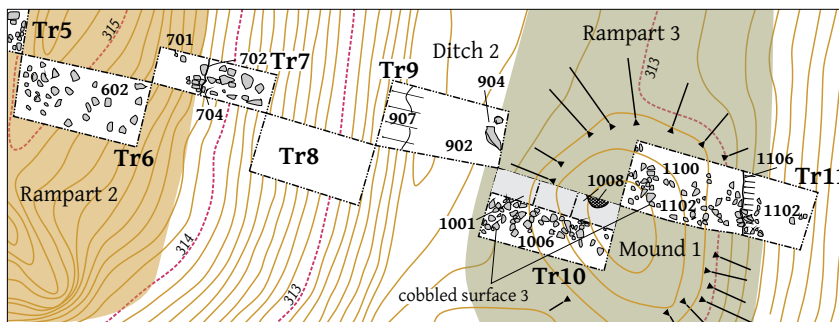
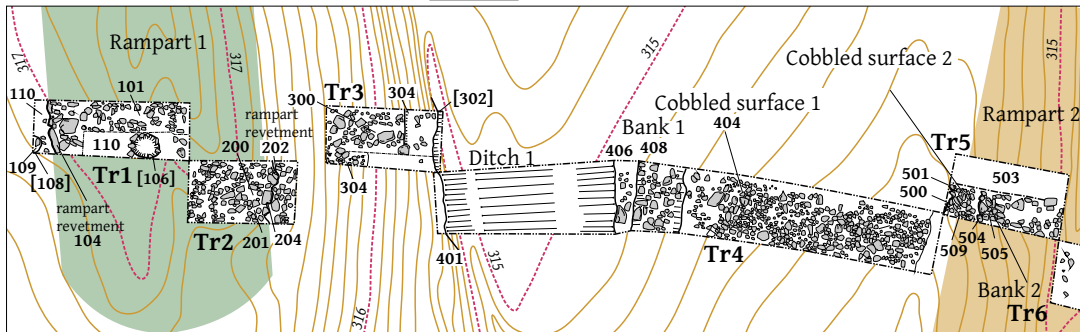
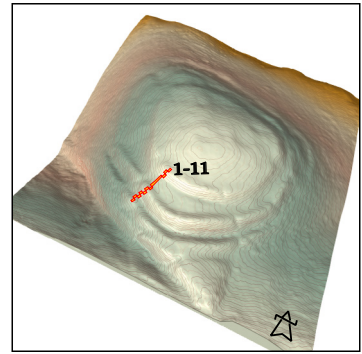
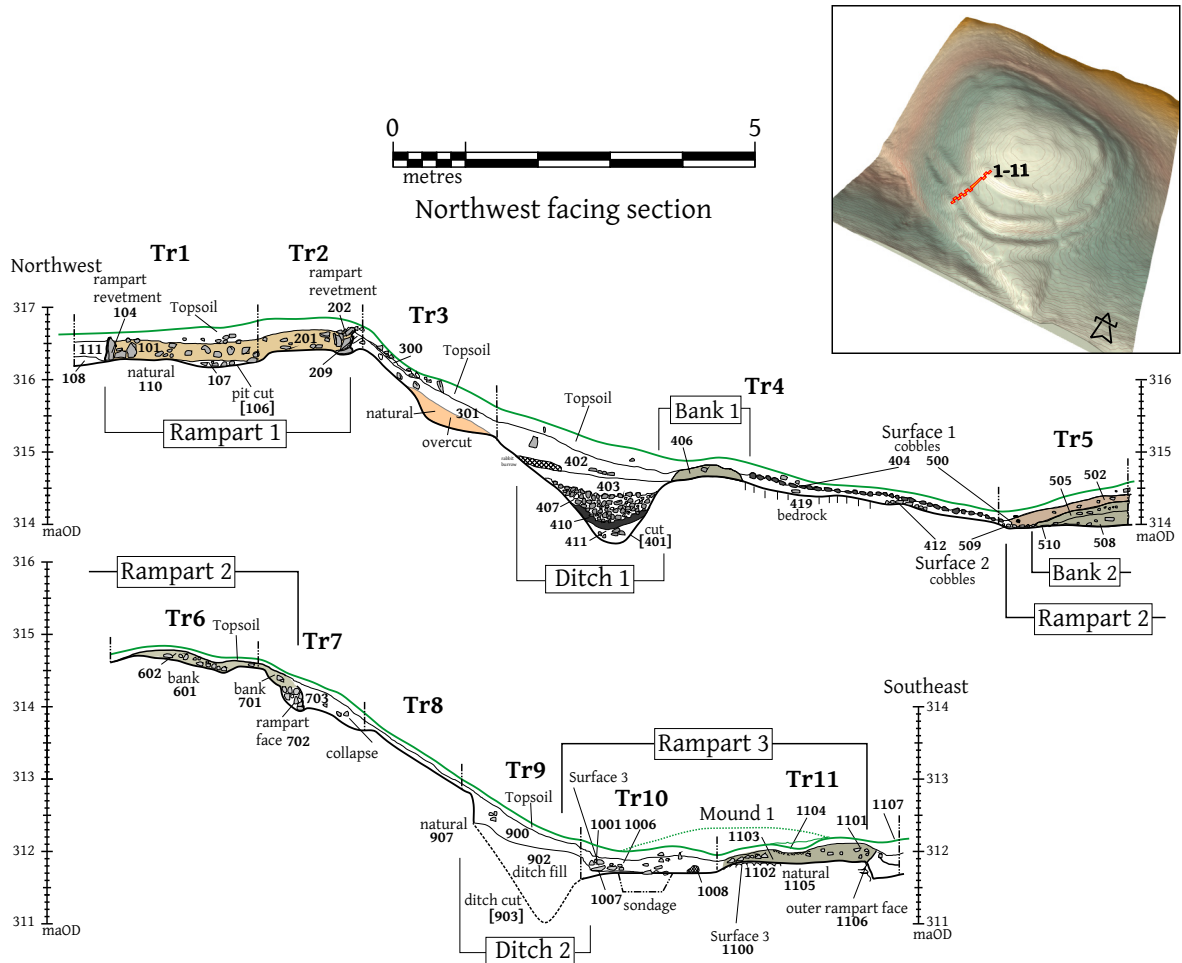
The enclosing works at White Castle comprise three circuits, corresponding to three banks (RAMPARTS 1, 2 and 3), with the inner two associated with ditches (DITCHES 1 and 2). A third short stretch of a ditch (DITCH 3) extends beyond RAMPART 3. All the banks and the two outer ditches survive as visible surface features on the southern, southwest and southeast sectors of the site, with the most impressive sections at the south and southeast. DITCH 1 was completely filled in antiquity and could only be identified in small sections in Trenches 4 and 40. On the northern and northwest sectors of the site, the ramparts are constructed as terraces (TERRACES 1, 2, 3) rather than upstanding banks. The three sets of enclosing ramparts, ditches and terraces are collectively referred to as the Inner, Middle and Outer Circuits. A further terrace (TERRACE 4) was identified between RAMPARTS 1 and 2 on the northwest side of the site (Figure 7).

In total, there are fifteen openings in the enclosing works (Figure 7) and the majority of the gaps through the banks and ditches (OPENINGS 1, 15 and 9; OPENINGS 4 and 5; OPENINGS 3, 7 and 13; OPENINGS 2, 8 and 10) form four sets of apparently aligned entrances. The dimensions of the various OPENINGS are listed in Table 4 and given as both maximum (top of break of slope) and minimum (bottom of break of slope) measurements for consistency (see Section 9.14).

The on-site information panel replicated by Haselgrove (2009a, inside cover) interprets the southwest and southeast openings as formal entrances, omitting the northwest entrance, which was only identified from excavation. It is uncertain if all three sets of the entrances were contemporaneous and, within each set, whether the openings were used as formal gateways, or as simple gaps through the bank.

In RAMPART 3, OPENINGS 10 and 11 sit to either side of a mound (MOUND 1), which presently forms a discreet feature on the line of the rampart. Prior to the excavations, it was not entirely clear which of the two openings represented a later breach caused by visitor or stock erosion (see section 8.4.2) and which was a formal entrance. A further distinctly mounded feature (MOUND 2) is located opposite MOUND 1 and likely represents a southeast terminal end of RAMPART 3, forming one side of OPENINGS 11 (see Section 9.11; Figure 7).

The ramparts and associated ditches are at their most imposing around OPENINGS 2, 8 and 10/11 when viewed from both outside and from within the enclosure works.



contours at 10cm intervals

Figure 16: Trenches 1-11 - northwest facing section and plan

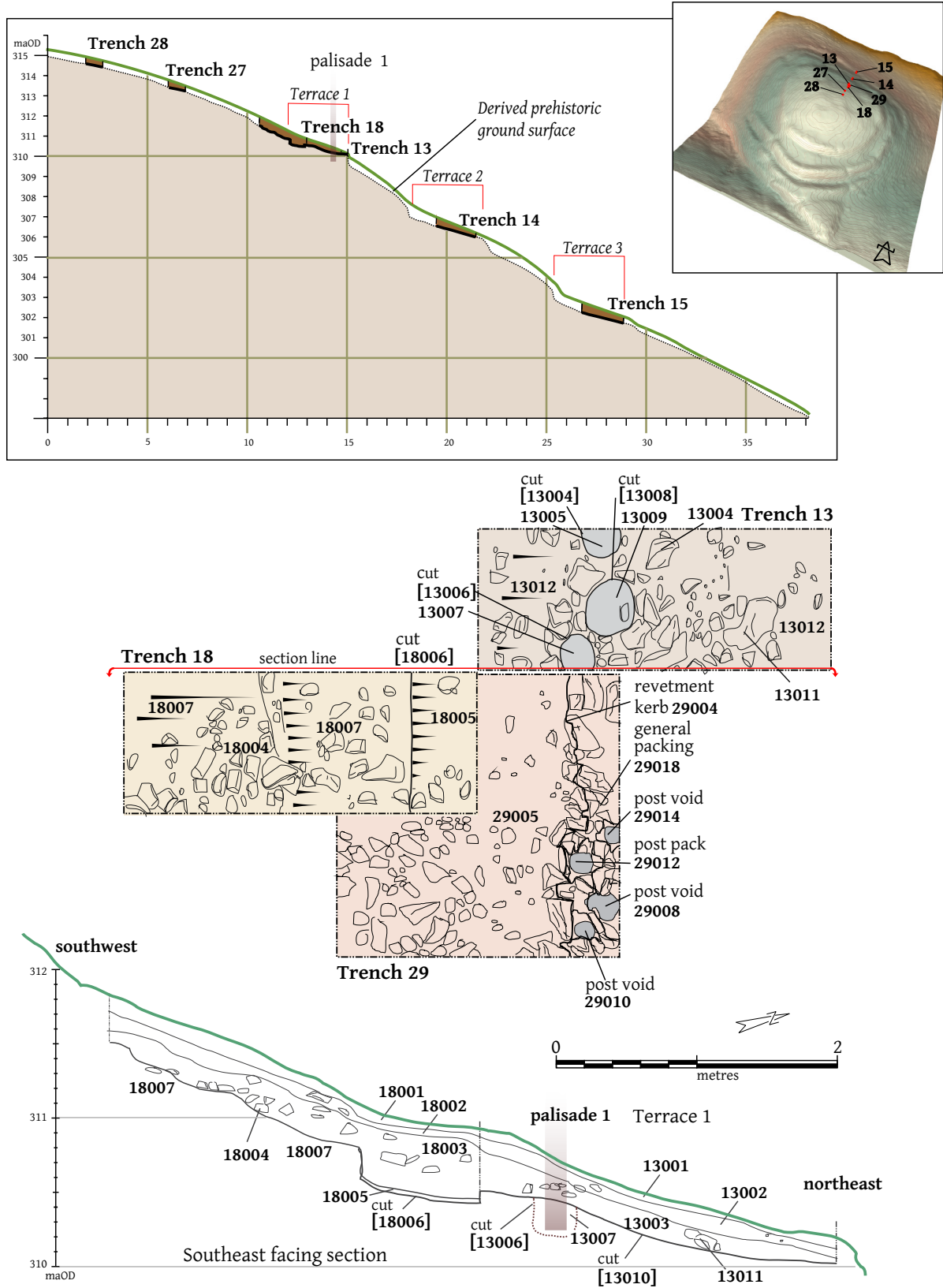


Figure 17: Rear Terraces and line of Palisade

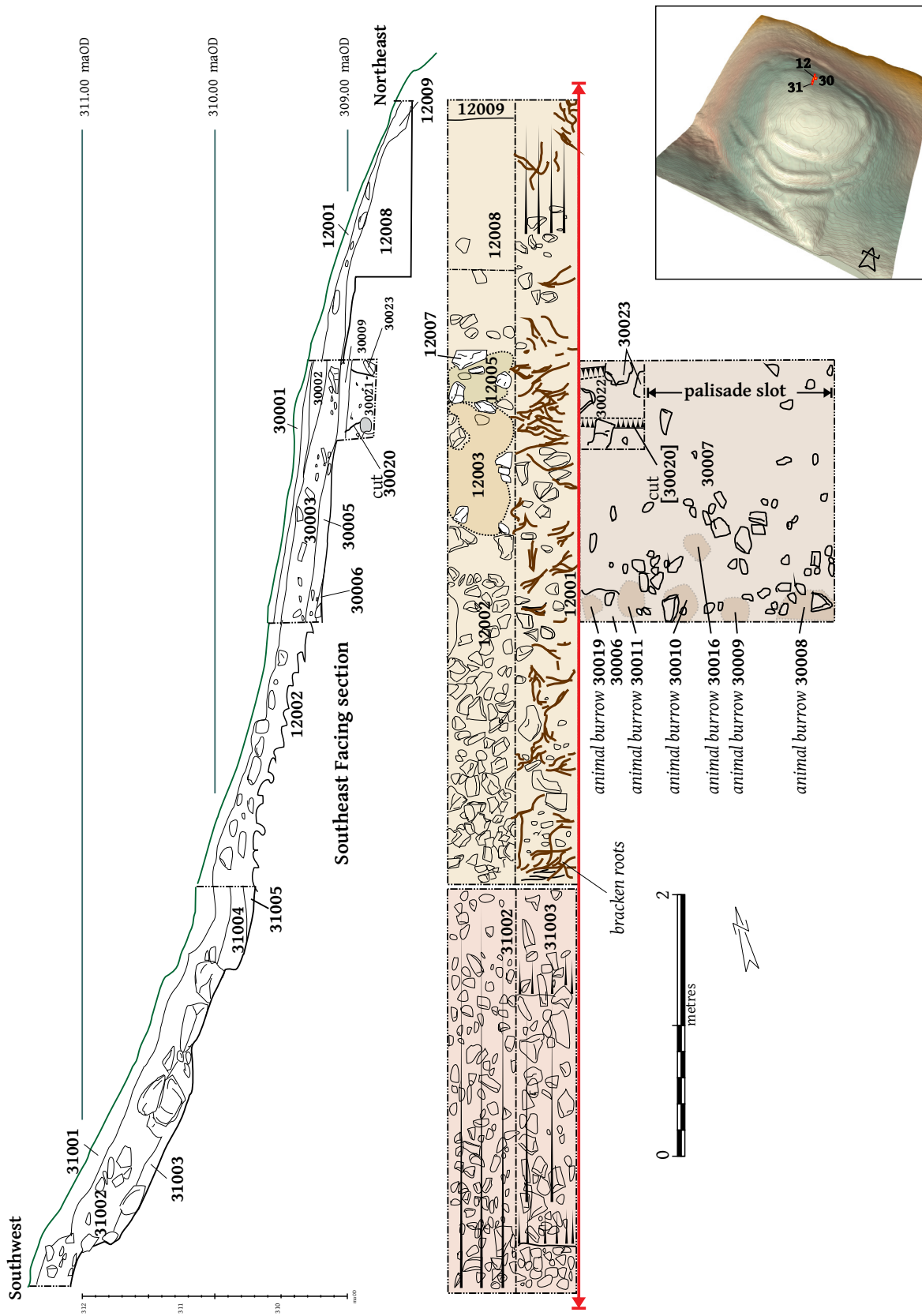


Figure 18: Platform 8 and line of Palisade

9.3 Rampart 1

RAMPART 1 survives as an upstanding feature within the Inner Circuit on the southern half of the site for under 50% of its circuit and is up to 2.6m thick and 0.4m high on its inner face. It runs around the break of slope of a knoll and was cut into by Structure 17. The rampart was characterised by Trenches 1, 2 and 3, and was penetrated by OPENINGS 1, 2, 3 and 4.

Excavation in Trenches 1 and 2 confirmed that the core lay directly under the turf and topsoil and comprised a dump of light red brown soil [102] (5%) and sub-angular stones [100] (95%), lying directly upon the natural subsoil [110]. The bank was 0.34m high and up to 2.6m thick with an inner edge defined by the edge-set stone kerb [104]. Where excavated, the top of RAMPART 1 was flat rather than rounded, indicating that it had either been deliberately levelled or subsequently robbed out. Immediately outside the inner kerb was a buried topsoil [111], approximately 0.28m deep, which contained charcoal and burnt bone. In addition, in the northeast corner of Trench 1 was a cut feature [108] that extended into the trench section and remained unexcavated.

The core of the rampart contained small fragments of burnt bone, a slag-like material, charcoal, a quern rubber and a possible grinding stone (SFs 2010.12 and 2010.01; see Section 5). A date of 2410 ± 30 (SUERC-34287) was recovered from residual alder charcoal from the core of the rampart [201], which when calibrated to two sigma gives a range of 740-390 cal BC, providing a terminus post quem for the rampart. Removal of the rampart core, exposed a small sub-oval cut feature [106], which excavation confirmed as a stone lined pit, 0.70m long by 0.20m wide and up to 0.08m deep, filled with a charcoal rich brown silty soil [107]. The nature and function of this pit is unclear. Beyond the outer edge of RAMPART 1 lay its collapse: a mixture of sub-angular stones [203] and yellow brown soil [204], similar in nature to the in situ rampart core. This material partially infilled DITCH 1 (see below, Section 9.6).

9.4 Terrace 1

Trenches 13, 18 and 29 were located over TERRACE 1, forming the northern half of the Inner enclosing circuit, which was found to be 3.25m wide. Excavation in Trenches 13 and 18 revealed the construction cut [13010] and [18006], which was not recorded in Trench 29 although it was not excavated down to the same level. The terrace appeared to have been cut into the side of the hill to create the appearance of a rampart when viewed from outside. A slight revetment and cut was observed in the northeast end of Trench 18 as a vertical edge 0.30m in depth (Figure 17). [18004] and [18005], which stepped back up Trench 18 to the southwest, were both covered by a dark brown material [18003] with frequent flecks of charcoal and burnt bone. Residual blackthorn/cherry charcoal from [18003] was dated to 2155 ± 30 BP (SUERC-37128), which when calibrated to two sigma gives a date of 358-94 cal BC. Moreover, to the northwest it was cut by PLATFORM 8 (Figure 18), which also truncated PALISADE 1 (see Section 9.5) and that appears to have had multiple phases of revetments, this was investigated by Trenches 12, 30 and 31.

9.5 Palisade 1

Trenches 13 and 29 were located on the northeast of the Inner Circuit and exposed a series of postholes (Figure 19), interpreted as a palisade (PALISADE 1), which is assumed to be a continuation of the line of RAMPART 1. Trench 29 was 'L' shaped, measuring 2m by 2m, and was designed to abut Trenches 13 and 18, excavated in 2011, to expand upon the nature of it. In Trenches 13 and 29 the topsoil [29001] was between 0.05m and 0.10m thick and lay directly over a thin compact grey layer [29002], which was between 0.01m and 0.07m thick, and that appeared to form a thin interface between the topsoil and the underlining deposits. Immediately under [29002] lay a charcoal rich dark soil [29003], varying in thickness from 0.02m to 0.07m, with numerous large and small rounded and sub-rounded stones,

including a possible stone smoother (SF 2012.10) and a faceted cobble (SF 2012.09). The deposit [29003] appears to have derived from soil movement from higher up the slope. Immediately under [29003] lay a black organic rich soil [29005] but it is not clear if this material represents the remains of a degraded bank or an accumulation of midden material.

Cut into [29005] was a linear slot [29019] (PALISADE 1), between 0.3 to 0.4m wide and 0.2 to 0.3m deep, which also cut into the underlying natural subsoil [29020]. Upslope from this palisade slot [29019] (not originally identified in Trench 13) was a revetment feature [29004], same as [13014] in Trench 13, within which packing stones [29018] surrounded the post-voids ([29014], [29008], [29010] and [29012]). A further three post-voids ([13004], [13006] and [13008]) were uncovered on a similar alignment within Trench 13. The fill of the palisade slot [29019] and the associated post-voids ([29008], [29010], [29012], [29014], [13004], [13006] and [13008]) appeared identical and comprised a compacted medium brown silty soil ([13005], [13007], [13009], [29006], [29009], [29011], [29013], [29018] and [29015]). The individual diameters of each post within the palisade varied between 0.09m to 0.12m. Residual hazel charcoal recovered from the fill [13009] of the post-void [13008] was dated to 2295 ± 30 BP (SUERC-37127), which when calibrated to two sigma gives a date of 406-231 cal BC.

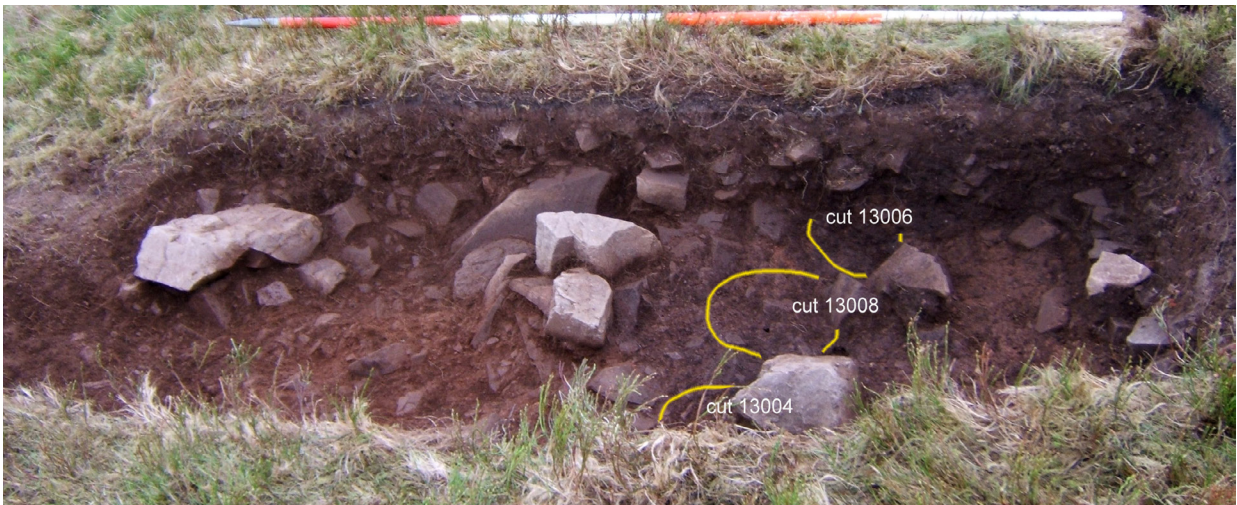


Figure 19: Trench 13, showing set of three postholes representing a palisade (PALISADE 1)

Immediately upslope from PALISADE 1, were possible slope revetments [18004; 18006], which step up the trench to the southwest and are overlain by a dark brown clay silt [18003]=[13003] containing frequent flecks of charcoal and burnt bone, which are unlikely to be in situ and more likely resulted from the hill wash of midden material downslope. Blackthorn/cherry charcoal from this material [18003] was dated to 2155 ± 30 BP (SUERC-37128), which when calibrated to two sigma gives a date of 358-94 cal BC. Deposit [18003] was overlain by deposit [18002], comprising a stone rich mid brown clay silt, from which a Neolithic horseshoe scraper (SF 2011.01) was recovered.

Trenches 12 and 30 were excavated to explore the nature of PLATFORM 8 and its relationship to PALISADE 1, although only Trench 30 was excavated deep enough to confirm the presence of the palisade (Figure 18). Excavation in Trench 30 revealed that construction of PLATFORM 8 lay over the cut for the palisade [30020] and therefore represents a later feature. The cut (i.e. cut [30020]) is assumed to be the continuation of the linear cut and post-voids identified in Trenches 29 ([29019], [29008], [29010], [29012], [29014]) and 13 ([13004], [13006], [13008]). The stone-lined palisade slot [30020] was found to be 0.3m to 0.4m wide by at least 0.14m deep and was cut into the underlying natural subsoil [30022]. The cut [30020] was filled by several sub-angular and angular packing stones [30023], measuring on average 0.25m by 0.2m by 0.15m, and a deposit of a light brown silty clay [30021].

Hazel charcoal from the upper deposit [12002] of PLATFORM 8, was dated to 2395 ± 30 BP (SUERC-37129), which when calibrated to two sigma gives a date of 730-396 cal BC. A second sample from the upper deposit [30004] of PLATFORM 8 in Trench 30 was dated to 2391 ± 29 (SUERC-44055), which when calibrated to two sigma gives a date of 726-395 cal BC. Although the dates of the material overlying the PALISADE 1 feature in Trench 30 are earlier than the dates from the palisade in Trench 13, it is clear that the material represents a midden deposit resulting from the slopewash from earlier platforms upslope.

9.6 Ditch 1

DITCH 1 is most visible as a slight linear depression at the base of the southern section of the Inner Circuit. Trenches 4 and 40 both explored DITCH 1, however the ditch would not be required where terracing was used for the circuit to the north and north-east, therefore its full extent remains unknown.

Trench 4 (Figure 16) was located at the base of RAMPART 1 and extended south towards RAMPART 2. At the northeast end of Trench 4, an accumulation of orange brown, fine silty soil [402], up to 0.42m thick, was assumed to derive from the collapse/slump of RAMPART 1. This deposit represented the upper fill, which suggests the ditch was already partially filled when this occurred. DITCH 1 [401] was V-shaped with a flat base and up to 2.30m wide by 1.40m deep. The ditch was cut into the natural slope of the hill and appeared steeper on its counter scarp

Outside DITCH 1 lay a low bank of material [408], exposed in Trench 4, measuring 1m wide by 0.20m high. The bank consisted of compacted pale beige sandy silt with a frequent small angular stone component and was associated with both the metaled/cobbled surfaces [404 & 412] and DITCH 1. The function of this small 'bank' is unclear; it may have resulted from cleaning erosional material out of the ditch or represents a deliberate construction associated with the ditch.

DITCH 1 [401] contained four distinct lower fills (from top): [403]; [407]; [410] and [411]. [403] consisted of 90% medium dark orange brown silty clay, up to 0.2m thick, and probably represents the soil matrix of the core of the RAMPART 1. [403] also contained a possible stone smoother (SF 2010.24). The fill [407] underlay [403] and consisted of angular stone rubble, up to 0.43m thick, derived from the collapsed/slighted outer face and core of RAMPART 1. Below [407] lay a charcoal rich fill [410], approximately 0.08m thick, which is assumed to be associated with the destruction of RAMPART 1 by fire. Alder charcoal from [410] was dated to 2290 ± 30 BP (SUERC-34289), which when calibrated to two sigma gives a date of 410-210 cal BC; this date is potentially contemporary with other elements of the Inner Circuit such as PALISADE 1 (see Section 9.5). The fill [407] lay over a medium to light orange sandy silt fill [411], 0.25m thick, representing the primary fill of DITCH 1 and deriving from the initial stabilisation of its sides.

Although Trench 40 (Figure 27) was primarily excavated to characterise PLATFORM 20 it also exposed a section of DITCH 1, which was cut/overlain by it. At the eastern and upslope end of the platform, a layer of angular stones [40009] was uncovered, which represents collapse from the slope above after the DITCH 1 was filled with rubble (Figure 20).

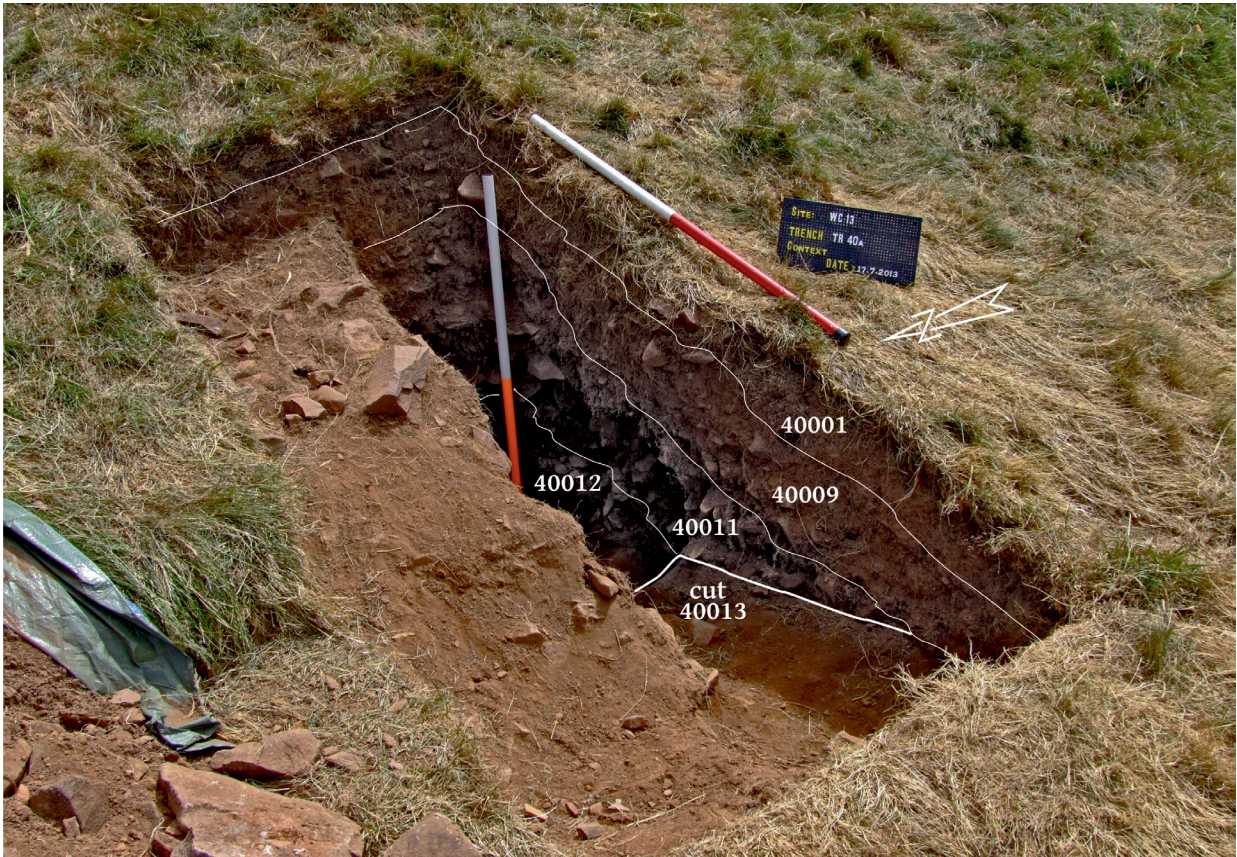


Figure 20: Easternmost segment of Trench 40 to southeast, showing Ditch 1 cut [40013] and rubble fills [40011] & [40012]

The ditch cut [40013] is assumed to be a continuation of DITCH 1 [401] to the southwest and was excavated to a depth of at least 1.20m though the full depth was not ascertained due to safety requirements (Figure 27; Figure 20). The two uppermost excavated fills of the cut [40011/40012], assumed to represent collapse from RAMPART 1 above, both consisted of large angular stone blocks, which were marginally larger in deposit [40012], probably corresponding to the collapse of larger stones of the rampart's outer revetment face.

The western end of Trench 40 uncovered the edge of TERRACE 4 (see below, section 9.7).

9.7 Terrace 4

Between the Inner and Middle Circuits on the west side of the site, lies TERRACE 4 rising to a height of up to 1.10m (Figure 7). The terrace is often obscured as a surface feature by dense bracken cover. The southern section is 35m long (north-south) and the northern section is 14.50m long (north-south).

TERRACE 4 includes one gap, OPENING 15, which is 8.30/3.50m wide (max/min) and which represents an eroded track of uncertain date between RAMPARTS 1 and 2. OPENING 15 is located between PLATFORMS 13 and 15, the edges of which are contiguous with TERRACE 4, although their stratigraphic relationship with it is unclear.

The topographic survey indicates that the construction of this terrace overlies an infilled DITCH 1, also noted in the excavation of Trench 40 as a cut feature [40013].

It was partially excavated in Trench 40, revealing a terrace edge, 1.10m high, sloping down to the west with a line of stones [40002] forming the informal limit of the terrace. The terrace edge also formed the boundary of PLATFORM 20, though the relationship between the two could not be determined.

9.8 Rampart 2

RAMPART 2 forms part of the Middle Circuit on the southern and southeast section of the site and survives as an upstanding feature for less than 50% of the overall circuit (Figure 7). Where excavated, it runs around a break of slope of the knoll and is at its largest immediately to either side of OPENING 8, being up to 2.60m wide by a maximum of 0.90m high internally. The rampart is pierced by six openings: OPENINGS 5, 6, 7, 8, 9 and 14, with OPENINGS 6, 7 and 14 assumed to be caused by visitor and stock erosion. The rampart bank was characterized in Trenches 5, 6, 7 and partially in Trench 9 on the southwest.

In Trench 5, the 0.26m thick upper layer of RAMPART 2 consisted of a reddish-brown silty clay with sub-angular stones [502] and was 0.26m thick. The stones [502] were concentrated towards the surface of RAMPART 2, suggesting that it may have had a stone capping. Under [502] was the core of RAMPART 2 comprising a darker reddish-brown silty clay horizon [505] and beneath this a dump of angular stones and pale brown silty clay [508]. Above [508] was a darker reddish-brown silty clay horizon [505], probably representing a stabilisation event. Directly underneath [508], i.e. under RAMPART 2, lay a coarse stone 'footing' [510], which extended at least 0.80m towards the centre of the bank, and which was only identified in Trench 5. While this feature was not completely excavated, it was at least 1.3m wide by up to 0.4m deep and lay at the edge of the natural slope.

Residual alder charcoal from the interface between stony deposit [508] and footing [510] was dated to 2460 ± 30 BP (SUERC-34288), which when calibrated to two sigma gives a range of 760-410 cal BC, meaning RAMPART 2 was constructed after this date.



Figure 21: Trench 7, external face of Rampart 2 to east, showing the heavily bioturbated stones [704] representing the line of the bank revetment.

alder charcoal recovered from this deposit [900], was dated to 2415 ± 30 BP (SUERC-34286), which when calibrated to two sigma gives a range of 750-390 cal BC, giving a somewhat broad terminus post quem for RAMPART 2.

Trench 6 was not bottomed and only exposed the upper layers of the rampart [601]. This consisted of compact silty clay with frequent small angular stones that continued into Trench 7 as context [701].

The external face of RAMPART 2 (Figure 6) was identified in Trench 7 and consisted of the surviving small stones [704] of what must have been a larger stone revetment – remains of which are found at the base of the slope.

Trench 9 exposed erosional material from this bank [900], which overlay the upper fills of DITCH 2. Deposit [900] comprised a stone rich, light brown silty clay layer, up to 0.40m thick, representing a collapse/erosion of the bank material of RAMPART 2. An isolated piece of

9.9 Terrace 2

Trench 14 examined the character of RAMPART 2 on the north portion of the Middle Circuit and confirmed that it continues as a cut terrace (TERRACE 2 [14003]), up to 2.0m wide, at this location. The cut of TERRACE 2 [14003] was overlain by a deposit of a slope wash [14002], comprising mid reddish-brown silty clay, up to 0.27m thick, with its make-up very similar to the underlying natural subsoil [14004]. No cut features or revetments were recorded in this trench and therefore the presence of a palisade, as identified on TERRACE 1 (Section 9.4) was not confirmed on TERRACE 2. Nevertheless, this does not preclude its existence.

9.10 Ditch 2

DITCH 2 survives as a visible feature on the southwest, south and southeast portions of the site, for less than 50% of the Middle Circuit. It is situated between RAMPARTS 2 and 3 and is at least 3.0m wide by 1.8m deep. The ditch appears to have been V-shaped and is at its most impressive to the immediate northwest of OPENINGS 8 and 10 due to the increased size of the bank on either side. Trenches 9, 10 and 39 all explored DITCH 2, although none fully bottomed it. It is also possible that it may have been created or impacted by quarrying for the construction of RAMPART 3 (Figure 16; Figure 23).

Trench 9 was located between the base of the natural slope below RAMPART 2 and the inner edge of RAMPART 3. The trench only revealed the edge of the cut of DITCH 2 [901] at its extreme southwest end but was more fully explored in Trench 39 (see below). The uppermost fill [902] was exposed to a depth of 0.10m and consisted of silty clay with traces of charcoal. Overlying DITCH 2 and its uppermost fill [902] was a stone rich layer [900] consisting of light brown silty clay, up to 0.40m thick. This layer [900] represents collapse from RAMPART 2 over an already partially backfilled ditch (Section 9.8).

Within the upper fill [902] revealed in Trench 9 were two edge set stones [904] perpendicular to each other, which were interpreted by one of the authors as a possible cist feature (see Section 11.3). This consisted of a cut [903], an outer fill [905], two edge set slabs [904] and an inner fill [906]. However, this interpretation remains mere supposition, as the feature was not excavated, it could equally represent some form of kerb remains to MOUND 1 or even tumbled revetment from RAMPART 2 (see Section 9.11) and it is not possible to comment further.

Alder charcoal from deposit [900] was dated to 2415 ± 30 BP (SUERC-34286), which when calibrated to two sigma gives a range of 750-390 cal BC, implying that DITCH 2 was constructed prior to this date. However, as was argued above (Section 9.8), this material might be a result from the erosion of RAMPART 2's core and thus pre-dates its construction.

Trench 10 was located immediately to the southwest of Trench 9 across DITCH 2. Although the ditch itself was not explored to any depth and only the uppermost fill [1004], consisting of red brown silty clay with traces of charcoal was exposed, this had the same character as deposit [902] in Trench 9.

DITCH 2 was more extensively excavated in Trench 39, (Figure 23). Its upper fills comprised slumped material from both RAMPART 2 [39002]; [39006=39009]; [39014]; [39016=39024]; [39018] and RAMPART 3 [39008]; [39011=39015]; [39020]; [39021=39023]. These predominantly consisted of various shades of orange brown silty clays with frequent angular stones and clearly represent a series of erosional/collapsed material from the banks of RAMPART 2 and RAMPART 3.

The lower fills of DITCH 2, [39007] and [39028], were predominantly stone rich and formed by large angular stones with frequent voids in between and their derivation is less clear. Specifically fill [39007] appeared to derive from neither RAMPART 2 or RAMPART 3 but from the causeway between OPENINGS 8 and 10. The lowest fill [39028] seems to represent a single rapid phase of infilling, which may either be the

initial collapse of any revetment facing to RAMPART 2 or perhaps a deliberate infilling of DITCH 2.

Additionally, a thin charcoal lens [39017], possibly representing a tip line, was recorded above fill [39028]. [39017] is assumed to represent internal occupation material– post-dating the deposition of [39028] and pre-dating the overall infilling of the ditch from the erosion of RAMPARTS 2 and 3. The location of the tip layer lies near the southeast entrance (OPENING 8) of the enclosure immediately outside RAMPART 2 and so may extend from material deposited from the causeway.

A piece of alder charcoal from [39017] gave a radiocarbon date of 2369 ± 28 BP (SUERC-51469), which when calibrated to two sigma provides a date of 536-391 cal BC. This range now indicates that DITCH 2 was constructed prior to this date and, by proxy, RAMPART 2 can be also dated to the same period of construction, assuming its construction was contemporary with that of DITCH 2. It is clear from the stratigraphic record that all deflated material from RAMPART 3 sits over an already infilled ditch (DITCH 2) and the cut of DITCH 2 is underneath RAMPART 3. This suggests that DITCH 2 was no longer maintained when RAMPART 3 was constructed, although it will still have represented a visible physical barrier (Figure 7).

9.11 Rampart 3

RAMPART 3 survives as an upstanding feature on the southwest, south and southeast portions of the site, for less than 40% of the Outer Circuit. RAMPART 3 is up to 4m wide and 1m high (above current ground level within the interior) and is at its most impressive to either side of OPENING 10. To the east of OPENING 10 is OPENING 11, which marks the extent of a discrete mound (MOUND 1) and another gap 20m further east represents OPENING 12. The potential exists for OPENING 10 to be either a later breach or a formal opening to line up with OPENINGS 2 and 8 and this is examined in more detail in Sections 9.16 and 11.3. The final gap, OPENING 13, breaches RAMPART 3 on its southeast side. The southwest portion of RAMPART 3 was explored by Trenches 10, 11, 39, and 42 and its northeast segment by Trench 15.

Trenches 10, 11 and 39 all confirmed that the core of RAMPART 3 comprised a hard-packed material, consisting of predominantly reddish-brown gravelly silty clays [1005], [1101] and [39023]. The core was built either directly on the natural subsoil [39025] or on a clay footing [39022], as revealed in Trench 39. Overlying the core of RAMPART 3 was collapsed rampart material [39011], comprising mid reddish-brown silty clay with frequent gravel inclusions. The external face of RAMPART 3 in Trench 11 may have been revetted by a stone kerb, however all that remains is an accumulation of small angular stones [1106], surviving to a height of some 0.22m

It is clear from the stratigraphic record that all deflated material from RAMPART 3 sits over an already infilled ditch (DITCH 2) and the cut of DITCH 2 is underneath the construction of RAMPART 3. This suggests that DITCH 2 was no longer maintained and indeed had been deliberately infilled when RAMPART 3 was constructed. However, the space between RAMPART 3 and RAMPART 2 still represented a visible physical barrier (Figure 23).

Trenches 10 and 11 uncovered evidence of a disturbed cobbled surface [1100], which underlay RAMPART 3/ MOUND 1. A quern rubber (SF 2010.25) and three smoothed stones with striations (SFs 201.26, 27 and 29) were recovered from the cobbled surface [1100].

The southeast edge of MOUND 1, as exposed by Trench 42, was bounded by five postholes associated with concentrations of packing stones [42009-42018]. This, together with the cobbling [1100] exposed in Trench 11 on the southwest side, is argued to indicate that MOUND 1 forms a discrete feature representing the terminal end of RAMPART 3 at a formal entrance (OPENING 11) matched by a similar ‘mound’ to the southeast on the other side of the formal entrance.

Excavation within Trench 42 (Figure 22) confirmed that MOUND 1 was constructed from a similar sequence of compacted and redeposited gravels as exposed in Trench 39. The presence of a single sherd of abraded prehistoric hand thrown pottery (SF 42004 04; the only pottery recovered from the site) implies that some anthropic material may have been included in the mound.

Explicitly, the sequence consists of cobbled surface [1100], over which RAMPART 3, including MOUND 1, was constructed. Additionally, if OPENING 11 represents a formal entrance, flanked by terminal ends in RAMPART 3 (MOUND 1 and MOUND 2), it is reasonable to suppose that a similar sequence can be extended to MOUND 2, although this remains supposition as the feature was not excavated. However, it does tend to suggest that as terminal ends are present on either side of OPENING 11 that the other opening - OPENING 10 - is a later breach by livestock.

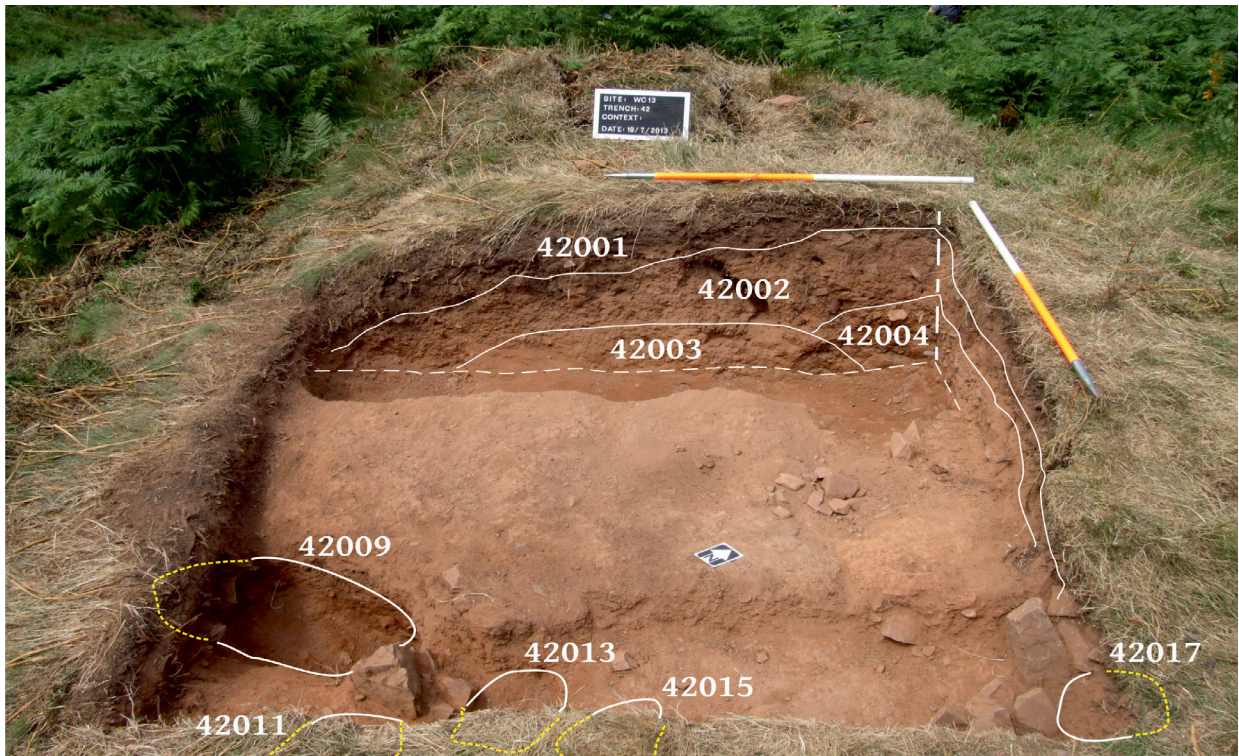


Figure 22: Trench 42 showing the mound material and unexcavated postholes around its southeast edge

9.12 Terrace 3

The north and northwest sections of the Outer Circuit were formed by TERRACE 3 (Figure 7), extending from the north to the southeast and investigated in Trench 15, located to the northeast.

Trench 15 confirmed the general character of TERRACE 3 [15003], revealing it was cut into a natural slope and approximately 2.40m wide. No other features or revetment were recorded in this trench, in contrast to TERRACE 1 (see above) and therefore the presence of a palisade, as identified in TERRACE 1, was not confirmed in TERRACE 3. However, as suggested in relation to TERRACE 2, where the presence of palisade was equally unverified, this does not preclude its existence.

9.13 Ditch 3

DITCH 3 was located to the south of the enclosure, effectively separating the natural causeway that leads to the knoll on which White Castle sits (Figure 7).

The ditch was approximately 50m long and up to 4.60m wide with a possible causeway at its centre. It slopes down prominently to the east and west following the natural contours of the knoll. Excavation within Trench 17, positioned across DITCH 3, revealed a flat based shallow linear cut [17005], 1.7m wide at the base but only a maximum of 0.60m deep, filled with homogenous orange-brown silty clay [17006]. A single possible stone smoother was recovered from the fill of DITCH 3 (SF 2011.02).

9.14 Inner Circuit Openings 1, 2, 3 and 4

As noted above, there are four openings in the Inner Circuit: OPENINGS 1, 2, 3 and 4 (Table 4). Excavations to confirm the nature of the openings were undertaken at OPENING 1 (Trench 33) and OPENING 4 (Trench 35). The nature of OPENING 2, which was surveyed as a gap in RAMPART 1, was interpreted from proxy data in Trenches 20 and 21, which exposed a metaled surface leading up to OPENING 2.

Trench 33 examined a possible southern ‘terminal’ of RAMPART 1 at OPENING 1, which was 6.20/2.50m wide (max/min). Under the bracken rhizome mat and topsoil [33001], the core of RAMPART 1 comprised a mid-brown gravelly soil [33002] up to 0.4m thick. Slumped material, [33012] and [33013], derived from RAMPART 1 overlay the fill [33011] of a post slot [33004], which ran perpendicular to the line of RAMPART 1 at OPENING 1. This feature [33004] appears to have formed an element of a gateway structure and was associated with three post voids [33008-33010] two of which, [33008] and [33009], were surrounded by angular packing stones [33014]. This evidence demonstrates OPENING 1 was a formal entrance rather than a subsequent breach. Alder charcoal from post-void [33008] gave a date of 2355 ± 30 BP (SUERC-51471), which when calibrated to two sigma gives a range of 516-379 cal BC. This date is statistically indistinguishable from dates recovered from DITCH 1: 405-353 cal BC SUERC-34289) and PALISADE 1 (406-354 cal BC SUERC-37127).

Although OPENING 2, 8.40/3.90m wide (max/min), was not excavated, the area immediately to its south and southwest was subjected to an extensive trenching (Trenches 04, 20, 21, 22, 23, 25 and 26). These trenches identified a cobbled surface extending for c. 7m to the southeast of OPENING 2. Trench 4 exposed the largest area of this surface [404], up to 0.1m thick, comprising densely packed angular to sub-angular stones, which lay either directly on bedrock or the earlier cobbled surface [412]. It is assumed that the presence of this surface implies that OPENING 2 was a formal entrance, contemporary with the surface, rather than a subsequent breach. In Trenches 20 and 21 the same surface comprised a stone causeway, [20003] and [21003], over the line of DITCH 1, gently rising from OPENING 8 situated lower down within the Middle Circuit (i.e. the causeway was located between OPENING 8 and OPENING 2).

OPENING 3, which appears on the 1894 OS map (Figure 5), was not investigated but as it forms a narrow and very deep gap, c. 1.38/0.90m wide (max/min), it is assumed to have been caused by visitor access. OPENING 3 is aligned with OPENING 7 and OPENING 13 (see also Section 9.15 and 9.16), all likely derived from repeated visits by tourists walking from the road in a straight line to the centre of the site.

Trench 35 examined OPENING 4 at its northern terminal, which is 6.50/2.80m wide (max/min). The topsoil [35001] comprised a bracken rich mid-brown organic clayey silt, which overlay a stony bank [35003] representing RAMPART 1. This material was abutted by up to 0.14m of a thick mixed deposit of looser dark organic clayey silt and stones [35002], which represent collapse from [35003]. [35002] overlay the underlying natural subsoil [35007], comprising an orange-red gravel, and the upper fill [35005] of a large posthole [35004]. The posthole [35004], which was heavily bioturbated by a large animal burrow, measured 0.4m in diameter and was 0.5m deep, with vertical sides and a flat base. Its upper fill [35005]

comprised a disturbed mid-brown silty soil, which overlay the lower fill [35006], consisting of a mid-brownish grey clayey silt with numerous charcoal flecks inclusions. Residual alder charcoal from the lower fill of posthole [35004] was dated to 2193 ± 29 BP (SUERC-44059), which when calibrated to two sigma gives a range of 366-179 cal BC.

Also uncovered within the upper [35005] and the lower fill [35006] of the posthole [35004] were a number of packing stones [35008], comprising sub-angular stones measuring 0.1m by 0.2m by 0.15m on average. As [35004] cut both the underlying natural [35007] and RAMPART 1 material [35003], it could represent a post of a gateway structure, which has been inserted through the upstanding bank [35003], and which has been subsequently truncated and eroded through stock movement. This would mean that OPENING 4 can be interpreted as a formal entrance and potentially represents a refurbishment event of a later gateway (certainly the discrepancies in the radiocarbon dating between this feature and the other elements of the Inner Circuit indicate that the posthole was later in the sequence).

Table 4: Width of the White Castle openings, based on maximum and minimum gap measurements taken from upper limit and base of each opening

Opening	Maximum (m)	Minimum (m)	Direction of Opening to
OPENING 1	6.20	2.50	Northwest
OPENING 2	8.40	3.90	Southwest
OPENING 3	1.38	0.90	South-southeast
OPENING 4	6.50	2.80	West
OPENING 5	7.80	3.50	West
OPENING 6	3.90	1.20	Southeast
OPENING 7	3.50	1.10	South-southeast
OPENING 8	10.20	3.80	Southwest
OPENING 9	6.40	2.50	Northwest
OPENING 10	12.40	4.30	Southwest
OPENING 11	4.50	1.80	South-southwest
OPENING 12	2.00	0.80	South
OPENING 13	3.00	1.00	South-southeast
OPENING 14	2.70	1.40	South
OPENING 15	8.30	3.50	Northwest

9.15 Openings 5,6,7,8,9 and 14

RAMPART 2 is breached by OPENINGS 5, 6, 7, 8 and 9 (Table 4). OPENING 5 was examined on its northeast terminal by Trench 36 and was found to be 7.80/3.50m wide (max/min). The topsoil [36001] overlay a stone-rich deposit of reddish-brown silty clay [36004], up to 0.3m thick. This deposit is interpreted as material derived from upslope erosion, which filled the void of OPENING 5. The erosional material [36004] abutted a tightly packed bank of sub-angular stones [36002], representing the remains of RAMPART 2. Within the bank itself was a large angular stone, approximately 0.40m long by 0.30m high and wide, which may signify the remains of a kerb within OPENING 5. This would suggest that OPENING 5 was a formal entrance, a conclusion also supported from the evidence of OPENING 4 (Inner Circuit), which is clearly

aligned with OPENING 5 and which was also found to have been a formal entrance (see Section 9.14). The same erosional material [36004] also overlay a stone rich silty clay [36003], up to 0.2m thick, which appears to represent the collapse of RAMPART 2 into OPENING 5. [36003] lay over another dark brown stone rich silty clay [36005], this associated with flecks of charcoal and measuring up to 0.22m thick. [36005] likely represents erosional deposit of the occupation layers from the interior, over which RAMPART 2 [36002] had eroded. In turn both [36002] and [36005] overlay the natural subsoil [36006], comprising loose orange gravel.

The sequence of deposits uncovered within Trench 36 appears to represent repeated phases of erosion and subsequent infill. The erosion may have been caused by periods of intense use which subsequently stabilised.

OPENING 6, which is 3.90/1.20m wide (max/min), was not excavated and is assumed to represent a later breach either caused by natural or livestock erosion. The presence of a substantial slump of bank material identified by the topographic survey points to a similar conclusion.

OPENING 7 is a narrow, 3.50/1.10m wide (max/min) and up to 0.65m deep gap caused by a visitor access, which appears on the 1894 OS map (Figure 5). OPENING 7 is aligned with (and of a similar character as) OPENINGS 3 and 13, all clearly deriving from repeated visitor movement (see also 9.14 and 9.16).

OPENING 8, 10.20/3.80m wide (max/min), was not excavated but has been evaluated by proxy evidence from the excavation of DITCH 2 (Trench 39) immediately to the west of the opening. This revealed that the lower fills of the DITCH 2 comprised predominately stone rich deposits [39007; 39028] deriving neither from the erosion of RAMPART 2 OR RAMPART 3. Both these deposits formed tip lines from the southeast, which is argued to represent material from the causeway leading to a formal entrance—i.e. OPENING 8.

OPENING 9, 6.40/2.50m wide (max/min), was examined by Trench 34, on the northeast terminal of RAMPART 2. Trench 34 also uncovered the surviving core of RAMPART 2 [34003], under the dense bracken cover and the topsoil [34002]. [34003] consisted of light brown, gravel rich silty clay, up to 0.28m thick. Tumble [34008] from the core [34003] of RAMPART 2 overlay the fill [34010] of a linear feature [34004], which ran perpendicular to the line of RAMPART 2. This feature appears to have formed an element of a gateway structure and was associated with two post voids: [34005] and [34009]. Residual alder charcoal from [34005] gave a date 2165 ± 28 BP (SUERC-51473), which when calibrated to two sigma gives a range of 359-114 cal BC. A further post-void [34006] was identified within the rampart core but its function remains unclear, although it might also represent component of a gate structure. Based on the evidence of gateway structure, OPENING 9 must represent a formal entrance, rather than a subsequent breach. This is also supported by OPENING 1 (Inner Circuit), which is aligned with OPENING 9 (Middle Circuit) and also signifies a formal entrance (see Section 9.14).

Finally, OPENING 14, located in the south of the Middle Circuit, was left unexcavated. It forms a narrow 2.70/1.40m wide (max/min) gap within RAMPART 2, either related to livestock or visitor access and therefore assumed not to be a formal entrance.

9.16 Openings 10, 11, 12, 13

RAMPART 3 contains four openings: OPENINGS 10, 11, 12 and 13. Apart from OPENING 11, partially exposed in Trench 42 (see Section 9.11), none of the openings were excavated, however some suggestions can be offered about their origins and function. OPENING 10, which is 12.40/4.30m wide (max/min), clearly lined up with OPENING 8 (in the Middle Circuit) and OPENING 2 (in the Inner Circuit). Coupled with the presence of a causeway across DITCH 2, this initially suggested that this was a formal entrance. However, with

the presence of the OPENING 11, the more likely formal entrance to the southeast, it is probable that this opening represents a later breach for livestock.

Directly to the southeast of OPENING 10 is OPENING 11 (approximately 5.50m from OPENING 10), which is 4.50/1.80m wide (max/min). OPENING 11 was partially exposed in Trench 42, revealing a line of postholes [42009], [4211], [42013], [42015] and [42017] (all unexcavated) though with clear post packing stones, which may represent revetment for a gateway structure of the mound feature (MOUND 1).

Given the proximity of the two openings (OPENING 10 and 11), it seems unlikely that they both functioned as gateways simultaneously. However, as they were never blocked, it is equally unlikely that one succeeded the other. It may be that MOUND 1 had some inherent significance and that there were indeed two functioning contemporary entrances. Alternatively, it is equally possible and more likely that Opening 11 represents the original entrance, with MOUND 1 and MOUND 2 forming the terminal ends of RAMPART 3, and that Opening 10 is in fact a later erosional breach (see also Section 9.11).

Openings 12 (2.00/0.80m wide (max/min)) and 13 (3.00/1.00m wide (max/min)) and up to 0.50m deep are both steep and narrow breaches caused by visitor or livestock access across RAMPART 3. OPENING 12 is matched with OPENING 14 in RAMPART 2, while OPENING 13 lines up with OPENING 7 in RAMPART 2 and OPENING 3 in RAMPART 1. Both were recorded as gaps in the banks on the 1894 OS map (Figure 5).

9.17 Direct occupational evidence

As described above (Section 8), the topographic survey of White Castle identified a total of 20 internal features 19 of which were sub-circular platform scoops and one of which was a square structure formed of turf banks (PLATFORM 17, subsequently referred to as STRUCTURE 17). The geophysical resistivity survey identified a further six such features.

The majority of the platform scoops lie within the Inner Circuit, but five are located between the Inner and Middle Circuits, or more specifically on TERRACE 4. It was assumed during the initial project design that all sub-circular platform scoops related to the enclosure, while the square structure (STRUCTURE 17) was later in origin, potentially of post-medieval date. The sub-circular platforms themselves can be sub-divided into larger and smaller categories. These variations may indicate either chronological or functional variations.

Three internal platforms were selected for sampling: PLATFORMS 4, 8, and 20, together with the square structure (STRUCTURE 17). These were investigated by Trench 32 (PLATFORM 4); Trenches 12, 13, 30, 31 (PLATFORM 8); Trench 40 (PLATFORM 20) and Trench 41 (STRUCTURE 17) respectively.

PLATFORM 8 and the square structure (STRUCTURE 17) were chosen as they both appeared to impact the Inner Circuit, providing potential for stratigraphic sequences of the complex site phasing. PLATFORMS 4 and 20 were selected due to their location inside and outside the Inner Circuit– PLATFORM 4 was located within the interior and PLATFORM 20 ON TERRACE 4. Both STRUCTURE 17 and PLATFORM 20 were dated to the second millennium AD and will be discussed further in the post-enclosure section of this paper (Section 9.22 and 9.23).

It is assumed that the upstanding internal features represent the final phases of settlement within the enclosure and that any earlier structures would have been destroyed by subsequent phases/uses of the site. Indeed, as noted above (Section 9.3 and 9.8), charcoal from the fill of RAMPARTS 1 and 2 indicates occupation activity within this area prior to their construction and the same argument can be extended to the material that PALISADE 1 cuts through as revealed in Trench 18 (Section 9.5; see also Figure 7).

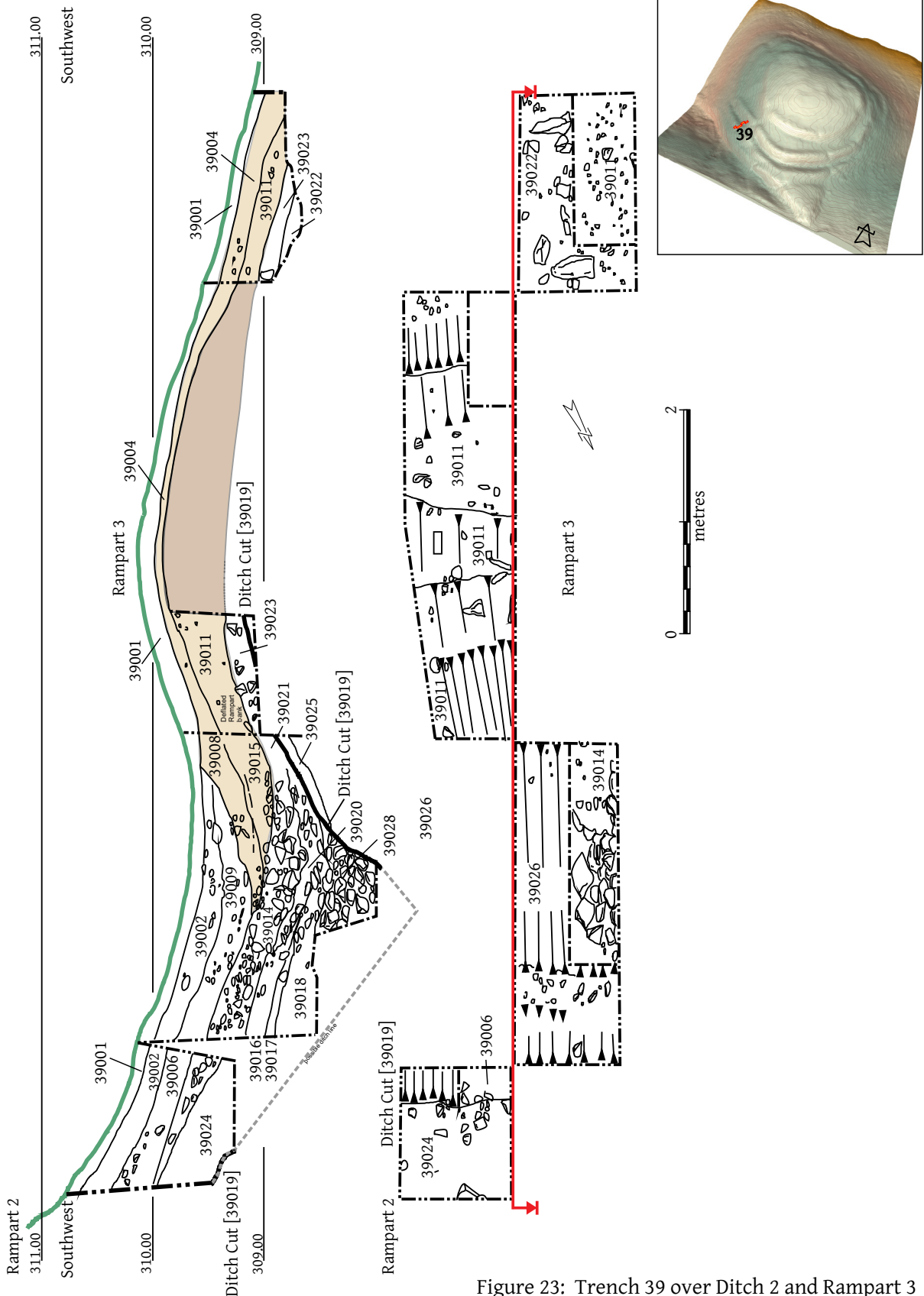


Figure 23: Trench 39 over Ditch 2 and Rampart 3

9.18 Platform 4

The northeast facing PLATFORM 4 was located in the northeast sector of the Inner Circuit and measured 13.20m by 11.20m (Figure 24). The platform was sampled by Trench 32.



Figure 24: Platform 4, a large circular feature visible in the centre of the image, with Terraces 1,2 and 3 to the right (north) (© Skyscape Survey).

Excavation revealed the topsoil layer [32001], which comprised a mid-brown clayey silt, up to 0.12m thick, with c. 5% stone inclusions. It overlay a heavily bioturbated mid-red brown clayey silt [32002]. This layer was 0.14m thick, with approximately 10% stone inclusions and probably derives from slope wash, forming a colluvium deposit.

At the southwest end of Trench 32 (Figure 25) was a revetment bank of stone [32003], at least 0.5m wide (as excavated) and 0.8m high. Although the bank [32003] was not fully excavated, its examination revealed it was built directly on the natural bedrock and it formed the rear revetment of PLATFORM 4. The collapsed material from the bank [32003] formed a stone spread [32013], which overlay features to the rear of PLATFORM 4 (see also below). Spread across the flat surface of PLATFORM 4, under the [32002], was a highly compacted mid-red brown silty clay layer [32004], up to 0.25m thick, with frequent charcoal inclusions and 20% angular stones.

In the northeast portion of Trench 32, covering approximately two thirds of the trench, lay a compacted cobbled surface [32005]. The surface [32005], uncovered underneath deposit [32004], surrounded areas of exposed bedrock and contained one probable post void [32008] (unexcavated), which measured 0.2m by 0.25m and was filled with a dark grey brown silty clay [32009].



Figure 25: Trench 32 to southwest after excavation.

To the southwest end of Trench 32, beneath [32013] and the mixed clay-silt and stony collapse of bank [32003], were two large structural features cut into the bedrock. The first feature [32006] was a linear slot that ran roughly southeast/ northwest across the trench (and beyond) and was up to 0.5m deep by 0.30m wide. [32006] contained along its entire length a series of angular packing stones [32012], measuring on average 0.2m by 0.1m by 0.15m. In addition, two post voids [32010] and [32014] were recognised within the southeast section of [32006]. The first posthole cut [32010] (not excavated) was sub-circular in plan, measuring 0.35m by 0.20m and filled with a mid-brown silty clay [32011]. The second post-void [32014], 0.30m deep and up to 0.25m wide, was filled with mid-red brown silty clay [32007]. Residual alder charcoal from this feature [32014/32007] was dated to 2195 ± 26 BP (SUERC-44054), which when calibrated to two sigma gives a range of 366-186 cal BC. It is reasonable to assume that these features represent structural elements of a roundhouse constructed on PLATFORM 4.

9.19 Platform 8

PLATFORM 8, which measured 7.50m by 6.50m, was located at the north extent of the Inner Circuit, overlying TERRACE 1; it was investigated by three trenches (Trench 12, 30 and 31; Figure 18).

Excavation of the northeast end of PLATFORM 8 (Trench 12) revealed a heavily compacted stony layer [30006=12002], a probable surface. A fragment of residual hazel charcoal from [12002] gave a date of 2395 ± 30 BP (SUERC-37129), which when calibrated to two sigma gives a date of 730-396 cal BC. A second date from PLATFORM 8 was recovered from Trench 30, deposit [30004], comprising a loose, stony dark silty clay that overlay probable surface deposits [30005], [30006]= [12002] and [30007]. Residual willow/ poplar charcoal from [30004] was dated to 2391 ± 29 (SUERC-44055), which when calibrated to two sigma gives a range of 726-395 cal BC, which is statistically indistinguishable from the dates recovered from

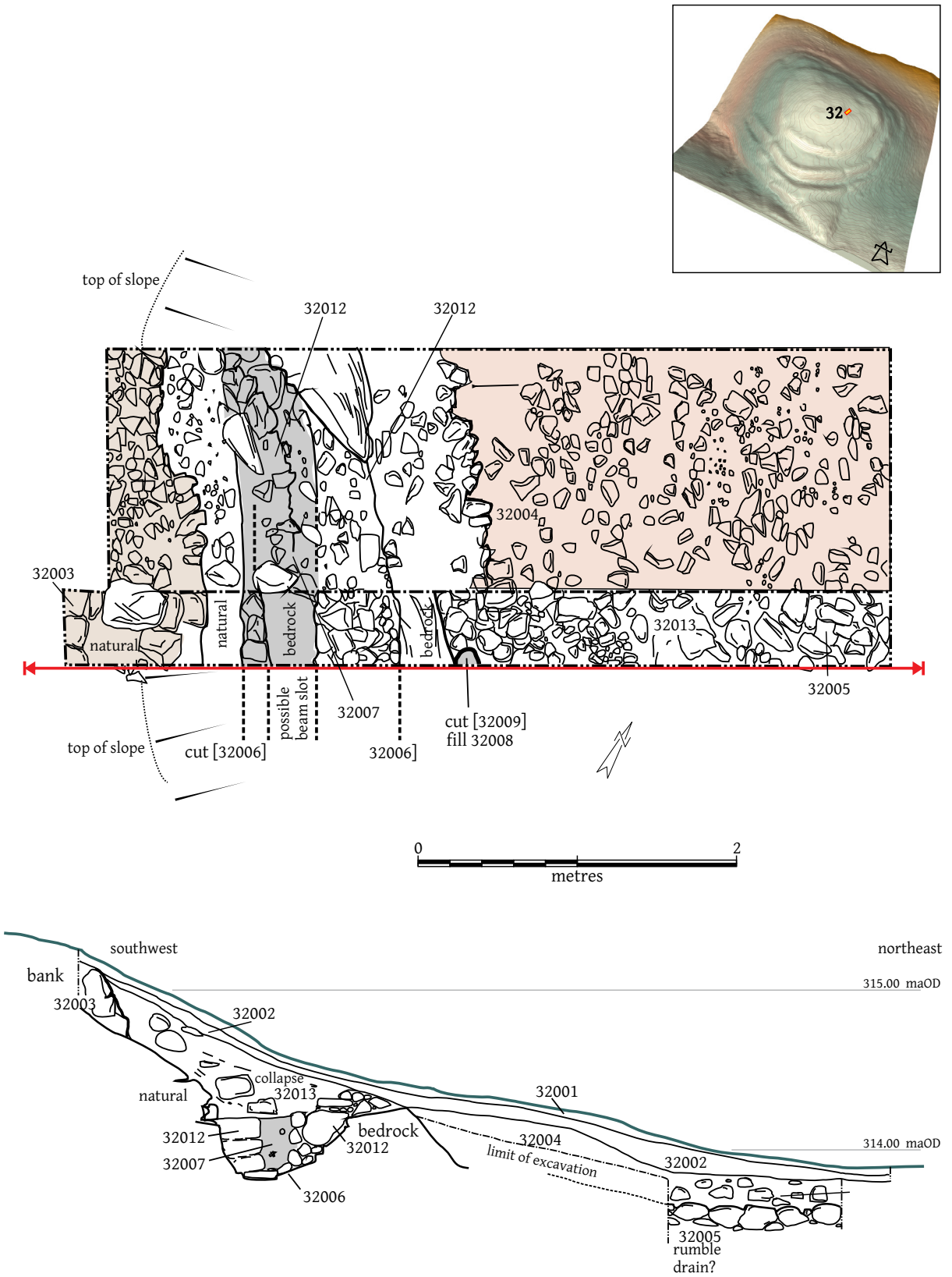


Figure 26: Platform 4 (possible house platform)

deposit [30006=12002]. Additionally, a Bronze Age barbed-and-tanged arrowhead (SF 2011.14) and an irregular flint flake (SF 2012.15) were also recovered from the deposit [12002]/30006].

Linear slot [30020] uncovered in Trench 30 is assumed to be a continuation of PALISADE 1. Hazel charcoal from post fill [13009] belonging the same palisade in Trench 13 was dated to 406-231 cal BC 2295 ± 30 BP (SUERC-37127). As slot [30020] is overlain by layers [30005], [30007] and [30009], which are contemporary with contexts [12002] and [30004] (SUERC-37129; SUERC-44055), there is clearly a reverse chronology in the dates. Therefore, either PLATFORM 8 was constructed from earlier midden material or was overlain by collapsing earlier midden material from upslope.

Trench 31 explored the southwest end of PLATFORM 8, where it was cut into the slope. Excavation revealed a stony layer [31002], comprising small angular stones mixed with loose mid-brown silty clay, approximately 0.09m thick, and similar to deposits uncovered in Trenches 12 [12001] and 30 [30004]. [31002] overlay another stony deposit [31003] consisting of large angular stones (up to 0.3m by 0.4m by 0.3m) within mid-brown silty clay. Within the stony deposit [31003] were two linear voids: the first [31007] was 0.9m wide and c. 0.2m deep; the second [31008], down the slope from the first void [31007], was at least 0.6m wide by up to 0.3m deep. The first void [31007] was filled with mid-brown reddish silty clay with numerous charcoal fleck inclusions [31006]. The second slot was filled with [31004], a mid-brown silty soil which overlay the natural subsoil, comprising an orange gravel [31005]. These voids ran perpendicular to the slope and may have functioned as drainage channels or structural elements related to the platform.

9.20 Indirect occupational evidence

As noted above (Sections 9.4, 9.8, 9.10 and 9.11) indirect evidence of internal occupation was recovered from Trench 18, the cores of Ramparts 2 and 3 and the fill of DITCH 2 . Blackthorn/cherry charcoal from deposit [18003] was dated to 2155 ± 30 BP (SUERC-37128), which when calibrated to two sigma gives a date of 358-94 cal BC. This organic material undoubtedly represents a midden deposit derived from occupation within the Inner Circuit, with waste thrown down the slope. RAMPART 1 was constructed after 740-390 cal BC (SUERC 34287) and RAMPART 2 after 760-410 cal BC (SUERC-34288) and their construction involved inclusion of material that contained charcoal from previous (pre-enclosure) activities on site. Alder charcoal from a tip line within DITCH 2 [39017] gave a radiocarbon date of 536-391 cal BC (SUERC-51469). Finally, Trenches, 27 and 28 identified charcoal rich soil presumed to be midden material, though not linked to any specific structures.

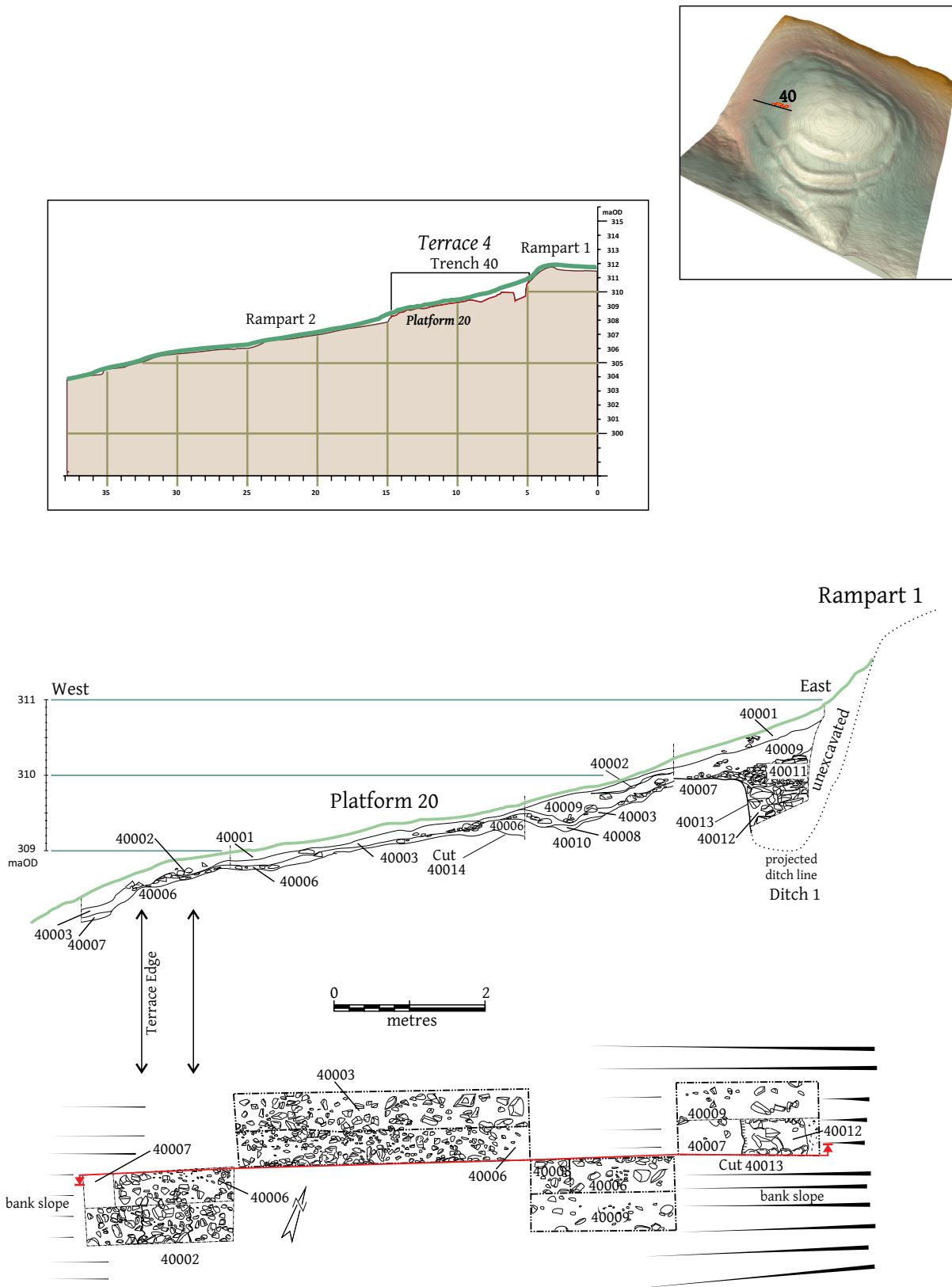


Figure 27: Trench 40 through Platform [20] and Terrace 4: south facing sections and plan

9.21 Post-enclosure activity

Post-enclosure activity was evidenced by two dated features: a single pit excavated into PLATFORM 20 and STRUCTURE 17 cut into the bank of RAMPART 1. Presumably, such structures and features represent activity at the site that may have been more extensive or long-lived, however, given the limited intrusive interventions, if this was the case it was not detected.

9.22 Platform 20

PLATFORM 20, measuring 8.50m by 7.50m, was cut into the slope below RAMPART 1 on TERRACE 4 and was examined by Trench 40 (Figure 27). The topsoil [40001] overlay two loose stony layers, [40002] and [40006], both composed of c 60% angular stones mixed with mid brown silty clay (40%).

Investigation confirmed that the platform was cut directly into the natural orange gravelly subsoil [40007]. The deposits [40002] and [40006] do not appear to have any structural significance/form and probably represent an erosion of the slope of RAMPART 1 above, post-dating the quarrying activities associated with the creation of the PLATFORM 20 (cut [40014]). However, it is also clear that the western end corresponded to an element of TERRACE 4 (see above, Section 9.7).

A single feature was identified within the investigated area of PLATFORM 20, comprising a small sub-oval pit [40010], measuring 0.53 m by 0.42m by 0.09m deep. The pit contained a single fill [40008] of dark brown silty clay with charcoal inclusions. Alder charcoal from this fill [40008] gave a radiocarbon date of 1009 ± 31 BP (SUERC-51472), which when calibrated to two sigma provides a date of cal AD 974-1150. This date is not clear evidence of occupational activities but points to early medieval activity on site, significantly post-dating the final prehistoric occupation of the enclosure.

9.23 Structure 17

Trench 41 examined STRUCTURE 17, which comprised a roughly square turf banked enclosure, measuring c. 4m by 4m, located partially over the bank of RAMPART 1 [41003] (Figure 28).

Three sides of the construction consisted of stone footings [41006], c. 1m wide and 0.25m high, which were the base for a turf wall, while the southern wall was built into the remains of the RAMPART 1 bank. The collapsed material from the structure comprised soil deposits derived from these turf walls [41005], [41007], [41010], together with loose stone rubble deposits, [41008] and [41009], from the stone footings. Within the interior of STRUCTURE 17, the collapse material overlay a thin charcoal lens [41013], including burnt *in situ* twiggy matting, which in turn overlay a hard packed orange-brown silty clay deposit [41011] forming the internal surface of the structure. Alder charcoal recovered from the twiggy matting deposit [41013] gave a date of 339 ± 30 BP (SUERC-51474), which when calibrated to two sigma gives a range of cal AD 1471-1640. Another possible internal feature was a single stone [41014] in the southwest of the structure, which was associated with a slight concentration of charcoal, and may represent an element of a hearth.

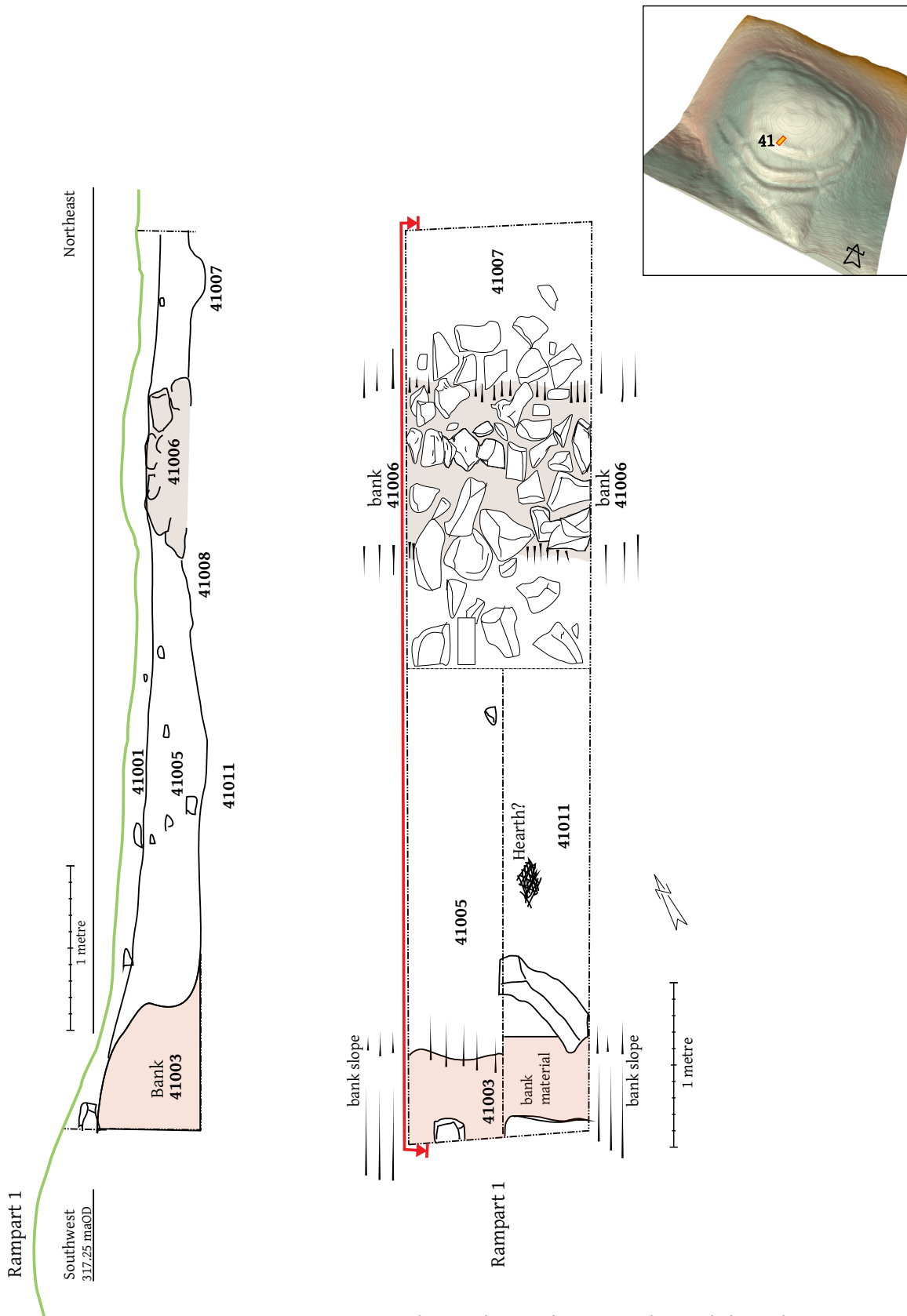


Figure 28: Trench 41, plan and section through later hut structure

9.24 Track

Trench 19 examined the line of a possible earlier track, predating the current road line, that leads from the causeway into the fort down the Whiteadder valley to the south. The trench across the suspected trackway was located on the northeast facing slopes of the valley, approx. 210 m southwest of the site. Some evidence of recent erosion was noted upslope of the trench and it is likely that the area forms a natural run-off channel. The topsoil layer [19001] was c. 0.20m deep which overlay an orange/red clay soil [19002]. Bracken roots penetrated down to c. 0.50m below the land surface.

At a depth of c. 0.60m a compacted layer of harder beige/orange clay and small pebbles [19004] was revealed, with a slightly convex profile and uneven edges and c 0.10 m thick. A series of linear ‘ruts’ [19008] were exposed within this surface running parallel to the track-way, 1.50 m apart and 0.05m deep (Figure 29).



Figure 29: Cart ruts running parallel to trackway

At the northeast end of the trench a thin grey layer of relict turf line [19003], c. 0.03m thick, was recorded sloping steeply down the natural gradient. Two sondages at the southwest and northeast ends of the trench were excavated to further characterise the track make-up. The southwest sondage revealed a further layer of orange/red clay [19007] under which another beige/orange compacted clay and pebble layer was exposed [19009]. The northeast sondage revealed c. 0.25m of orange/red clay [19005] under which a further grey relict turf line [19006] was observed, similar to [19003]. In addition, the traces of a harder clay surface with further ‘ruts’ was recorded [19007], which may be equivalent to [19009].

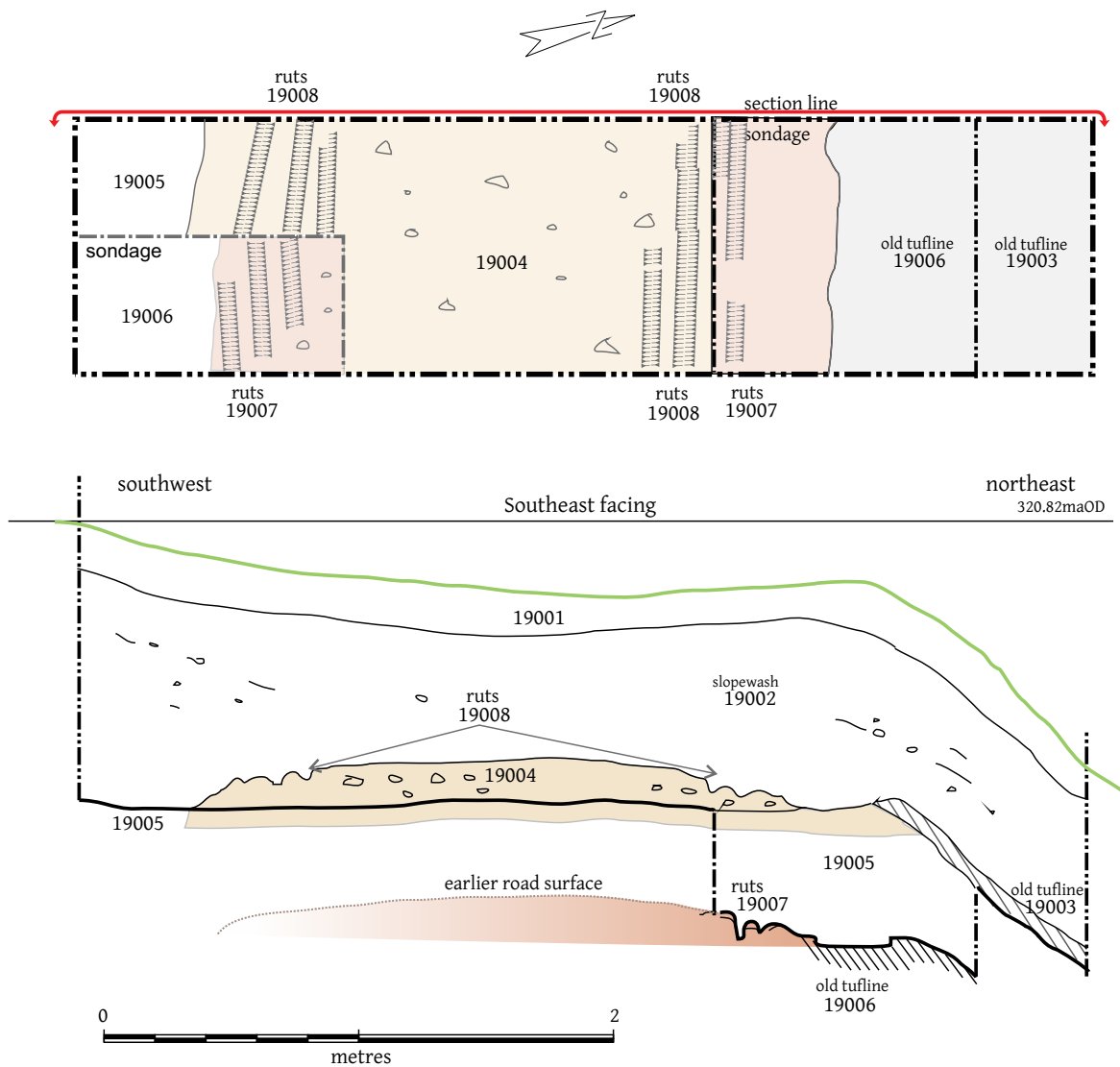
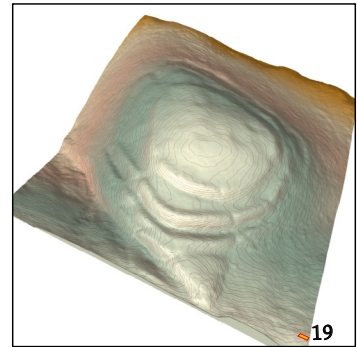


Figure 30: Trench 19 across track from south

10. Post-excavation

10.1 Introduction

As emphasised above, the actual area of excavation at White Castle was extremely limited (less than 0.5%) and the upper layers of excavated deposits had all been disturbed by bracken growth. Thus, the amount of post-excavation works was always expected to be rather minimal. The key aim of the project was specifically to recover stratified charcoal suitable for radiocarbon dating, however, all artefacts recovered were examined and a single sample of the redeposited midden rich material in Trench 13 [13009] was fully sieved and analysed; the processing failing to identify any charred macroplant remains.

10.2 Radiocarbon dates

A total of 15 radiocarbon dates were obtained from key features within the enclosure's stratigraphic sequence (

Table 5). The majority of the charcoal recovered from White Castle is taphonomically secondary, in many cases it has been included in material quarried to form banks and platforms or deposited as a result of erosion from these. Only one date, between AD 1471-1640 from STRUCTURE 17 [41013], is conclusively *in situ*. Correspondingly, the medieval date of AD 974-1150 from the pit fill on Platform 20 [40008] is unlikely to have been included in the fill from residual material, but it is not impossible.

Two further dates, while secondary, do not appear to be residual from pre-enclosure activities on the site. The date 410-210 cal BC (SUERC 34289) from the charcoal-rich layer of DITCH 1 [410], overlain directly by rampart collapse material, is argued to be from the destruction of RAMPART 1. It is maintained that the amount of charcoal involved must be associated directly with the destruction of timber elements of RAMPART 1. The second date of 536-391 cal BC (SUERC 51469) comes from a tip layer of an already partially infilled DITCH 2 [39017] and is more likely related to internal occupation activities.

The dates recovered from charcoal in postholes from OPENINGS 1 [33008], 4 [35006] and 9 [34005] and from PALISADE 1 [13009] all have the potential to be taphonomically secondary as no *in situ* decayed posts were observed. The above dates can be used to construct the broadest of chronological frameworks for the construction of enclosing works, and the majority of structures cannot be linked directly to these events. At first glance, the range of dates from the enclosure suggest two broad and statistically distinct periods of activity: the first between c. 750 cal BC and 400 cal BC and then between c. 366 cal BC and 100 cal BC. Only the dates from PLATFORM 4, TERRACE 1, OPENING 4 and 9 indicate a statistically distinct phase.

It is also proposed that the degree of overlap between the fill of DITCH 1 (410-210 cal BC; SUERC 34289) and DITCH 2 (536-391 cal BC; SUERC 51469 and 750-390 cal BC; SUERC 34286) is so slight that they are more likely separate phases. However, the second date from DITCH 2 (SUERC 34289), derived from slumped RAMPART 2 material, hints at some possibility of this sample being residual. All that can be conclusively suggested from the available dates is that DITCH 1 was infilled after DITCH 2, which of course does not relate directly to their construction.

It should be stressed that the two clusters of radiocarbon dates represent calibrated radiocarbon date ranges, not durations. Application of Bayesian statistics to the radiocarbon assemblage, as applied

successfully elsewhere (e.g. Hamilton *et al* 2013; 2015), would perhaps yield more nuanced results and although no such attempt was made, the data is available, allowing for such enquiry to be carried out in the future. Examination of the stratigraphic and physical relationships between features and contexts, does allow further certainty regarding the overall phasing of the site (see Section 11).

Table 5: Calibrated Radiocarbon dates from White Castle excavations. The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal) <http://www.rlaha.ox.ac.uk/oxcal/oxcal.htm>

Ref	Material	Context	Description	Deposition-Context	Uncal. BP	Cal. 1-sigma	Cal. 2-sigma
SUERC-34288	Alder charcoal	503	Redeposited charcoal with-in fill of Rampart 2	Secondary	2460±30	750-420 cal BC	760-410 cal BC
SUERC-34286	Alder charcoal	900	Redeposited material from Rampart 2 in upper fill of Ditch 2	Secondary	2415±30	530-400 cal BC	750-390 cal BC
SUERC-34287	Alder charcoal	201	Redeposited charcoal with Rampart 1 core	Secondary	2410 ± 30	520-400 cal BC	740-390 cal BC
SUERC-37129	Hazel charcoal	12002	Redeposited charcoal eroded from upslope overlying fill of Platform 8	Secondary	2395 ± 30	510-403 cal BC	730-396 cal BC
SUERC-44055	Willow/poplar charcoal	30002	Redeposited charcoal eroded from upslope overlying fill of Platform 8	Secondary	2391 ± 29	510-401 cal BC	726-395 cal BC
SUERC-51469	Alder charcoal	39017	Charcoal from internal activity deposited into Ditch 2, lying within tip line	Secondary	2369 ± 28	480-397 cal BC	536-391 cal BC
SUERC-51471	Alder charcoal	33008	Residual charcoal within fill of structural element of Opening 1	Secondary	2339 ± 28	474-389 cal BC	516-379 cal BC
SUERC-37127	Hazel charcoal	13009	Residual charcoal within fill of Palisade 1	Secondary	2295 ± 30	401-263 cal BC	406-231 cal BC
SUERC-34289	Alder charcoal	410	Charcoal associated with the destruction of Rampart 1 within fill of Ditch 1	Secondary	2290±30	400-260 cal BC	410-210 cal BC
SUERC-44054	Alder charcoal	32007	Redeposited residual charcoal within Platform 4	Secondary	2195± 26	356-202 cal BC	366-186 cal BC
SUERC-44059	Alder charcoal	35006	Residual charcoal within fill of structural element of Opening 4	Secondary	2193 ± 29	356-200 cal BC	366-179 cal BC
SUERC-51473	Alder charcoal	34005	Residual charcoal within structural element of Opening 9	Secondary	2165 ± 28	351-172 cal BC	359-114 cal BC

WHITE CASTLE: THE EVALUATION OF AN UPSTANDING PREHISTORIC ENCLOSURE IN EAST LOTHIAN

Ref	Material	Context	Description	Deposition-Context	Uncal. BP	Cal. 1-sigma	Cal. 2-sigma
SUERC-37128	Blackthorn/ cherry charcoal	18003	Residual deposit within Terrace 1	Secondary	2155 ± 30	350-121 cal BC	358-94 cal BC
SUERC-51472	Alder charcoal	40008	Fill of pit within Platform 20	Secondary	1009 ± 31	cal AD 990- 1034	cal AD 974- 1150
SUERC-51474	Alder charcoal	41013	Burnt in situ matting in Structure 17	Primary	339 ± 30	cal AD 1490- 1632	cal AD 1471- 1640

10.3 Lithics (Ann Clarke)

Forty-three finds of stone objects were recorded, including five struck lithics (four flints and one chert); one worked lump of haematite/ochre; and 13 coarse stone tools (Table 6). The rest of the collected stone finds appeared unworked.

In common with IA assemblages elsewhere, the collection was dominated by cobble tools – most of these were simple putative smoothers on which one face appeared to have been slightly burnished as the result of using the face as a rubber/smoother. The largest smoother ([22001] SF3) was a fine-grained sedimentary rock and had been worn to a concave surface on part of one face with some visible striations. Another fragment ([102] SF12) is vesicular in texture and retains a smooth worn flat lower face.

Other cobble tools include a hammerstone fragment from a quartz cobble (UnStrat.SF3) and a quartzite cobble with a finely ground facet on one end (SF [29003] SF9).

A quern rubber ([1100] SF25) – possibly of crystal tuff – has a D-shaped cross-section with a heavily ground convex lower face (Figure 31).



Figure 31: Quern Rubber from context [1100]

The group of tabular fragments with visible striations is interesting because they were all collected during excavation of the rampart: three of them were found together in Trench 11, one came from Trench 1, and a fifth was unstratified. The stones vary in texture and root size: there are two small

siltstone pieces ([1100] SF29; UnStrat.4) and the others are coarser sandstones ([1100] SF26; [1100] SF27; [001] SF1). They all bear visible striations on one or both faces, most frequently unilinear, as if the stone, or the object being ground was held in one position and rubbed back and forth – even the multi-directional striations are slightly angled against each other and do not criss-cross. Occasionally, sharper grooves are worked at right angles to the striations most likely made by a metal blade ([001] SF1) (Figure 32). One slab ([1100] SF27) has an irregular dished surface made by grinding and striations and grooves are present on this ground and the opposite unground face.

The wear on these pieces was produced by rubbing the stone against an object or rubbing an object against the stone. The striations suggest the material being worked was hard – or perhaps the striations were made by a grinding agent, such as sand. Other sharper score marks suggest the maintenance of metal blades.



Figure 32 Deeply scored and striated stone from surface 1100

The piece of haematite/ochre ([28001] SF17) is interesting because it has clearly been worked – two faces have been ground to convex cross-sections and there are striations left on the surface of the piece from rubbing. Whether this was a product of the IA occupation is not certain but it had clearly been used for making marks in this location.

Flint is present, mainly as small flakes but there is one large horseshoe scraper ([18002] SF1) made on dark grey mottled flint. This technology originally dates to the Late Neolithic/Early Bronze Age (EBA)

but it may have been found by the IA inhabitants of White Castle and reused – perhaps as a strike-a-light or core as demonstrated by the rough bifacial flaking on the proximal end. A broken chert barbed-and-tanged point ([1200] SF14) dating to the EBA was also recovered (Figure 33).



Figure 33: Horseshoe scraper and EBA tanged arrowhead

	Flaked lithics	Smoother	Quern rubber	Grinding/ sharpening stones	Hammerstone	Faceted cobble	Haematite/ ochre
2010	Flake (TR4)	2 (TR1 and TR4)	1 (TR11)	5 (one from TR1 three from TR11 and one Unstratified)	1 (Unstratified)	0	0
2011	Horseshoe scraper (TR18); Barbed-and-tanged point (TR12)	2 (TR17 and TR22)	0	0	0	0	1 (TR28)
2012	Flake; Burnt chunk (TR30)	1 (TR29)	0	0	0	1 (TR29)	0

Table 6: Worked stone from White Castle by year and trench

10.4 Ceramics

A single badly abraded pottery sherd [SF 42004.04] was recovered from the site, from within MOUND 1 [42004], assessed to be an abraded hand thrown prehistoric body sherd (M. Johnson pers comm).

11. Interpretation and Discussion

11.1 Pre-enclosure

It is likely that the White Castle promontory would have been used before the construction of the enclosure, however, the nature and form of this activity is unknown. The worked lithics from the site may represent direct on-site activity or may simply be curios picked up millennia later and brought to site.

11.2 Enclosure Chronology

The project was designed to characterise the visible and extant features of the site in order to develop a model for White Castle's construction. This of course means that while we can identify the presence of earlier phases and activity, their full nature cannot be determined or discussed. Additionally, our interpretation is dominated by the final phase of the site's design and construction and the necessary assumption that the internal structures and distribution of entrances relate to this phase.

The excavations make it evident that there was a high degree of reworking and movement of older deposits – and thus charcoal – within the site. For example, the presence of charcoal within the fills of RAMPARTS 1 and 2 and the material into which PALISADE 1 was cut, indicates that there was activity on White Castle before the construction of RAMPART 1/ PALISADE 1, although its nature and form cannot be gauged (see Section 10.2; Table 5 and Table 7).

The radiocarbon dates indicate a high degree of overlap as most fall within the 'Hallstatt plateau' (800–400 BC) and the majority of dates overlap with each other. On balance, the dates indicate enclosure activity on site around 400 cal BC. There was clearly activity on the site prior to the construction of the enclosure, although precisely when is uncertain.

The ramparts forming the enclosure elements are all different in character and indicate a phased construction. The simplest model would be to assume that the enclosure expanded over time, with a subsequent redesign of the inner RAMPART 1 and backfilling of the inner DITCH 1. This suggests a minimum of four main enclosure phases (Phases 1.1-1.4), though clearly there must have been a more complex development of the site during this time. The redesign was associated with the levelling of RAMPART 1 and the infilling of both DITCH 1 and DITCH 2. This may have also been associated with either the repairs of or the *de novo* construction of northwest and southeast entrances in RAMPARTS 2 and 3.

Given the density of identified platforms (27) it seems reasonable to assume that there was some level of domestic activity within the enclosure during the period when the ramparts were in use, although the precise nature and phasing of that activity was not determined; except from the identification of midden deposits (see Section 9.19 & 9.20) and the structural elements excavated on PLATFORM 4 (see Section 9.18).

Table 7: Breakdown of White Castle’s main phases

Pre-Enclosure Phase	Pre-rampart activity, lithics and charcoal producing activity, which is later incorporated into RAMPART 1 (before 740-390 cal BC SUERC-34287 and 760-410 cal BC SUERC-34288)
Phase 1.1	Construction of RAMPART 1 and DITCH 1 between 740-390 cal BC SUERC 34287 and 410-210 cal BC SUERC 34289
Phase 1.2	Construction of RAMPART 2 and DITCH 2 between 760-410 cal BC SUERC 34288 and 536-391 cal BC SUERC 51469
Phase 1.3	Construction of RAMPART 3 and DITCH 3 (undated though after phases 1.1 and 1.2, but could be contemporary with Phase 1.4)
Phase 1.4	Levelling of RAMPART 1 and infilling of DITCH 1 (after 410-210 cal BC SUERC 34289); the repair or construction of OPENING 9 (after 359-114 cal BC SUERC 51473) and OPENING 4 (after 366-179 cal BC SUERC 44059); the deposition of material in Trench 18 (after 358-94 cal BC SUERC 37128) and the use of PLATFORM 4 (after 366-186 cal BC SUERC 44054) Construction of TERRACE 4 over the infilled DITCH 1.
Phase 2	Post enclosure activity on PLATFORM 20 cal AD 990-1034 SUERC 51472
Phase 3	Post-enclosure activity STRUCTURE 17 cal AD 1490-1632 SUERC 51474

11.3 Enclosing works and openings

Topographic survey demonstrated that all three sets of enclosing works are designed to be more impressive when viewed from what is considered to be the main route into the site across the causeway (south/southwest), with the height of the banks decreasing in both directions away from these openings. The same is true for DITCH 2 and likely to be the case for DITCH 1 where the features, out of view from the southwest entrances, deliberately terminate.

This is not to say that the western, northern and northeast sides of the site were defenceless, as these are the locations with the steepest natural slopes. Nonetheless, it is argued that this design of banks to the landward side and terraces to the rear highlights the importance of physical appearance in the site's construction, with the greatest effort focussed on its most visible elements (Figure 35).



Figure 35: Visually impressive Ramparts are evident to the left, while slight Terraces are to the right; this appears to have been deliberate design relating to maximising visual impact from the main routes and approaches (© D. Connolly).

White Castle is not alone in displaying such characteristics in the region– similar embellishments were observed at western sections of Broxmouth (Armit and McKenzie 2013, 91) and elsewhere in Scotland and beyond (e.g. Collis 1996, 89-90; Ralston 2006, 75, 95, 128-29, 133; Kokeza 2008, 90, 102-3; Reader 2012, 71-3, 82, chapter 8).

Reader (2012, chapter 8) argues that within East Lothian circular enclosures (such as White Castle) were often focussed on prominent and defensible locations clearly intended to make a visual statement. Elsewhere in Britain, others have highlighted the role of design and visual impact in enclosure design over and above practical considerations (e.g. Driver 2007; Frodsham *et al* 2007, 261), with the construction of such large-scale enclosures in the third quarter of the first millennium BC seen as part of a wider trend found across Scotland and Britain (e.g. Dunwell and Strachan 2007; Cook 2013b; Brown 2009; Harding 2012; Armit and McKenzie 2013).

At various times during its use, White Castle was either univallate or bivallate; with a possibility remaining it may also have been trivallate or at least presented the impression of being so. With the construction of RAMPART 3 and the renovation or construction of OPENING 4 also involving the refurbishment of the line of the RAMPART 1, the diminished remains of RAMPART 2 and DITCH 2 that lay between would still have been (as they still are) a physical presence giving the impression of a large trivallate enclosure.

A total of 15 openings in the enclosing works were identified during the project (Figure 7), however, these are only the visible gaps and there could easily be blocked entrances only detectable upon more extensive excavation. Of the identified openings OPENING 3, OPENING 7, OPENING 13 and OPENING 6 are argued to be erosional in origin and probably caused by visitor access, given how much narrower they are in comparison to the others (Table 4). Additionally, OPENING 12 and 14 simply seem to be livestock breaches, while OPENING 10 may either be a breach or a formal entrance.

The remaining three sets of openings, which are assumed to be genuine entrances, are OPENING 1 and 9 (and 15 where it bisects TERRACE 4) in the northwest, OPENINGS 2, 8 and 11 in the southwest and OPENINGS 4 and 5 in the southeast. Of these entrances, it is not clear if OPENINGS 9 and 4 are original and were refurbished during the construction of RAMPART 3 or if they represent *de novo* constructions. If one assumes the latter, then the construction of RAMPART 3 was also connected with a radical redesign of the interior and its use by the insertion of two new entrances.

Enclosures with multiple entrances can be found across Scotland (e.g. Harding 2004, 91; Ralston 2006, 66, 173-4), including the Scottish Borders and East Lothian, however they do not appear to be generally dominant within the enclosure record (Kokeza 2008, 101; Reader 2012, 195). Previous examination of the available East Lothian dataset (Reader 2012, 190-3, figures 6.46) suggests a single entrance appears to be by far the most common form, although, as noted earlier, on multivallate sites several entrances dominate, most likely reflecting combined factors of longevity of the site's use and size (cf Reader 2012, 195).

Of the upstanding sites within the study area, Black Castle (Canmore ID 56073) has two entrances (west and northwest) suggested by apparent causeways across the ditch, which remain unexcavated and therefore the contemporaneity of these openings is unconfirmed and the same is true for most of the enclosures in East Lothian. Of those excavated, most notably at Broxmouth, the three identified entrances found there represent different phases of construction and use, with only two entrances appearing to have been used during any one phase (Armit and McKenzie 2013, 43-4). This is probably also true of the multivallate/multiperiod site of Chesters, Drem, which has potentially three entrances (though likely only two functioning at the same time), however the site's complex sequence cannot be disentangled by survey alone (Connolly and Cook 2014).

As identified previously (Reader 2012, 190-2), interpreting entrances from often partially surviving cropmarks, characteristic of much of East Lothian's enclosure record, is fraught with difficulties. By the same token, except for the cropmark enclosure of Sheriffside (Canmore ID 56099), where unfortunately the entrances could not be identified during the excavations, none of the enclosures in the Hillforts of East Lothian Project study area have been investigated, preventing meaningful comparisons or interpretations.

Furthermore, the scale of the enclosing works at each of the various sets of entrances at White Castle are different: the largest and most impressive are at OPENINGS 2, 8 and 10, followed by OPENINGS 4 and 5 and then finally OPENINGS 1, 15 and 9 (Figure 7). Again, similar variations of scale have been observed across Scotland, for example Hill of Barra, Old Meldrum has a main southeast entrance, which has deeper

ditches and higher banks to either side than the other entrances (Cook 2012b). Correspondingly, at Broxmouth, all of the entrances were embellished and monumental with larger banks and ditches to their immediate sides than the rest of the circuit (Armit and McKenzie 2013, 88-91).

The aggrandisement or monumentality of entrances at enclosed sites has been subject to considerable discussions with evidence from sites across Europe and England (e.g. Collis 1981, 1984, 1996; Ralston 2006) or, more locally, within southern Scotland (summary in Kokeza 2008, chapter 5; Reader 2012, 248-250, Table 7.7). The evidence of embellished or strengthened entrances and sections of defences beyond that which would be required for pragmatic reasons exist on other sites in East Lothian, for instance at Fishers Road East (Haselgrove and Lowther 2000, 175) and Broxmouth (Reader 2012, 273; Armit and McKenzie 2013, 88-90) or in Scottish Borders– for instance Hamildean Hill or Cockburn Law (Kokeza 2008, 90).

The excavations carried out at Broxmouth suggested the likelihood of the presence of substantial timber gates and potentially a gate-house or watchtower associated with later phases of gateways (Armit and McKenzie 2013, 89-91; illus 4.37). Nonetheless, it is clear that not all such entrances had gate structures, as noted in relation to enclosed sites elsewhere, suggesting defence was not the key consideration for the design in these cases (cf Ralston 2006, 72, 84, 174). For instance, at Broxmouth, the earlier hillfort phase had a 15m wide west entrance without any evidence for fixed timber furniture or a barrier (Armit and McKenzie 2013, 88).

As Haselgrove observed (2001, 55), at some British enclosures, ramparts were particularly reinforced/enlarged on the line of approach, where anyone accessing the site would view them. A review of the evidence certainly tends to suggest that monumental or embellished entrances were often located at a point of easiest access and visibility of these from afar was part of the original idea to impress. Even where these have been embellished by additional banks or other structures and associated with multivallation and rows of entrances, the explanation probably lies in the desire to impress, rather than to defend (Kokeza 2008, 89-90, 102,105). This is certainly suggested at Broxmouth, where the focus on embellishment or monumentalising of entrances appears to be governed by an aim to make an impression from the exterior and to capitalise on the views from the interior towards the coastal plain and anyone travelling across it (Armit and McKenzie 2013, 91). It also argues for larger communities at certain sites or at certain times, where the entrance would represent a threshold, as important element of prehistoric societies (Reader 2012, 250, 267).

Correspondingly, some authors have argued for ritual symbolism or social status as being reflected in enclosure entrance orientations (Cunliffe 1995, 25; Hill 1995, 110), with a noticeable dominance of eastward entrances in some areas (e.g. Oswald *et al* 2006, 51, 77), however, in East Lothian there appears to be no distinctive patterns, other than a common avoidance of the north and south (Reader 2012, 196, fig. 6.47, 203; Reader and Armit 2013, 481 illust. 13.4; 484). However, it should be noted that White Castle had a northwest entrance, which was only confirmed by excavation and further northerly orientated entrances may remain undiscovered on other sites in the area.

It is worth observing that the northwest entrance at White Castle seemingly references notable landscape features to the north– namely Traprain Law, Berwick Law and the Bass Rock (Figure 36), which may suggest the importance of these geological formations to Iron Age societies, as observed previously in relation to entrance orientation as seen across Europe (Ralston 2006, 41-2). Alternatively, the entrance could be designed to provide views in relation to the various phases of enclosure at Traprain Law (on intervisibility of sites see for instance Ralston 2006, 40-41), which may have at this time served as a symbolic meeting place and would have been in local communities' memory (Armit & McKenzie 2013, 495, 512). Parallels can be suggested elsewhere in Britain, such as West Hill Hillfort in Northumberland

National Park, where the gateway faces directly towards the area's largest hillfort on Yeavinger Bell (Oswald *et al* 2006, 51).

Additionally, the southeast entrances at White Castle are in turn aligned to view the point where the ancient route leading from the south becomes visible (Figure 37) and the first view for any traveller approaching from the south, would be these, presumably elaborated, entrances (see also below).



Figure 36: View from northwest entrance line, showing Traprain Law (A), North Berwick Law (B) and Bass Rock (C) (© D. Connolly).

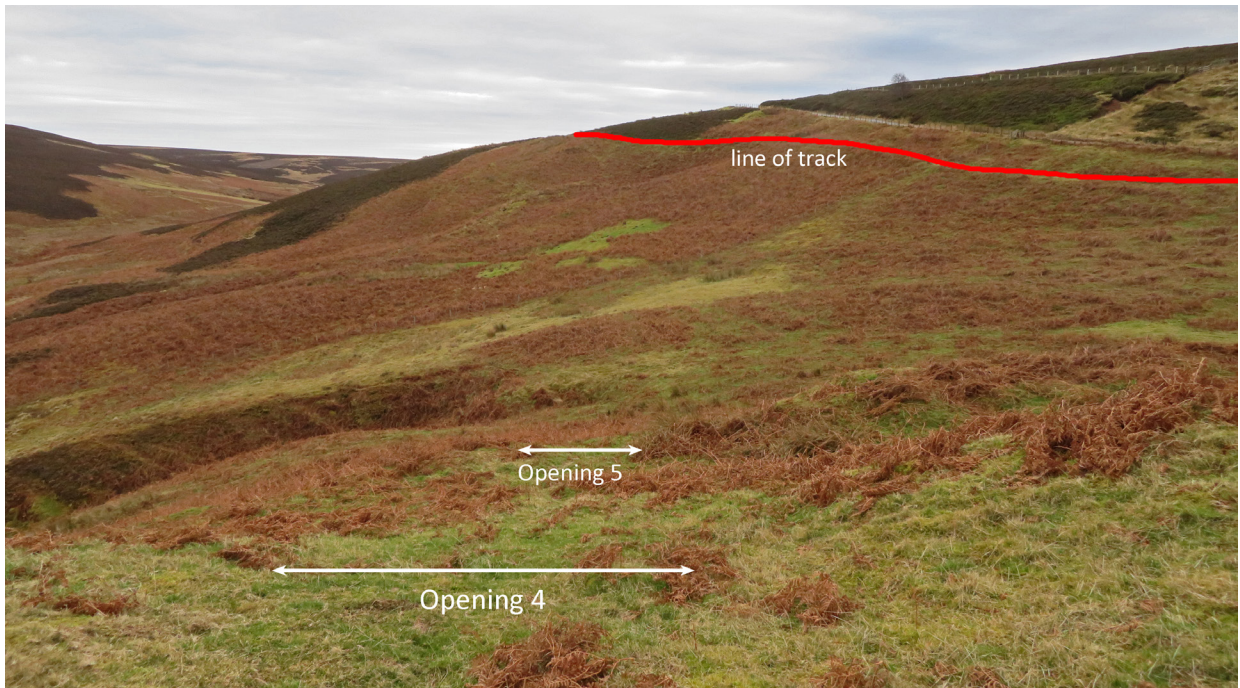


Figure 37: View from southeast entrance line, showing the ancient routeway from the south (© D. Connolly).

In relation to the entrances, MOUND 1 was located between OPENINGS 10 and 11 was assumed to form a discreet feature prior to the excavation, with OPENINGS 2, 8 and 10 assumed to form the main formal entrance to the site. Based on initial observation, the material of MOUND 1 is now clearly separated from the main bank of RAMPART 3 to both the northeast and southwest. Therefore, its exact relationship to RAMPART 3 was unclear prior to excavation. Excavation however revealed a previous stone surface beneath the mound and also showed that the southeast edge was defined by a row of postholes, uncovered in Trench 42, while a further limit was defined by a kerb [1106] exposed in Trench 11. Location of the MOUND 1 at the main formal entrance therefore seemed highly significant in this respect until matched with MOUND 2 to the southeast.

The excavated evidence lends itself to four possible interpretations:

- 1) MOUND 1 represents the northwest terminal of a formal entrance (OPENING 11), with corresponding southeast terminal (MOUND 2) and therefore OPENING 10 representing a later breach (either formal or erosional); this would create a dog-leg access to the site through RAMPART 3 (OPENING 11) and RAMPART 2 (OPENING 8);
- 2) MOUND 1 stood outwith the southwest entrance (OPENING 8) prior to the construction of RAMPART 3 and subsequently was respected and subsumed into this later work;
- 3) MOUND 1 was created later by altering the terminal end of RAMPART 3; an interpretation which presupposes OPENING 10 was the original formal entrance
- 4) MOUND 1 sits between two contemporary entrances into the site.

Based on the present level of excavation, it is not possible to distinguish between the four options, although the authors, prefer the foremost (i.e. option 1), which supposes the existence of a dog-leg access arrangement (staggered approach) to the site, as found commonly in 'hillfort' designs in England (e.g. Harding 2012, 78-83), for instance at the site of Bury Ditches, Shropshire (Brown 2006, 62 fig. 41) or Ring Chesters in Northumberland National Park (Oswald *et al* 2006, 53, 60, fig. 4.26) but which does not appear to be a feature of the East Lothian record (e.g. Harding 2012, 75-85). Purely military interpretations of this pattern suggest a defensive character to such and other 'passage' arrangements (e.g. Cunliffe 2005, 368; Ralston 2006, 67-8; Harding 2012, 78), although it is also feasible that this may be a result of re-use or re-design, whereby in this case the addition of the exterior RAMPART 3 would have rendered the original entrance approach (OPENING 8) impractical/cumbersome.

Trench 9 exposed a pair of perpendicular edge set stones [906] at the edge of the MOUND 1 (OR RAMPART 3), which, while unexcavated, was initially interpreted as a possible cist feature (Figure 38). While, without the excavation, any such interpretations must remain speculative, similar isolated burials at entrances have been recorded at other enclosed sites in East Lothian, for instance Grave 3 at Broxmouth (Armit and MacKenzie 2013, 428-430) and Knowes, near East Linton (Haselgrove *et al* 2009, 91-97) where the cist burial is covered by a low cairn and has been interpreted as relating to closure of the site. However, no clear evidence was excavated to suggest this feature was a cist and it was more likely disturbed kerbing.

Having said that, it is feasible that some level of formality would have been associated with the use of entrances and access. It is maintained that the movement and direction of routes to the various entrances must have been imbued with some deeper level of symbolic significance (e.g. Mytum 1996; Collis 1996, 90; Ralston 2006, 75, 129; Brown 2006, 65-6, 193), as suggested from the pattern of entrances, the views to and from the site, which cannot be simply prosaic but designed with purpose.

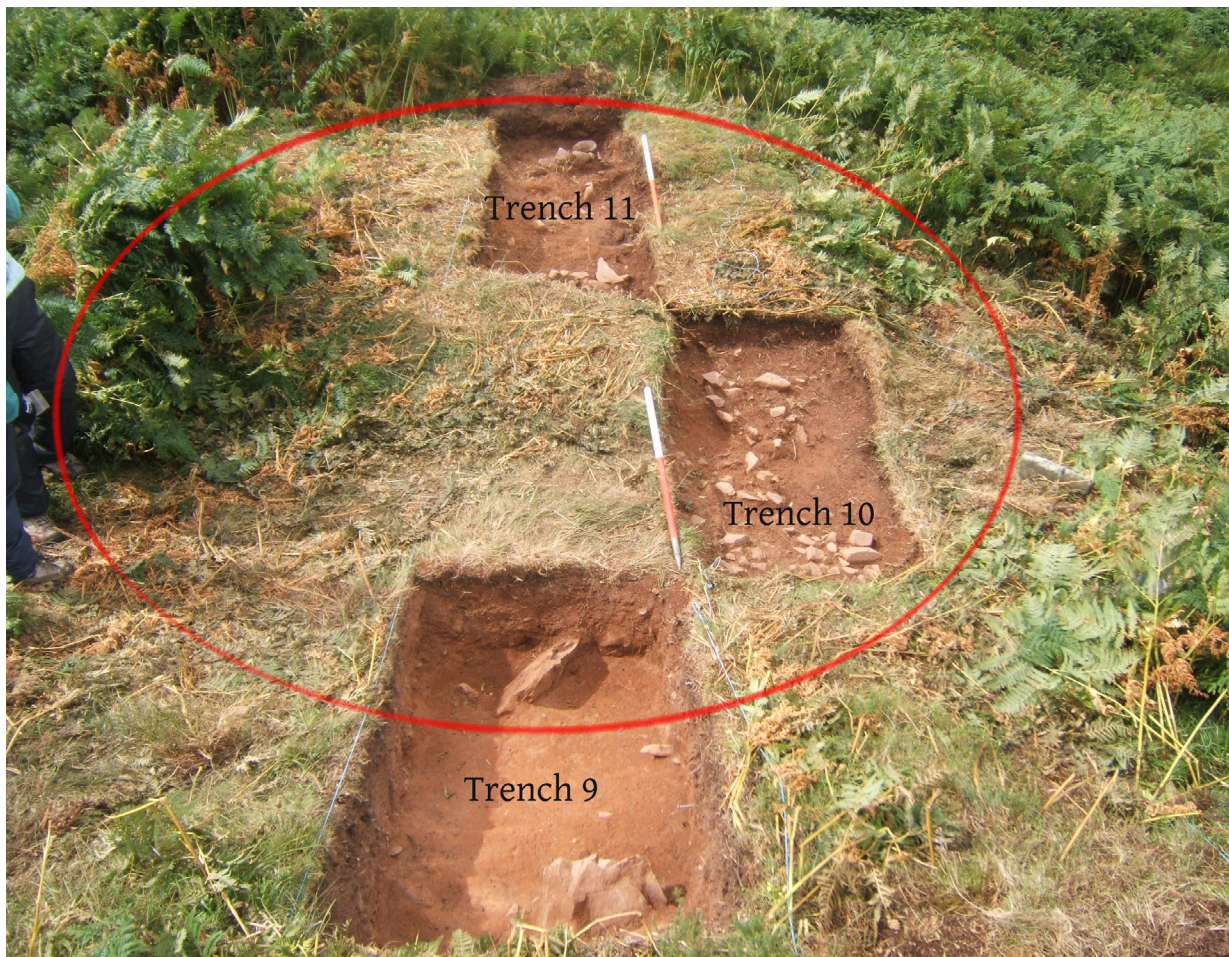


Figure 38: MOUND 1 (highlighted) looking southwest over trenches 9, 10 and 11 (2010 season); the vertical edge set stone is visible at the top of Trench 9.

At White Castle, this is best illustrated in the southwest entrances: people approaching the enclosure through the southwest openings would have had to walk the causeway, cross DITCH 3, then turn left along a narrow path that currently skirts the exterior of RAMPART 3, which would block the views of the interior (Figure 7). To the left, a steep sided gully would have added to the sense of verticality to anyone's approach and upon reaching the southwest entrances, the vista of the East Lothian plain would be visible before turning into what logically must have been the main access to the site or continuing round to the entrance in the northwest.

It is not clear if there was any contemporary track to the northwest entrance, (OPENINGS 1, 9 and 15), proceeding clockwise past what is presumed to be the main entrance in the southwest. Certainly, there is little trace of RAMPART 3 on the western slopes of the hill, a situation in complete contrast to the southern and southeastern slopes. Correspondingly, both RAMPARTS 2 and 3 are reduced to slight terraces c. 25m to the northwest of OPENINGS 8 and 10, implying the main purpose of their construction was to monumentalise the OPENINGS 8 and 10, as suggested on other southern Scottish sites, such as Gallowberry Wood or Hamildean Hill (Kokeza 2008, 146-5). This would still apply even if the course of the enclosing works was completed by palisades, identified on the inner circuit of White Castle in Trenches 13, 29 & 30 (see Section 9.4 and 9.5) and suggested elsewhere (Feachem 1971; review in Kokeza 2008, 143-46).

The presence of so many entrances, all of which are aligned, suggests that defence was not a primary motivation for the construction of the enclosing works, as a more defensible design would minimise the number of entrances and ensure that they were staggered, thus preventing potential enemy force gaining speed in a charge against any gate (Ralston 2006, 66, 75, 173-4). However, given the limited excavation, the nature of any gate features or palisades within entrances is unknown and elsewhere in Scotland such structures can be highly complex (e.g. Dunwell and Strachan 2007, 28; Armit and McKenzie 2013, 90). In addition, as has been noted above, the extant form of White Castle represents its final phase. It may be that in this final enclosure phase defence was a less pressing factor than in previous generations, where the preceding defensive circuits may have had fewer openings.

There has been a significant volume of recent discussion regarding the relationship between violence and hillforts (e.g. Armit 2007; Lock 2011; Harding 2012; Cook 2013a) and it is beyond the scope of this publication to add to this subject. Suffice to say, that while experience of violence in prehistoric societies was likely real and potentially widespread, it was probably not the major factor connected with hillfort design and construction, although on occasion it may have been (cf Oswald *et al* 2006, 69; Armit and McKenzie 2013, 496-497, 510). Additionally, it is unlikely that the contemporary East Lothian populations were sufficiently numerous to undertake large scale siege exercises outside hillforts (*ibid*).

11.4 Destruction and redesign

While the erection of multiple banks and ditches implies phases of construction and redesign, it is not possible to comment in detail on these in the absence of a more precise site chronology. It is assumed that there were other phases of construction and demolition not detected by the excavations.

The key event of redesign that the excavation identified was the levelling of RAMPART 1, which was deliberately demolished and used to infill DITCH 1, an event apparently associated with burning (Section 9.6). However, it is not clear if the demolition of RAMPART 1 was undertaken by White Castle's occupants as part of a process of redesign or as a result of some form of aggressive action (see also discussion in Brown 2009, 67). Nonetheless, the fact that RAMPART 1 appears to have been levelled to create an even profile along both its short and long axis may suggest that the occupants themselves were behind its destruction. Of course, this does not preclude this happening after any prior hostile destruction, as part of repair works. It is also uncertain what happened to the palisade line, which appears to have at least four structures constructed over the top of it (Platforms 5, 7, 8 and 11), implying it was disused at some point prior to their construction.

Supposing the demolition/slighting of RAMPART 1 was carried out purposely by White Castle's inhabitants then the most likely motivation behind this event was to enlarge the interior space. The infilling of DITCH 1 certainly creates additional space, and TERRACE 4 with the additional platforms, as well as PLATFORM 8 to the south, are ample proof of utilising this space. Despite this, it appears that the slope up to the line of the former RAMPART 1 would still create the impression of a significant barrier when viewed from outside (as it does today), even without the functioning ditch and bank.

Given the potential long duration of most enclosures, i.e. several generations, redesign of their enclosing works is a common occurrence across Scotland (Hingley 1992, 30, 32), sometimes with radical outcomes: for example, at the White Caterthun a multivallate enclosure with multiple entrances was replaced with an enclosure with no entrances (Dunwell and Strachan 2007). In general, the larger the excavation

sample, the more complex the evidence for redesign (Haselgrove 2009a, 213). This is aptly demonstrated by excavations at Broxmouth, which have identified six major reconstruction phases over a period of 120-275 years and numerous smaller scale maintenance works (Armit and McKenzie 2013, 86).

Just as the construction of any set of enclosing works requires a large communal effort, which may reflect underlying social bonds and obligations (Ralston 1996, 145; Sharples 2007, 179), so too does the renewal of these systems, which inevitably degrade over time (Ralston 2006, 103-4). Such processes are often interpreted as a focus for regular gatherings to maintain community cohesion (Sharples 1991; Hingley 1992, 32; Lock *et al* 2005; Wigley 2007), with such organisation perhaps presupposing an elite presence to organise such efforts (Dunwell and Strachan 2007, 92).

Supposing the addition or the removal of enclosing works reflects the changing dynamic between the need for defence and the internal space, it is feasible to suggest that defensiveness increases at moments of external stress and internal space may then be sacrificed (Collis 1981). Equally, conversely, at times of increased peace and trade and potentially resulting population growth, defensiveness may be abandoned in favour of internal space. While undoubtedly there were periods of conflict with neighbours that required more attention to their defences, it is argued that at White Castle the remodelling of the enclosing works was clearly undertaken in the context of increasing or maintaining the visual impression of a defended, imposing enclosure.

11.5 Internal use and settlement

White Castle contains 19 visible platforms (excluding STRUCTURE 17) and at least seven further possible platforms located from geophysical work (Figure 12), all of which are assumed to be connected to the enclosure's occupation, while STRUCTURE 17 and the pit cut into PLATFORM 20, clearly post-date it. It is assumed that each structure represents a cut platform upon which a timber building was constructed, as found on other excavated sites in Southern Scotland (e.g. Eildon Hill North, Owen 1992, 35). Access to the buildings on the platform appears to have been from the front of the platform rather than its rear, which of course implies that the majority of them had their entrances facing either north, northeast or northwest, indeed only PLATFORM 6 had the potential for a south facing entrance (Figure 12).

Roundhouse entrance orientation has been subject to a considerable volume of discussion, particularly in relation to any potential underlying cosmological model that the settlement adhered to (e.g. Fitzpatrick 1997; Giles and Parker Pearson 1999). However, it is increasingly clear that orientation tended to be dictated by locally specific and pragmatic circumstances, such as light, prevailing wind and ground slope, as convincingly argued by Pope (2007) and confirmed by other studies (e.g. Kokeza 2008, 88 for Southern Scotland). Thus, while the predominantly northern, northeast and northwest putative entrances at White Castle may seem strange and even rare, at a broader level (Pope 2007) they are predetermined by the decision to locate settlement on a north and west-facing slope. Beyond East Lothian there are further examples of north-facing entrances on platforms on north-facing slopes, as at Tap o' Noth, Aberdeenshire and Eildon Hill North, Scottish Borders (RCAHMS 2007, 104; Owen 1992, 26).

It is assumed that the visible structures represent the final phase of activity within the White Castle enclosure, with earlier settlement having been destroyed by subsequent phases, as was the case at Broxmouth (Armit and McKenzie 2013 491-4). However, it is likely that the extant platforms are not all contemporary, certainly some appear to truncate or be truncated by others. Having said that, this interpretation assumes that none are deliberately conjoined, which has been again identified

at Broxmouth (*op cit*, 181). If one accepts that the structures are near contemporary, there are clear indications of possible rows and clusters in addition to the hierarchy of structures within the interior (Figure 12); interestingly the three largest identified platforms (PLATFORMS 1, 4 and 13) are close to the three entrance routes (Figure 12). Within East Lothian, both Dryburn Bridge (Dunwell 2007, 99) and Phase 6 at Broxmouth (Armit and McKenzie 2013, 116) show evidence for internal settlement organisation, as also found on similar sites in England and Wales (e.g. Brown 2009, 68-9), however the White Castle excavations were not of sufficient scale to determine similar arrangements conclusively. The presence of three entrances, all of differing sizes, all associated with the three largest platforms certainly suggests a complex system of organisation at White Castle, though what form this took is unknown.

Moreover, assuming that there has been no substantial erosion of the hill, access to PLATFORMS 5, 7, 8 and 22 must have been difficult, given their location on the northern break of slope. In turn, this suggests that space may have been at a premium within RAMPART 1, although the visible structures only occupy 33% of the interior (Figure 12); assuming all these structures were contemporary. Intriguingly, there are no evident structures to the south of the central peak; there is a small open area to its north and there are no extant structures between the southern sections of RAMPARTS 1 and 2. With the exception of Platform 20, which is either a later platform or a later pit in an older platform, there are no structures in the southwest area between RAMPARTS 1 and 2. Although one cannot disregard the possibility of structures leaving no surface traces (Feachem 1963, 100; Ralston 2004, 34-5), given the careful design of the enclosing works at White Castle, it is unlikely that this layout is anything but intentional. Similar 'empty spaces' and marked concentrations of structures in enclosed sites are found elsewhere in Britain, such as Norsebury Rings, Berkshire or Yeavinger Bell, Northumberland (Brown 2009, 69), which, depending on the size and situation, could presumably have had varied function.

If the identified surviving internal settlement pattern is correct, such spaces could be potentially used for multiple purposes, such as markets, meetings, communal activities, including ceremonial (e.g. Brown 2009, 153), all uses suggested in relation to 'hillforts' more generally (Ralston 2006, 19-20). Elsewhere, such as the Tollard Royal in Cranborne Chase, temporary corralling of livestock has been also suggested (Cunliffe 2005, 248), although the enclosure here is of a very different character and size. Perhaps the central peak performed as a natural elevated platform from which activities could be undertaken and observed by many. Although there was no investigation of the central area at White Castle, elsewhere, four-post structures are argued to have potentially served as elevated platforms for public speaking (Evans and Knight 2001; Cook and Dunbar 2008). Although many of the post-structures (four, six or nine-posters) may have served as granaries, other uses are also suggested, including excarnation platforms, as proposed for some sites in England and Wales (Brown 2009, 78-9, and for some of the post-structures excavated at Dryburn Bridge (Dunwell 2007, 105). A similar ritualised element was proposed at the site of Croft Ambrey in Wales, a mound c 1.5m high and 5m across (top), with dry-stone kerb on three sides, was constructed in the enclosure annex and potentially served as 'ceremonial arena' (Brown 2009, 153). As noted above (Section 11.3), anyone visiting the site via the southwest entrance would have had to pass a series of ditches and banks, all visual statements about the scale, importance and duration of the White Castle community. By contrast, access via any of the other entrances was considerably less impressive. Even so, it is noticeable that the bulk of the internal settlement was orientated on the northwest and southeast entrances.

The noticeable variations in the size of the platforms and indeed the locations of structures, both within and beyond RAMPART 1 may suggest a settlement hierarchy within the enclosure. However, as the structures were not excavated, we cannot confirm that they were all habitation structures and

some may have formed the equivalent of barns or stores (Guilbert 1981; Brown 2009, 73). Indeed, one of the largest structures at Broxmouth (House 2) was argued to have a non-domestic origin (Armit and McKenzie 2013, 186) and the authors argued for a non-hierarchical society (*op cit* 501-2).

Correspondingly, while population estimates based on the internal area of the excavated roundhouses were attempted in the Broxmouth account (Armit and McKenzie, 2013, 500), a similar exercise has not been undertaken at White Castle, as while the platform dimensions are known, the scale or function of the assumed structures on the platforms are not.

Given the limited evidence, it is not clear if White Castle was occupied permanently or seasonally. Certainly, roads to and from the site are frequently blocked during current winters (David Connolly *pers obs*), however, this does not preclude continuous prehistoric settlement and Roy's as well as Armstrong's eighteenth century maps certainly show permanent settlement in the wider environs of White Castle (see Figure 5). It may be that if, as argued below, grazing would have been a major part of the White Castle's residents' economy, there may even have been a small permanent population throughout the year, increasing over the summer.



Figure 39: Aerial view to south across Whitecastle, note the platforms in the interior circuit and the obvious earlier track into the uplands to the left (© Skyscape Survey).

11.6 Economy

The exact nature of White Castle's economic base is unknown, though its location indicates a clear connection to accessing upland pasture and animal husbandry, as manifested by its association with a major ancient route to, through and from the Lammermuirs (Figure 39). Indeed, other commentators have argued for such a pastoral function for enclosures in the first millennium BC (e.g. Macinnes 1982, 59; Armit and Ralston 2003, 179).

Armit and McKenzie (2013, 503-5) assume the need for cooperation amongst the populations of East Lothian as well as the importance of pastoralism to the economy, which presupposes access to the Lammermuirs. However, it is argued that cooperation need not occur to the exclusion of competition and there will clearly have been periods of more limited collaboration, if not open hostility. At Broxmouth, the occurrence of perimortem trauma on human bones in all occupational sequences, as well as finds of weapons, including bone spearheads are suggestive of inherent violence within Iron Age societies (ibid, 497, 510), as argued previously (Armit 2007). The location of White Castle, the design of its enclosing works and the relative position of the settlement within White Castle's interior indicate that visual impact on visitors and travellers was an important factor. This suggests that there was a competitive or cautious relationship with visitors, perhaps one in which negotiations or payments were required to move livestock north or south.

A direct link between 'hillforts' and accessing upland pasture has been suggested elsewhere in Britain, for example in the Cheviots and Dumfriesshire (Oswald *et al* 2006, 87-8; Frodsham *et al* 2007, 263; Mercer 2018, 204-210). If managing access to pasture was one of the key functions of White Castle's economy, it may be that its relative importance increased over time, with the infilling of DITCH 1 potentially designed to create more space to corral livestock. Additionally, the movement of livestock in and out of the enclosure between Ramparts 1 and 2 may explain the need for multiple entrances (see also Ralston 2006, 66,68); while elsewhere, in southwest England, multivallation (extra lines of ramparts and ditches) in numerous enclosures has been linked to keeping livestock within (Cunliffe 2005, 280-5, 299, 357).

The practice of transhumance has been previously considered for sites in East Lothian (Macinnes 1984, 193) and within the study area, including White Castle and Black Castle (CANMORE NT56NE 2), in relation to established routeways into uplands (Reader 2012, 307-8, 346). The large faunal assemblage (cattle and sheep) from Broxmouth is also suggestive of the necessity to access the pasture land; feasibly the animals could have been taken to upland pastures in Lammermuirs during the summer months (ibid, 93, 346; Armit and McKenzie 2013, 506). Macinnes (1982, 67; 1984, 193) likewise tentatively suggested possibility of seasonal use for some of the East Lothian upland enclosures, possibly linked to transhumance.

Of course, pastoralism may not have been the only means of subsistence and small scale cultivation cannot be ruled out. White Castle is located within 500m of Fallow Green Rig (CANMORE NT66NW 22), a deserted settlement associated with rig and furrow and livestock enclosures, which appears on Armstrong's map (1773) as '*Falla green*' and which may potentially be of earlier, perhaps medieval date. In turn, the surviving rig could overlies even earlier cultivation evidence, as proposed elsewhere (Halliday 2001, 11). Further cultivation marks can be seen on the hill slopes south of the fort and elsewhere in the vicinity, indicating the prior suitability of the site's environs for arable agriculture (Figure 5 [1]).

This is suggested elsewhere in the area, such as Friar's Nose enclosure (CANMORE NT66SE 1), with evidence of cord rig (CANMORE NT66SE 25; Reader 2012, 190), while multiple cord rigs of later prehistoric origin and their association with prehistoric enclosures or roundhouses has been observed elsewhere in the Southern Uplands, particularly in the Borders (Halliday 1986, 584-5; 2001, 11-12; RCAHMS 1997, 44-5; Topping 1989, 160-71) and beyond (Oswald *et al* 2006, 91; Brown 2009, 127). It is therefore more than feasible that mixed farming practices have been carried out by White Castle's population, as previously proposed for other enclosures in East Lothian, notably Broxmouth and Dryburn Bridge (Macinnes 1984, 190; Dunwell 2007, 107; Reader 2012, 93). This is also in concordance with the interpretation of mainstay economy for Iron Age enclosures in wider Britain (Brown 2009, 127).



Figure 40: The present day landscape of the Southern Uplands looking southeast down the valley of the Whiteadder, with Spartleton Edge to the left and Priestlaw beyond (© Skyscape Survey).

11.7 Abandonment

It is not clear exactly when the prehistoric settlement at White Castle was finally abandoned, though the excavations have not recovered any dates later than 358-94 cal BC. Given the limited scale of the investigations, this does not preclude evidence of later use surviving within. Although, the pattern across Scotland suggests that in the closing centuries BC large scale enclosures ceased to be constructed (Armit and Ralston 2003, 178-9), it may be that, as with Broxmouth Phase 6 (Armit and McKenzie 2013, 185-6), settlement at White Castle continued and that successive generations simply reused existing platforms. However, without further excavations this remains mere speculation.

It is also unlikely that the economic function of the location would have ceased with the disuse of the site but rather the nature in which the control of the resources and how it was expressed by local communities changed.

11.8 Post-enclosure

Two post-enclosure features were identified at White Castle, PLATFORM 20 and STRUCTURE 17, dated to cal AD 974-1049 (SUERC-51472) and cal AD 1471-1640 (SUERC-51474) respectively. While examples of rural medieval activity remain rare (Yeoman 1991) and the discovery is therefore exciting, discussion is limited by the nature of the excavation.

The character of the feature identified as PLATFORM 20 is uncertain– it may have been either a platform proper or a level surface associated with quarrying stone from the long abandoned RAMPART 1. There is

certainly tenth and eleventh century settlement in the Lammermuirs, which relates to both the earlier Anglian occupation (Woolf 2007, 6) and later conquest of East Lothian by the Scots under Kenneth II around AD 973 (Perry 2000, 7). As noted earlier, it may be that PLATFORM 20 is linked to the currently undated structures at Fallow Green Rig (CANMORE NT66NW 22) but this remains pure speculation.

STRUCTURE 17, which is late medieval/early modern in origin may also be connected to Fallow Green Rig but this cannot be proven. Not much can be said about its character, other than that it had a turf superstructure and likely a simple thatched roof, it may also have had a hearth, which suggests human habitation.

With medieval structures having a very wide variation of forms (Walker and MacGregor 1993, 9), and presumably function, its potential use is unknown, but given the recorded subsistence activities taking place in the Lammermuirs in more recent times and presently, the possibility of a shepherd's or herder's hut cannot be discounted at this location. Comparable evidence of shepherd's huts within prehistoric enclosures certainly appear elsewhere, such as West Hill or Great Hetha hillfort, Cheviots, Northumberland; the former of possible medieval origin, the latter more recent (Oswald et al 2006, 87, fig. 6.3, 117, fig. 7.15), while a group of shielings around Spartleton Edge, located only three miles to the southeast of White Castle, is mentioned in a twelfth century charter (quoted in Morton 1830, 128). This charter, drafted during the reign of Malcolm IV (1153-1165), represents a gift of church of Fogo and pasture land at Bothkilscheles by Earl Gospatric to Kelso Abbey; it reads:

“By those bounds viz. from the source of the Kaldwell, all the way to the uninhabited land where this stream descends, and from there as that river falls into Bothkil [Bothwell]; and thence as Bothkil falls into the Witheddre[Whitadder]; and then from the Witheddre to the great road which goes beyond Spertildoun [Spartleton], and by that road all the way to the source of the Kaldwelle; and to have common pasture between them and the shielings of my men of Pinkerdun[Pinkerton, near Innerwick].”

Arguably, the structure is quite close to the low-lying ground as well as being very small (at 4m by 4m) for a shieling, though this is not without parallel (Bil 1990, 56, 247). Indeed, one of the few potential equivalent sites close to the study area, a thirteenth or fourteenth century structure recorded on Traprain Law (Rees and Hunter 2000, 437) was considerably larger at 10-12m long and 4m wide. Therefore, the function of STRUCTURE 17 must remain uncertain at present, although its association with sheep herding shouldn't be ruled out.

11.9 Whiteadder Route

The small excavations in Trench 19 exposed at least three phases of tracks, with evidence of repair and refurbishment, clearly required to maintain the difficult route, particularly in harsher winter weather. Two of the uncovered surfaces included evidence of cart ruts (Figure 12).

Although no finds or dating material were recovered, it is unlikely that these tracks are earlier than post-medieval in date. Nonetheless, it is proposed that this route could feasibly be of prehistoric origins and certainly used during the Iron Age; with the tracks representing post-medieval manifestations of this route, which, if not on exactly the same alignment, would not be too far from what is topographically possible. Given the nature of the steep sided Whiteadder valley and the deep side/ancillary valleys (cleughs), it is difficult to find another easier route through this area of the landscape and this would have also been the case in the more remote past (Figure 41).



Figure 41: Line of earlier track to left with modern tarmac road to right, showing a potential continuity of the route to the south (© Skyscape Survey).

It is therefore plausible that the White Castle site was accessed from this same route, given that there are no other suitable locations for a routeway through the Whiteadder Valley at this point. It is important to stress that the visible track would not be the same physical surface as that used in prehistoric periods, however the valley is constrained at this point, thus the route would, by necessity, have followed the suggested alignment, at least within 100m of the White Castle causeway in both directions; in fact, it was followed by two of the authors on foot much further. It is noticeable that the modern road deviates from this earlier track in several locations, clearly following a course suitable for motorised transport rather than gentler slope gradient needed for horse or oxen driven carts, though otherwise the road is following the earlier route.

Although no detailed discussion of the historical routeways in Scotland as a whole or Southern Scotland (East Lothian) is attempted here (on this see Inglis 1916; Graham 1951; 1962; Reader 2012: 126-32), some references can be made. Several historically recorded routes cross the Lammermuirs through valleys such as the Whiteadder, or transversely across the uplands, have been linked to intensive cattle and sheep farming. Many of these may be traced back to at least the Medieval period (cf Graham 1951, 199, 205-6; 1962, 217-235) but may be much earlier (cf Reader 2012, 127-29).

Several of these medieval routes are recorded in connection with military campaigns, including the Whiteadder route (Figure 10), which appears in connection to the campaign of James IV, who is said

to have marched with his army from Haddington and camped at Johnsleugh (Graham 1962, 224-5; Goodman 1981, 111). Although Graham (1962, 224) alludes to a possible earlier evidence of this route recorded in the thirteenth century Melrose charter during the reign of Alexander II, more certain indication is the above recorded campaign of 1496. In the fifteenth century this route must have been clearly suitable even for the heaviest of guns and carts, which would have accompanied the army and therefore well established by that time, as evident from the following excerpt: “The treasurer made payments on the 16th September [1496] for the ‘walking of the guns that night at Johnsleugh’ [3km to the southeast of the site]...”(Goodman 1981, 111).

Feasibly, the origin of the Whiteadder route might be sought much further in the past, as argued previously for other upland routeways in Lammermuirs and Southern Scotland (e.g. Reader 2012, 130). In relation to Whiteadder, Reader, drawing from earlier research (e.g. Graham 1951; 1962), considers the importance of this route to sheep pasture, as well as its connection to a number of prehistoric monuments (Reader 2012, 130-1), of which White Castle is one. Feasibly, the siting of the enclosure at this location suggest some attempt at control of access and movement, inferring the prior existence of an established routeway (see also Section 11.6).

11.10 White Castle within East Lothian: some final considerations of the enclosure design and location

As discussed earlier (Section 5.2.4), the existing enclosure corpus from across East Lothian’s Iron Age demonstrates considerable variation of scale and architectural form, a characteristic made more apparent when contemporary prehistoric sites are examined.

Seven broadly contemporary enclosures from East Lothian are compared in Table 8 in terms of date, form and number of entrances, although, of course, caution must be exercised as the durations and dates of most of these enclosures remain unclear and they may not be directly contemporary. The table clearly demonstrates the considerable architectural variation amongst these structures– from presence of palisades, uni- bi- and tri-vallate ditch systems, single entrances, multiple entrances and multiple entrance orientations. It is also clear that many of these monuments represent several generations of redesign, expansion and contraction, with former entrances blocked and new ones created (cf Hingley 1992). As noted at Broxmouth (Reader 2012, 191; Armit and McKenzie 2013), frequently this chronological complexity is only visible via total or extensive excavation.

With regards to entrance orientation, White Castle’s assumed main entrance (OPENINGS 2, 8 and 11; Figure 7) was to the southwest, which is echoed in many other multiple ditched sites in East Lothian (Reader 2012, 195). Reader (*ibid*) makes a compelling case for multiple ditched sites’ tendency to have more than one entrance, as does White Castle, which she interprets as reflecting the longevity of use at these sites, as well as their larger size (see also Section 5.2.4).

As noted earlier (Section 11.6), the logic behind the use of multiple entrances is unknown and may have changed over time or even between different groups or locations. Nonetheless, it may reflect issues connected to seasonal use or status of those who entered through different gateways. With specific regard to White Castle, the authors argue that pastoralism and the concomitant requirements of this pursuit (such as requirement for suitable spaces to hold livestock and openings for easy access) must have played a role in the site’s design, although this is hard to express, given the similar forms of other contemporary enclosed sites located in very different situations.

Table 8: Comparison of enclosures in East Lothian contemporary with White Castle; (dimensions are approximate) (data from Canmore unless otherwise indicated)

Site (phase)	Date	Area	Enclosure Type	Entrances	Reference
White Castle (1.1)	After 672-429 cal BC and before 536-391 cal BC	0.6 ha	Univallate bank and ditch	Multiple; at least south-east and southwest and potentially northwest	
White Castle (1.2)	After 549-401 cal BC and before 554-353 cal BC	0.3 ha	Bivallate banks and ditches	Multiple; at least south-east and southwest and potentially northwest	
White Castle (1.3/1.4)	Between 405-353 cal BC and 306-209 cal BC	0.6 ha	Bivallate banks and ditches	Multiple; at least south-east and southwest and potentially northwest	
Broxmouth (1)	640/570-490/430 cal BC	0.3 ha	Palisade and ditch	One	Armit and McKenzie 2013, 44
Broxmouth (2)	490/430-395/375 cal BC	0.6 ha	Bivallate ditches and ramparts	Two; east and west	Armit and McKenzie 2013, 44
Broxmouth (3a)	395/375-295/235	1.2 ha	Expanding; Univallate to Bivallate	Two; east and southwest, though SE blocked then reopened	Armit and McKenzie 2013, 44
Broxmouth (3b)	395/375-295/235	1.5 ha	Expanding; Univallate to Bivallate	Two ; east and southwest, though SE blocked then reopened	Armit and McKenzie 2013, 44
Broxmouth (4)	295/235-235/210 cal BC	n/a	No enclosure; settlement expanding over older defences	n/a	Armit and McKenzie 2013, 44
Broxmouth (5)	235/210-100-60 cal BC	n/a	No enclosure settlement expanding over older defences	n/a	Armit and McKenzie 2013, 116
Broxmouth (6)	100/60 cal BC-cal AD 155/210	?	Univallate bank	One; South	Armit and McKenzie 2013, 44
East Linton	390-200 cal BC	0.87 ha	Trivallate promontory with multiple entrances, some subsequently blocked	Multiple; to north and southwest; north entrance subsequently blocked	Haselgrove and Hale 2009, 111-114
Foster Law	760-410 cal BC and 360-50 cal BC	0.36 ha	Univallate oblong enclosure	One; West (earlier enclosure west and north)	Haselgrove and Hale 2009, 104-108
Standing-stone*	390-200 cal BC	0.17 ha	Ditched enclosure and palisade*	One; West	Haselgrove, Carne and Fitts 2009a, 44, 66
Biel Water	410-200 cal BC and 390-190 cal BC	0.02 ha	Palisade	One; East	Innes and McLellan 2007, 130
Eweford Cottages	390-200 cal BC	0.28 ha	Bivallate ditches	One; East (?)	Innes and McLellan 2007, 131
Dryburn Bridge	Prior to 400 cal BC	0.35 ha	Palisade	One; East	Dunwell 2007, 7

*There is both LBA and IA material in the ditches and palisades, which is either residual or intrusive and no overall consensus over the origin (Haselgrove 2009a; contra Sharples 1991).

Moreover, the East Lothian enclosures also display considerable variation in size– for instance, Biel Water is covering approximately 13% of the final phase at Broxmouth (see also Section 3, Figure 2,

Table 1). Presumably much of this variation reflects access to resources; the more impressive an enclosure the greater the economic base. It is assumed that there must have been some form of hierarchical relationship between the differing sizes of enclosures, although of course it could also have been functional.

Within the data-set, Knowes, East Linton and Broxmouth are perhaps closest to the scale and form of White Castle. The greater evidence from Broxmouth indicates that the site expanded in size over time (Armit and McKenzie 2013, 496-8) and as noted above, it is assumed that the scale of the enclosing works at White Castle also increased through time.

As argued earlier (Section 11.4), the creation of enclosing works has often been linked to the issue of community cohesion and maintenance of identity or even to ensuring access to communal resources, rather than solely military considerations (e.g. Bowden and McOmish 1987, 77; Lock *et al* 2005, 134). It is clear that increasing the size of an enclosure involves a significant amount of work, so we might view the increasing scale of Broxmouth as representing an ever-expanding resource base; presumably more communities contributing to Broxmouth or greater agricultural resources.

Certainly, during the closing centuries BC there is evidence from southeast Scotland for increased woodland clearance and agricultural intensification (Tipping 1994, 31-3). Although there are some regional differences, pollen analyses suggest that the East Lammermuirs were deforested in the middle of the first millennium BC, while other analysed sites in South Scotland and North England suggest cleared land between 200BC and 50BC or generally in the second half of the first millennium (Tipping 1994; Tipping 1997, 20-1; see review in Kokeza 2008, 10-12). As suggested, the wood clearances were presumably accompanied by the perceived adoption of the rotary quern in the second half of the first millennium BC across Scotland (McLaren and Hunter 2008), while there is also evidence for improvements of agricultural tools in the Iron Age generally (Rees 1979, 472).

It is also worth noting that given its location on the knoll there was only a finite amount of internal space for White Castle, so, unlike Broxmouth (Armit and McKenzie 2013), it could not expand. Although, of course, the infilling of Ditch 1 did slightly increase the available space within the former. It is further proposed that this redesign was undertaken in a manner that retained the illusion of tri-vallate enclosure.

It is possible that in addition to maintenance, ‘change’ and redesign were also important concepts for contemporary society. Of course, we do not know if there were any blocked entrances at White Castle and indeed will never know unless the ramparts are completely excavated, so it is possible we are underestimating the scale of redesign at White Castle.

Unfortunately, it is not possible to compare the internal settlement pattern at White Castle with the contemporary configuration at Broxmouth, as the latter had been destroyed by subsequent activity, but perhaps one crucial observation may be permitted: Broxmouth continued well into the early centuries AD and White Castle seems to be abandoned in the closing centuries BC. Naturally, as discussed above, this does not mean that the wider economic function of White Castle environs ceased at the same time.

Haselgrove (2009b, 230) comments that many East Lothian enclosures are increasingly abandoned in favour of open settlement in the closing centuries BC and that this coincides with the re-emergence of Traprain Law as a major centre and an ever increasingly densely occupied lowland plain around

it. Presumably, if the White Castle sequence had not ended we might have recovered evidence for platforms spreading out across the ramparts at this time.

Seemingly, wealth and identity came to be expressed via different forms to enclosing works and this may have been combined or indeed influenced by a more hierarchical and centralised society. Certainly, elsewhere in Scotland the closing centuries BC witness a rise in personal adornment (Hunter 2007 17, 49). Alternatively, it may be that the slightly more marginal location of White Castle hastened the abandonment of enclosing works.

Beyond East Lothian, White Castle's combination of multiple entrances and multivallation invites comparison with sites such as the White and Brown Caterthun in Angus (Dunwell and Strachan 2007), Barmekin of Echt (RCAHMS 2007, 99) or Barra Hill in Aberdeenshire (Cook 2012b) or multiple similar sites across England and Wales (e.g. Brown 2009, 57-66). However, it seems increasingly clear that these are superficial comparisons only, albeit using similar architectural language and as others have pointed out (Cowley 2009, 207, 212; ScARF 2012, 77), caution should always be expressed when using typology to compare and cross-date sites from different areas and regions.

At White Castle, multivallation appears to be linked to site redesign, while evidence from other sites, such as Broxmouth, suggest that in some instances, multivallation may be the result of re-use or complex chronologies of site (Hingley 1992, 30). Display and design were clearly important concepts connected to prehistoric enclosures, but White Castle and indeed Broxmouth are only ever bivallate and have no more than two entrances at one time, while the sites mentioned above have between three and even nine sets of enclosing works and many more entrances, suggesting very different concepts, motivations and site histories behind creating these (Figure 42).



Figure 42: White Castle today, with the three surviving banks (© Skyscape Survey).

12. Conclusion

The four seasons of intrusive archaeological works (key-hole excavations) and concomitant topographic and geophysical survey at White Castle unearthed less than 0.5% of the enclosed site and produced a plausible framework sequence for the major structural phases, together with a detailed plan of the final phases of the enclosure. In addition, the limited excavation uncovered evidence of substantial bioturbation damage, consisting of bracken root penetration across the site, even in locations where none was evident above the ground, causing significant homogenization of archaeological deposits. The, admittedly, limited excavations were successful in achieving their goal of dating the major periods of constructional activity on site; though more nuanced phasing and characterisation could have been achieved by different approach, such as application of Bayesian statistics. Of course, this does not preclude further targeted works in the future in order to tease out unresolved questions. As this publication hoped to demonstrate, the White Castle works carried out by Rampart Scotland form a valuable contribution to an ongoing conversation pertaining to the existing and ever-increasing dataset into the chronology of this highly visible monument type.

Examination of the results and radiometric dating identified four main phases of activity, starting with limited pre-enclosure evidence and followed by two major phases of enclosure, including the initial complex development of the banked enclosure and subsequent multiple evidences of redesign (between c 750 cal BC and 100 cal BC); the final two phases correspond to a slight post-enclosure presence during the high medieval (cal AD 974-1150) and the post-medieval/early modern periods (cal AD 1471-1640). Although a more refined site sequence/chronology could not be determined, the enclosure phase itself suggests four distinct periods of enlargements or alterations to the banks, ditches, terraces and entrances. These fit within two statistically distinct date ranges (c 750 cal BC and 400 cal BC and between c 366 cal BC and 100 cal BC), corresponding to the development of the site from initial univallate banked enclosure, through to the bivallate or even trivallate one (although RAMPART 3 remains undated).

It is argued that White Castle's location and design was connected to control of access to the grazing resources of the Lammermuirs in the site's immediate locale through its opportune situation on an ancient Whiteadder route. Nonetheless, this does not preclude management of arable land as part of its economy, with evidence of more recent cultivation still apparent on the slopes particularly to the west of the enclosure. It is likely that this mixed pastoral and arable economy both pre-dates the enclosure's construction and carries on long after the abandonment and maintenance of its enclosing works.

White Castle's imposing banks and terraces were constructed at a time when such edifices were commonplace across Britain and were probably built to underline and define the community's rights to local resources in the face of competition with other communities. On occasion this competition may have turned violent but it is also feasible a great degree of intercommunal cooperation was practiced by the local communities, as represented in these constructions. The very act of construction, maintenance and reworking of the enclosing works are likely to have sustained and enhanced community cohesion and perhaps formalised and reaffirmed access to communal resources. Correspondingly, it is clear that the location and size of internal structures follows a pattern of use and reuse that hints at a complex chronology and functionality of occupation.

During all stages of the enclosure's lifecycle, the enclosing works were designed to be impressive, from both close proximity and a considerable distance; either from the south as the structure became suddenly visible on the Whiteadder route from the last 250m or so, adding an element of surprise and perhaps awe, and to the northwest as it towered above the traveller(s) approaching from the Lothian

Plain. Specific entrances were located, added to and embellished to take account of the surrounding landscape, in order to maximise the visual impact on visitors and on occupants in regards to specific landmarks. The excavations, together with detailed survey, clearly indicate that display and status were important concepts behind the White Castle's design, perhaps more so than defensive considerations. It is argued that multivallation would have been part of the same display concerns, even if the three sets of enclosing works/ramparts were not all serving as such contemporaneously.

The radiometric dates suggest that in the closing centuries BC, the enclosing works at White Castle ceased to be maintained or redesigned, although it is not clear if the internal structures were likewise abandoned or would have been (re)used. It is plausible that activity on the site continued for some time after this, albeit within disused enclosure circuits. The two phases of post-enclosure activity identified on the site are a platform cut into the derelict TERRACE 4, dating to around the tenth century AD, and a late medieval/early modern turf-built building, built against the interior of the much reduced RAMPART 1; this likely representing a shepherd's hut. Perhaps a fitting end, given the assumed importance of pastoralism to the White Castle's builders.

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Appendix 1: Calibrated and uncalibrated dates from Enclosed sites in East Lothian

NOTE: Information from Canmore (Scottish Radiocarbon Database) unless otherwise stated – data collected November 2017

Canmore ID	Site Name	Site Type	Select Dates (C_{14})/Period	References
58800	Broxmouth	Fort	Phases 1 (IA enclosure): 640/570-490/430BC; Phase 2 (hillfort construction): c. 490/430-395/375BC; phase 3 (hillfort remodelling): 395/375- 295/235BC; phase 6 (hillfort/enclosure renewal): 100/60BC-AD 155/210	<i>Armit and McKenzie 2013: chapter 2</i>
68375 and 257292	Dunbar, Castle Park	Promontory Fort	IA promontory: 3 ditches ?168 cal BC – cal AD 128; Roman period enclosure: AD 85-380 (predating middle ditch); AD 125-495 (courtyard 1); Northumbrian (Anglian) period (Phase 8 rampart and palisade): c. 5th/6th century AD to 7th century AD; cal AD 405-625; cal AD 430-655 (dates not from defences)	<i>Perry 2000: 28-33, 59-61; Lelong 2007, 245-6; Reader 2012: 243, table 7.4</i>
56215	East Linton	Fort	LBA inner ditch: 1370-1050 cal BC; LBA palisaded ditch: 1260-1000 cal BC; LIA central ditch: 390-200 cal BC	<i>Haselgrove and Hale 2009: 113-114</i>
54998	St Germain's	Fort, enclosure	IA based on artefacts and cross-reference with similar sites, but no C_{14} dates	<i>Alexander and Watkins 1998: 208, 216-219, 242-247</i>
56374	Traprain Law	Fort	Most C_{14} dates cluster in 10th- 9th centuries BC (LBA): e.g. contexts under summit enclosure 1010-810 cal BC; 1010-820 cal BC; 1260-910 cal BC; 1260-910 cal BC; re-occupied in early AD, with sizable population especially in 3rd and 4th centuries AD; Cruden Wall: probably 4th to 5th century construction	<i>Armit et al. 2002; Reader 2012: 143;</i>
57479	White Castle	Fort	IA (c. 672 cal BC to 209 cal BC); the dated activity appears to relate to two discrete phases: c. 540-395 cal BC and 366-186 cal BC; inner rampart construction c. 406-354 cal BC/destroyed before 410-350 cal BC; middle rampart: after 670-410 cal BC/ before 536-391 cal BC; outer rampart: built after 306-209 cal BC	<i>Cook and Connolly 2014: 26, 27, fig.9; see also Fig. 15; Error! Reference source not found.</i>
57809	Whittingehame Tower	Fort	LBA/EIA, RIA (5-6 C. AD): main ditch, lowest fill recut- 1200-970 cal BC; main ditch recut upper fill- cal AD 340-540	<i>Hamilton and Haselgrove 2009: 190, table 9.1</i>
330175	Biel Water	Enclosure (palisaded)	420-200 BC	<i>Innes and McLellan 2007: 128</i>

Canmore ID	Site Name	Site Type	Select Dates (C ₁₄)/Period	References
58802	Dryburn Bridge 1, Dunbar	Enclosure (Palisaded)	EIA prior 400 BC-50 BC? And Roman; Palisaded enclosure: likely pre-400 cal BC; Houses 2 and 9: most probably constructed prior to 400 cal BC (and by proxy the inner enclosure also); cemetery: in use prior to 400 cal BC; post-enclosure house 7 fence and dog burial: early centuries AD	Dunwell 2007: 96-7, 100-102
56406	East Bearford 2	Enclosure/settlement	LIA: enclosure ditch base- 210-20 BC	Haselgrove and Hale 2009: 101
57594	Eweford/ Eweford cottages	Enclosure/settlement	Enclosed settlement (basal silts from ditch A and B): 390-200 BC; ditch A uppermost midden fill: 350-40 BC; unenclosed: 40 BC to 210 AD	Innes and McLellan 2007: 131-36, 140
54934	Fisher's Road/ Port Seton West/Seton West Mains	Enclosure/settlement	Main enclosure phases: C 200 BC to AD 100; 200 to 100 BC; then 30 BC to 210 AD; post-enclosure?: 3rd to 5th century AD; 9th - 11 century AD Enclosure(s) phases: first enclosure (smaller, phase 3): c. 2nd century cal BC; second enclosure (phase 4): c. 2nd century cal BC to 1st century cal AD; primary fill NE ditch terminal: c. 196-91 BC (or 360-70 AD 10)	McCullagh and Mills 2000: 26-9
54931	Fisher's Road/ Port Seton/ Fishers Road East	Enclosure/settlement	Main phases broadly 1st century BC-1st century AD; lower deposits from 3 ditches: 1st centuries cal BC to 1st centuries cal AD; Enclosure 1, inner ditch base clay: 90 cal BC to AD 60; enclosure one, outer ditch lower fill: 100 cal BC to AD 20; Enclosure 3 ditch circuit: 40 cal BC to AD 80; 90 to 230 cal AD; pre-Enclosure 1: stage 1: c. 4th to 3rd centuries BC; Enclosure 1, inner ditch constructed: late 2nd century to 1st century BC; Enclosure 1 outer ditch construction: later 1st century BC; Enclosure 1 inner ditch disused/outer ditch partially continued: 1st century AD; Enclosure 3: early 1st century BC to early 2nd century AD	Haselgrove and Lowther 2000: 126-32
56315	Foster Law	Enclosure/settlement	EIA, LIA: inner ditch- 760 - 400 cal BC; recut (basal fill)- 360-50 cal BC; inner ditch terminal- 760-410 cal BC	Haselgrove and Hale 2009: 106-8
57720	Knowes 2	Enclosure/settlement	Ditch recut: 2nd century BC-1st century AD; N ditch terminal recut: c. 4th to 1st centuries cal BC; entrance cobbled surface- post 2nd to 1st centuries BC; a hearth/oven inside the entrance: AD 1-220; charcoal rich layer W of oven: AD 1-220; human bone from cist burial at the entrance: 50 cal BC to AD 130, AD 80-320; bone samples: 420-200 cal BC, 750 to 390 cal BC	Haselgrove et al 2009b: 71, 74, 79, 89-90, 93

Canmore ID	Site Name	Site Type	Select Dates (C ₁₄)/Period	References
56099	Sheriffside	Enclosure	7th century BC- 4th century AD; Ditch 1 was cut before cal AD 211-384 and Ditch 4 was cut before cal AD 58-260; Ditch 5 cut prior to 401-353 cal BC; c791-703 BC: Palisade 3; c766-486 BC: Palisade 2; c378-202 BC: Palisade 1; c120 BC-AD 60: scooped settlement from 2011 season; c. AD 211-384: Ditch 1, ditch cut before this point and filled after it; after c. AD 211-384: Palisade 4.	<i>Cook et al 2018: 14; Cook and Connolly 2017: 12; Cook and Connolly 2016: 10; Cook and Connolly 2015: 14</i>
143239	South Lodge/West Prestonpans	Enclosure	2910 BP, or 899 BC	https://canmore.org.uk/site/143239/south-lodge
56438	Standingstone	Enclosure/ settlement	An unenclosed settlement during the LBA was enclosed during the 10th or earlier 9th century cal BC (LBA). The site was reoccupied during the LLIA Age by an unenclosed settlement represented by three large circular structures; Enclosure dates: Ditch western terminal, lower fills: 1370 to 900 cal BC; eastern and southern ditch segments, upper fill: 810 to 540 cal BC; second-phase palisade (upper fill and posthole): 1010 to 830 cal BC; second-phase palisade (posthole cut into the slot): 980-810 cal BC; internal feature within enclosure (two post-settings fill): 1020 to 830 cal BC	<i>Haselgrove et al 2009a: 54-66</i>

