

◆ Whitehawk Camp

THE IMPACT OF A MODERN CITY'S EXPANSION ON A NEOLITHIC CAUSEWAYED ENCLOSURE, AND A REASSESSMENT OF THE SITE AND ITS SURVIVING ARCHIVE

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A grant from Our Heritage, a Heritage Lottery Fund scheme, facilitated a programme of archive conservation and reassessment, site improvement, archaeological investigation and community outreach at Whitehawk Camp, an early neolithic causewayed enclosure, during 2014 and 2015. Data gathered by the project indicates how the monument has deteriorated since the 19th century, due to a variety of impacts, and the extent to which these have, or have not, been archaeologically recorded. Through the experience of the project, suggestions are made as to how the site can be better protected in the future and the site improvement works carried out by the project are described. The archaeological investigations carried out by the project are then outlined and the limitations of the results of previous fieldwork and the surviving archive detailed. Through the reassessment of the site's stratigraphic and finds archives, site formation processes and site use are addressed. The reassessment revises our understanding of the site and also its importance in the light of modern archaeological techniques and current knowledge of the British neolithic period.

INTRODUCTION

Whitehawk Camp, located in Brighton, East Sussex (Fig. 1), is one of the most complex, finds-rich and well-dated neolithic causewayed enclosures in southern Britain. The first of these is thought to have been constructed shortly after 3,800 BC, with primary use on the last active sites finishing shortly after 3,300 BC (Bayliss *et al.* 2011, 703). Construction at Whitehawk Camp is thought to have started around 3,650 BC, with primary use lasting for between 75 and 260 years (Healy *et al.* 2011, 226). In 1923 it became one of the first sites to be designated a Scheduled Ancient Monument (SAM 1010929) and excavations carried out in the 1930s were early examples of developer-funded archaeology (Curwen 1934; 1936). Whitehawk Camp featured prominently in the neolithic landscapes survey carried out in the 1990s by the Royal Commission on the Historical Monuments of England (RCHME 1995) and was one of the key sites revisited and dated as part of the Gathering Time project (Whittle *et al.* 2011).

Despite its obvious importance, the site suffered piecemeal destruction and encroachment from development throughout the 20th and 21st centuries (Sygrave *et al.* 2015, 13–24). Likewise, the condition of the excavation archive had deteriorated

since its deposition in the late 1930s: there was no comprehensive catalogue of the collection and key artefacts had been dispersed or were inadequately packaged (Sygrave *et al.* 2015, 45–6).

From the 1990s onwards, staff from Archaeology South-East (Centre for Applied Archaeology at University College London) and members of the Brighton and Hove Archaeological Society volunteered their time to engage the local community with the site and to lobby local government. This led to the formation of the Whitehawk Camp Partnership in 2014, which comprises the archaeological society, the UCL Centre for Applied Archaeology and Brighton and Hove City Council's Royal Pavilion and Museums and Cityparks.

In January 2014 the partnership was awarded a grant through the Heritage Lottery Fund's Our Heritage scheme in order to undertake the Whitehawk Camp Community Archaeology Project, hereafter referred to as the project. The project ran from April 2014 to March 2015 and worked with local volunteers and community groups to raise awareness of the importance of the monument, investigate the extent of the monument, improve the condition of the site and audit, repack and assess the 1930s stratigraphic

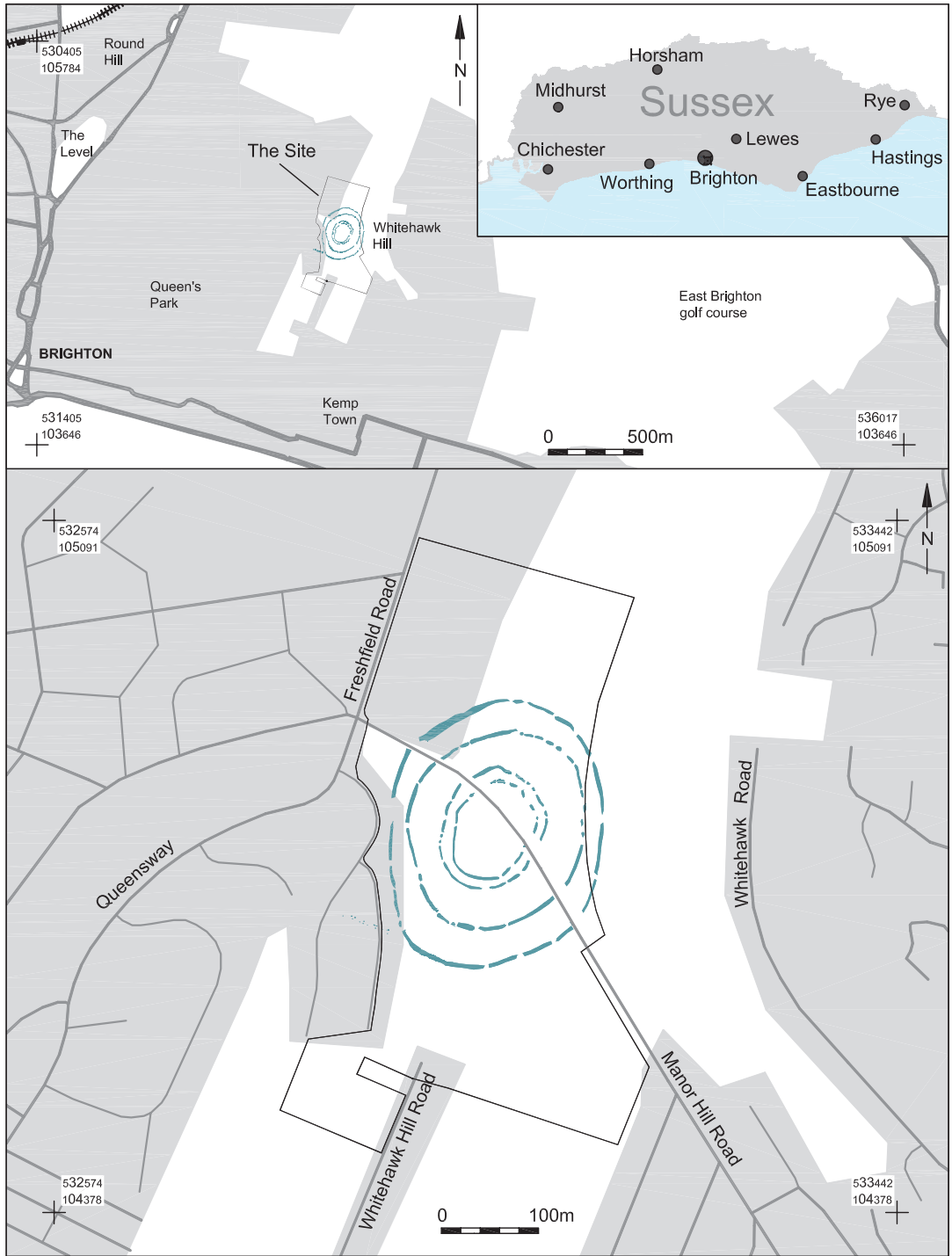


Fig. 1. Site location.

and finds archive. Volunteers took part in all project activities. The results of this project are presented within the evaluation report (Orange *et al.* 2015) and the Post-Excavation Assessment and Updated Project Design (Sygrave *et al.* 2015); the latter is reproduced in full in the ADS Supplement. This paper presents a background to the monument's deterioration over the last 200 years, the results of the recent fieldwork project and a synthetic discussion of the reassessment of the surviving archive.

THE MONUMENT'S DETERIORATION

The deterioration of Whitehawk Camp over the last 200 years is intimately linked to the expansion of Brighton and the pressures brought about by its urban setting (Sygrave *et al.* 2015, 21–4).

IMPACTS EVIDENCED BY HISTORIC MAPPING

The 1st edition Ordnance Survey, produced in 1876 (Fig. 2), shows the site as two well-defined circuits of earthen banks, truncated by the racecourse and a probable dew pond. Agricultural small holdings can be seen abutting the south of the monument, with newly constructed streets and the Brighton workhouse to the north-west. Subsequent mapping through the later 19th and early 20th centuries records the major impacts on the monument. Although the extension to the racecourse track (Fig. 2, g) and the construction of Manor Hill (Fig. 2, h) were archaeologically mitigated (Curwen 1934; 1936), other major impacts prior to the scheduling of the site in 1923, such as the extension of Whitehawk Hill Road (Fig. 2, b), the expansion of the racecourse enclosure (Fig. 2, a) and the expansion of allotment gardens across the south-east (Fig. 2, c) of the monument, were not. Further impact from allotment gardens (Fig. 2, d), their subsequent redevelopment as a compound for the racecourse (Fig. 2, f) and the construction of stable blocks (Fig. 2, e) in the north-west of the monument also appear to have occurred after the site became a scheduled monument, but without archaeological mitigation (Sygrave *et al.* 2015, 22–4). During the later 20th century, several episodes of soil deposition, landscaping and bund, or embankment, formation occurred on or near the site, notably in the north of the monument where two terraces were constructed and an earthen bund, approximately 70m long and 3m wide, was installed to prevent

vehicular access (Fig. 3). This bund was removed during the present project and it is thought that two other bunds were removed from the monument in the early 1990s, although their exact positions and extent is unclear (Sygrave *et al.* 2015, 17–8). This soil deposition occurred without scheduled monument consent or archaeological monitoring.

IMPACTS NOT EVIDENCED BY HISTORIC MAPPING

Less tangible deterioration to the monument has also occurred which is not evidenced in the historic mapping, such as the presence of service trenching across the monument (Fig. 4). This was already an issue in the 1930s, when the archaeological excavation that took place ahead of the construction of Manor Hill revealed a number of substantial water mains had been laid across the site (Fig. 4) (Curwen 1936). The recent archive reassessment has shown that the excavation of these water mains is likely to have resulted in the contamination of previously undisturbed neolithic deposits in this area (Forsyth 2015, 106). The magnetometer survey undertaken by the project also showed that probable water pipes had been laid across the south-eastern quarter of the site, presumably when this area was allotment gardens, across the pulling up track (the most southerly extent of the racecourse, which extends into the monument), and in the north east of the site (Fig. 4) (Archaeology South-East 2014, 4–5). The extent to which service trenches have affected the site is unclear, partly due to the lack of archaeological fieldwork on the site between 1935 and 1991 (Sygrave *et al.* 2015, 19), and partly because service trenches are considered permitted development and can be laid, under certain circumstances, without archaeological monitoring. Since 1991 there have been a further 18 developer-funded archaeological investigations on, or adjacent to, the scheduled monument, mainly associated with changes to the racecourse and service runs (Sygrave *et al.* 2015, 18–9). This suggests that there could have been numerous other unrecorded impacts on the monument.

Other less obvious impacts include the accumulation of rubbish and disturbed soil across the site. The magnetometer survey showed how the compaction and subsequent depression of the monument's ditches have acted as capture points for modern rubbish and that they are now only detectable as arcs of magnetic disturbance, rather

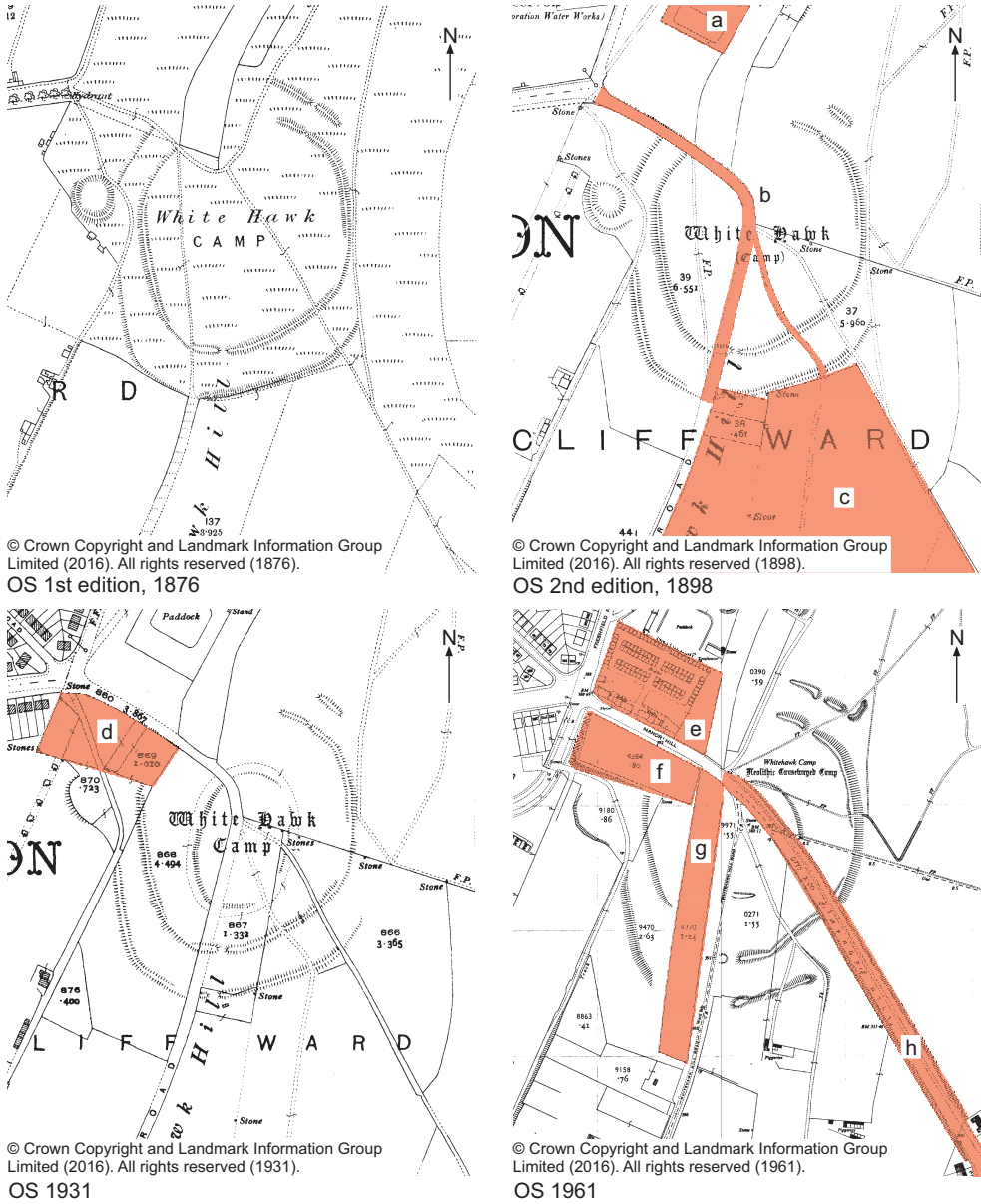


Fig. 2. Historic Ordnance Survey maps showing major impacts on the monument during the 19th and 20th centuries.

than as archaeological features (Archaeology South-East 2014, 4–5).

These impacts and others, such as unauthorised vehicular access rutting the site, have diminished and obscured the earthworks shown on the 1st edition Ordnance Survey to the point where it is difficult to discern the majority of the monument.

The 1993 survey by the Royal Commission on the Historical Monuments of England (hereafter RCHME) (Fig. 3) and report on the site (RCHME 1995) presents a complex array of earthworks in comparison with the 1st edition Ordnance Survey (Fig. 2) and it is impossible to tell, without archaeological investigation, whether many of these

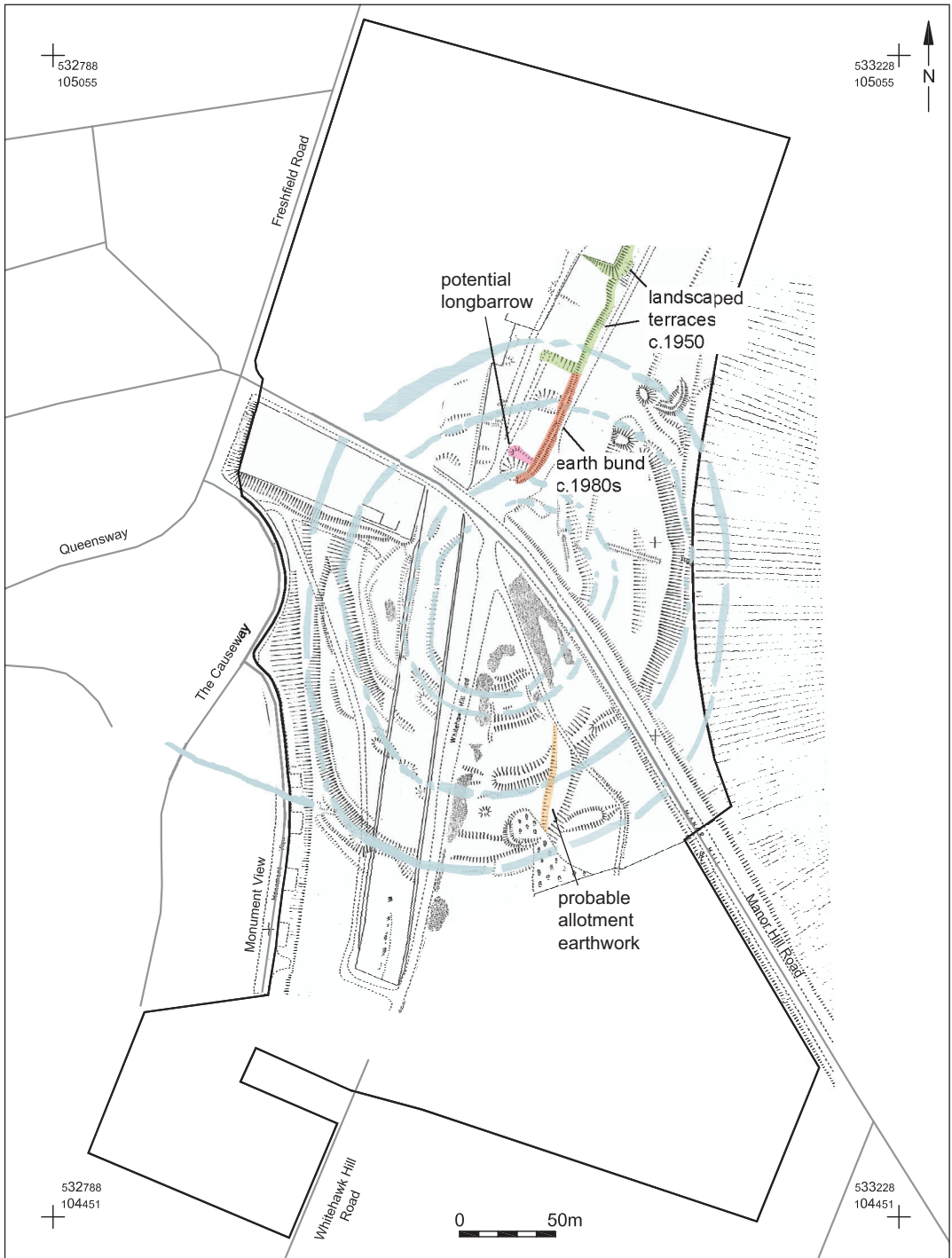


Fig. 3. Plan showing further impacts to the monument in the late 20th century, after the Royal Commission on the Historical Monuments of England 1995.

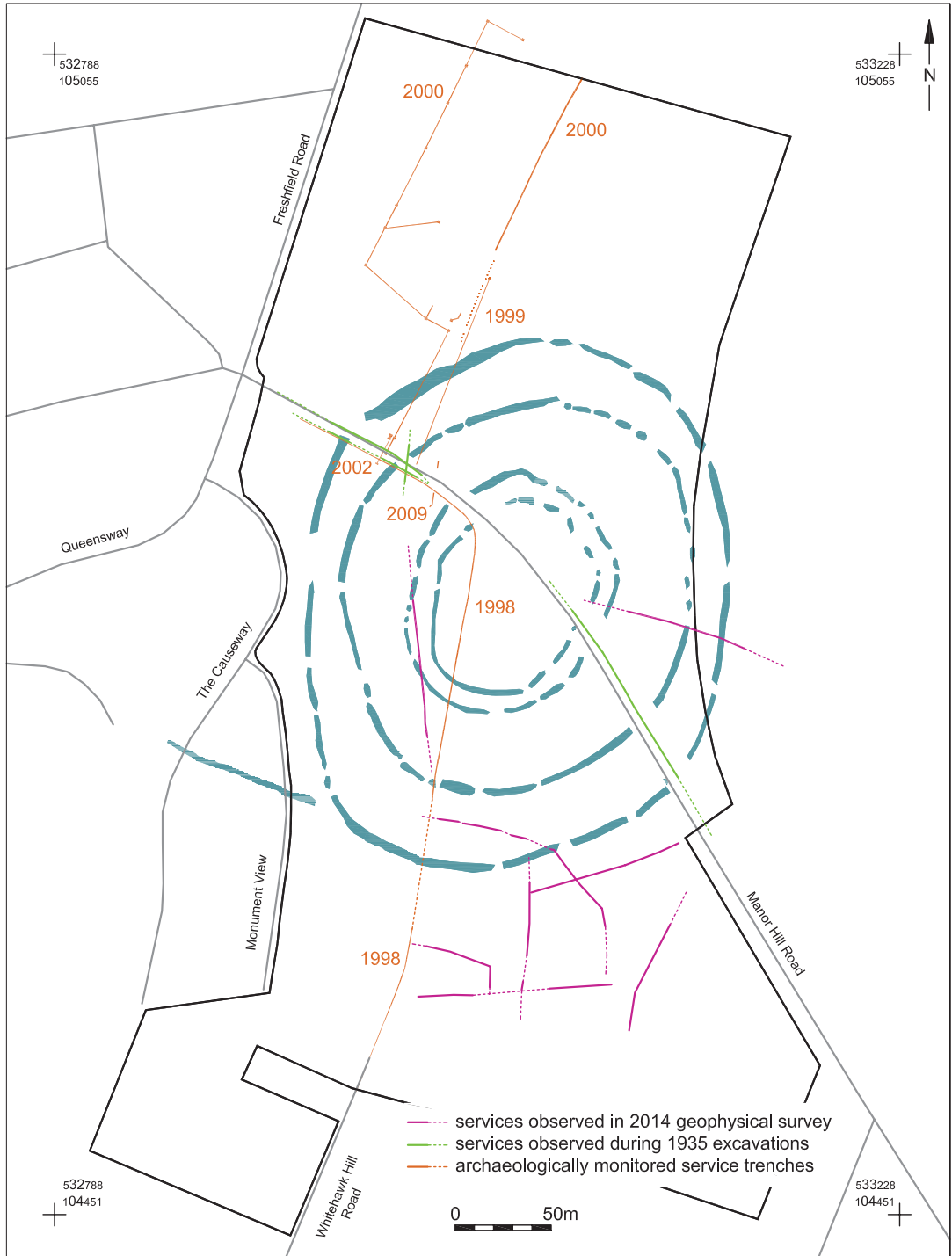


Fig. 4. Plan showing observed service runs across the site.

are archaeological features or the result of impacts caused by later 19th- to 21st-century activities on the site.

THE FIELDWORK PROJECT

The fieldwork elements of the project were designed to better protect the monument through a search for archaeological features outside the scheduled area and site improvement works.

COMMUNITY INVOLVEMENT AND THE COMBINING OF THE SITE'S ECOLOGICAL AND ARCHAEOLOGICAL IMPORTANCE

The recent history of the site has shown that being designated as a scheduled monument is not necessarily sufficient to prevent damage and deterioration, especially in an urban setting and that the local community and local government need to be aware of a monument's importance in order to actively choose to protect it. The project realised that the site's importance to the majority of the local community was less about the fact that it was a scheduled monument, with low, poorly defined, grass banks and esoteric archaeological value, and more about the fact that it was a green space to enjoy: a place to stroll, walk dogs or enjoy allotment gardening with a viewpoint across the city and a telecommunications mast seen as a local landmark. The project therefore attempted to bring together these interest groups, and any existing voluntary and community organisations, in order that the various aspects of the site's importance could be combined. Volunteers were involved in all aspects of the archaeological and site improvement works, and talks and seminars were organised to inform the public of the site's archaeological and ecological importance. In this manner the project hoped to gather a greater and more widely based support for the site, which would improve its long-term survival and provide a lobby for continued site improvements. The methodology through which the work was undertaken is detailed in Sygrave *et al.* 2015, and the outcomes of the project in the evaluation report (Orange *et al.* 2015).

The project brought together key groups, including local community volunteers interested in heritage and ecological conservation, local residents, Brighton and Hove Archaeological Society, Brighton and Hove City Council's Cityparks rangers, who manage the site, and Brighton

Racecourse Ltd, which leases the northern half of the scheduled area from the council. The rangers actively involve volunteer groups and individuals in their tasks and the project provided volunteering opportunities in many aspects of heritage work, as well as undertaking numerous outreach events. The project aimed to improve the site for ecology, improve the condition of the scheduled monument and encourage the public to enjoy an open green space in an urban setting. A key example of how this benefited all groups was the protection and expansion of downland habitats on the site.

The 1st edition Ordnance Survey shows the monument and the area surrounding the racecourse as downland (Fig. 2). Whilst the racecourse has caused numerous impacts upon the monument it seems that it has also played a crucial role in the preservation of downland in the area, which has in turn contributed to the site's survival. This habitat accommodates a staggering array of plants, animals and fungi, many of which are rare or threatened (Bangs 2004, 125–238), and is recognised as having significantly declined in the UK over the last century. Today, parts of the site and surrounding area still contain some of the best unimproved chalk grassland in Brighton and Hove (Fig. 5), although this is at risk from the encroachment of brambles and scrub and requires active management.

SITE IMPROVEMENTS

As part of the project the rangers and volunteers replaced broken and rusting fencing along the site of the racecourse, which improved its setting and facilitated the reintroduction of sheep on the hill (Fig. 6). Grazing by sheep reduces the need for mechanical mowing, which can scalp earthworks, and therefore provides a better means to manage and improve the site's chalk grassland by preventing the growth of shrubs and brambles.

The racecourse funded the removal of an illegal earth bund across the north of site (Fig. 3), removing an intrusive 20th-century earthwork from within the scheduled area which obscured the monument and gathered rubbish. The scar caused by the removal of the bund was planted by volunteers with downland species which had been grown by the rangers. Further to working with the project, Brighton Racecourse Ltd changed its land management practise on a northern portion of the scheduled area to encourage the return of downland species, which also provided a better demarcation



Fig. 5. Species-rich chalk grassland on Whitehawk Hill. ©Paul Gorringe



Fig. 6. The return of sheep grazing to Whitehawk Hill. ©Paul Gorringe

of the scheduled area. Ecology, heritage, the local community, users of the site and the racecourse have all benefited from these activities.

The active management of downland ecological and archaeological sites by their owners is supported through Natural England's Environmental

Stewardship scheme (Natural England and DEFRA 2015) and the site was used as an example of good management practise at a meeting hosted by Cityparks for stewardship monitors. The Cityparks rangers are committed to the long term management of the site and the Whitehawk Camp

Partnership is committed to supporting them through the provision of free advice from heritage professionals, as well as supporting community outreach and volunteering.

INVESTIGATING THE EXTENT OF THE MONUMENT

Whitehawk Camp is a complex monument with at least four circuits of causewayed ditches and banks. However, it is far from certain that this is the total extent of the neolithic activity and previous survey work suggests that other contemporary features could be present in the wider vicinity. On other enclosure sites, such as Hambledon Hill, associated contemporary features outlie the main enclosure area by some distance (Mercer and Healy 2008, 13).

Curwen's original bosing, an early geophysical technique, and topographic survey of the site (Ross Williamson 1930) suggest there is a potential fifth ditch circuit to the north-west. The 1935 excavation also noted two further ditches downslope to the east, although these appear not to have been recorded or excavated (Curwen 1936, 69). No associated earthworks were recorded with these outer ditches, although it is highly likely that these, and others in the vicinity of the site, had been removed by the extensive allotment gardening and racecourse landscaping which occurred prior to the first detailed archaeological survey in 1928 (Ross Williamson 1930, 58–9; Sygrave *et al.* 2015, 21–2). The presence of other contemporary earthworks not directly related to the causewayed enclosure was postulated in the RCHME survey of the site in 1993, which noted a potentially earlier long barrow, respected by the second ditch in the north of the monument (Fig. 3) (RCHME 1995). Other features, such as the tangential ditch to the south-west of the site, excavated in 1991 (Fig. 7) (Russell and Rudling 1996), are now thought to be of Bronze Age or Iron Age date (Oswald *et al.* 2001, 142–3), although the tangential ditch to the north-east is yet to be tested.

In order to address this, the project attempted to identify archaeological features outside of the scheduled area through geophysical survey (Archaeology South-East 2014) and then test them with targeted excavation (Figs 7 and 8) (Sygrave *et al.* 2015, 37–44). Although modern rubbish and disturbed soil made interpretation difficult, several potential features were identified and investigated. However, all proved to be natural in origin, including a substantial east-west fissure to the south of the monument partially filled with a

clay-with-flint deposit (Sygrave *et al.* 2015, 37–8).

The excavations, even those immediately adjacent to the scheduled area, also produced a very limited and heavily abraded assemblage of neolithic or later prehistoric worked flint and no other identifiable finds earlier than the late medieval to post-medieval periods. A similarly poor assemblage was noted in a previous archaeological evaluation just to the north of the scheduled area, which also identified no features securely dated earlier than the 19th century (Chris Butler Archaeological Services 2010). This is surprising, given the wealth of neolithic material within the ditches of the monument and evidence that the monument was used during at least the Beaker, later Iron Age and Roman periods (Doherty 2015a, 67–9). What needs to be explored further is whether this lack of finds is due to activity taking place exclusively within the enclosure, even in later periods, and the banks of the monument then constraining the post-depositional movement of material from its centre, or whether material had been lost from the site due to other processes.

THE REASSESSMENT OF THE SURVIVING ARCHIVE

The following section presents a synthetic discussion covering various themes which arose through the recent reassessment of the surviving archive. As part of the project a rough calculation was made of the percentage of the monument (the four known circuits) so far excavated and is presented in Table 1. (Sygrave 2015, 51).

Table 1. Estimated percentage of monument excavated.

Ditch Circuit	Total area of ditch in m2	Area of ditch excavated in m2	Estimated % of ditch excavated
1	503	61	12%
2	720	97	13.5%
3	1,639	215	13%
4	2608	185	7%
All Ditches	5,470	558	10%

LIMITATIONS OF PAST FIELDWORK AND THE SURVIVING ARCHIVE

The archives from the excavations (Fig. 7) which took place in 1928–29 (Ross Williamson 1930), 1932–33 (Curwen 1934) and 1935 (Curwen

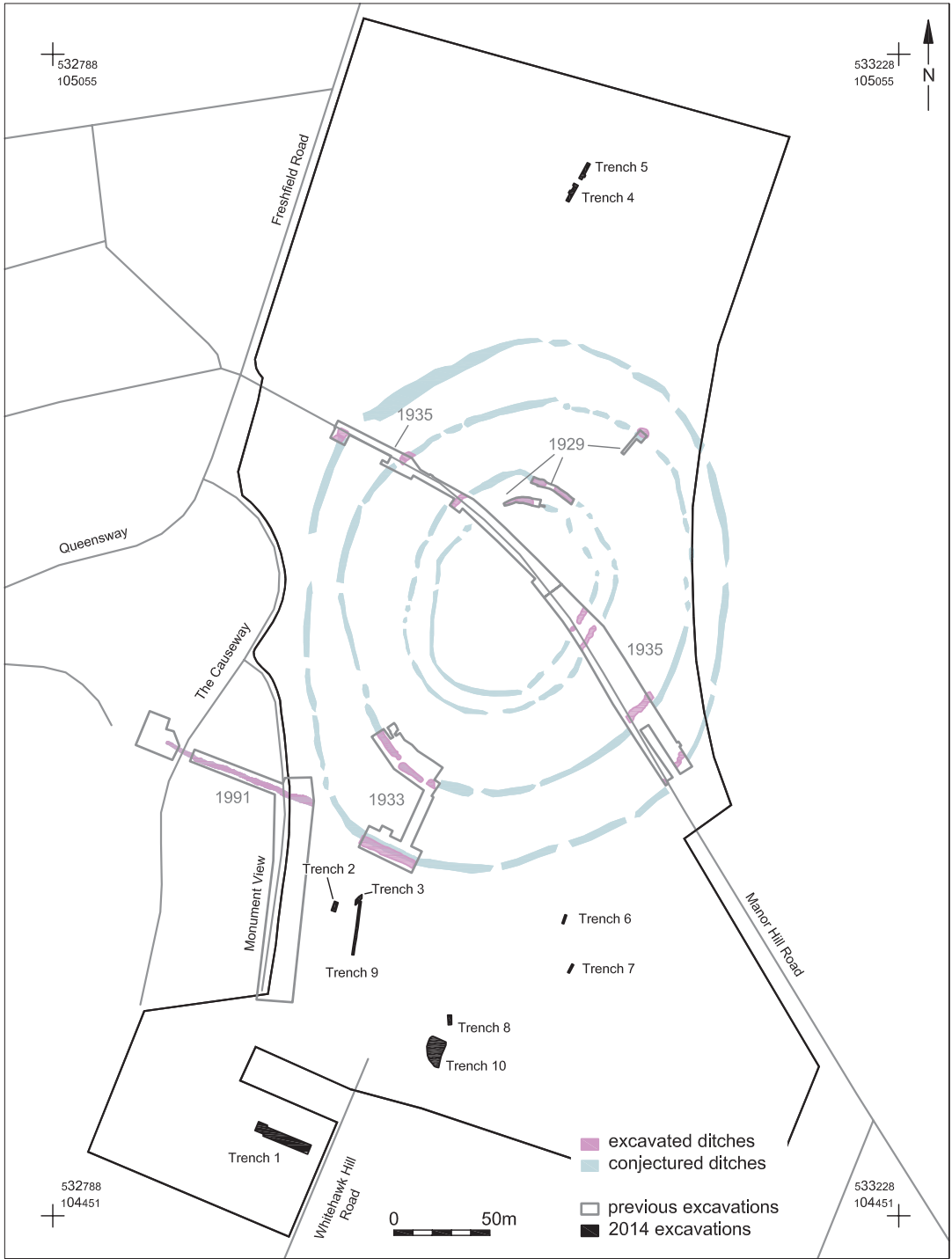


Fig. 7. The locations of the previous major excavations on the site and of the 2014 trenches.



Fig. 8. The excavation of Trench 1 during the 2014 fieldwork.

1936) were deposited with the Brighton Museum and Art Gallery and the Sussex Archaeological Society shortly after their publication. However, the resultant archive has limitations for several reasons, including the excavation methods (although these were generally good for the time), the approach to finds and environmental material, and incomplete deposition and curation in the intervening years.

The excavation was carried out in a manner typical of its time and before widespread use of contexts as the unit of record for archaeological deposits. The first two excavations were undertaken with labourers (Fig. 9); areas were divided into 'cuttings', generally about 20ft



Fig. 9. Labourers excavating during the 1932/3 excavation. ©Sussex Archaeological Society

wide across the ditch and 40ft long (Curwen 1934, 101) and dug in spits nine inches deep until the underlying chalk was reached. This only provided a coarse means of recording the stratigraphic relationship between finds, although many were marked with their cutting and spit number, so limited spatial analysis is possible. The stratigraphic record of the site is largely absent, with only a partial record of the 1935 excavation and no other primary site plans or notes. It is therefore uncertain if any stratigraphic relationships between features were investigated beyond the recording of sections at arbitrary points through the excavation.

The excavations also took place well before the advent of systematic environmental sampling, with charcoal, shells and plant macro remains recovered by hand in an *ad hoc* fashion and a single five litre soil sample taken during the 1935 excavation; the lack of sieving also introduces a bias against smaller artefacts and ecofacts. For the hand-collected finds, there is no record of what was collected, retained and discarded, either during excavation or subsequently. An example of this is the apparent discard of numerous pieces of stone prior to deposition from all three of the excavations (Barber 2015, 93). This situation is made even more frustrating by there being only a partial quantification record of the finds in the published reports and only a partial list of the material accessioned into the museum and the archaeological society. Following the deposition of the archives several finds appear to have been loaned or given to other organisations, the most notable being the roe deer skeleton from the 1932–33 excavation (Curwen 1934).

SITE FORMATION PROCESSES

Setting, human modification of the site and soil loss

There is a general assumption that the post-glacial downland areas in southern Britain were wooded until at least neolithic times, which allowed the development of deep brown earth, or even argillic brown earths, both forest soils (Limbrej 1975). While the presence of a blanket post-glacial woodland has been challenged (Allen and Scaife 2007; Allen and Gardiner 2009), tentative evidence for a nearby, or recently removed, woodland environment has been noted at Whitehawk (Kennard and Woodward 1930; Kennard 1934 and 1936; Thomas 1997) and other nearby contemporary sites such as the causewayed enclosure at Offham (Thomas 1977, 234–239) and within colluvial deposits at Ashcombe Bottom

and Grey Pit, Southerham (Allen 2005 and 1995). From an examination of the published molluscs from Whitehawk, Michael Allen suggests that this may have occurred before the construction of the monument, due to the presence of large numbers of small, open country mollusc species (Kennard and Woodward 1930; Kennard 1934 and 1936; Thomas 1982 and 1996), although this suggestion needs to be supported by a proper review and re-interpretation of the data.

Further human modification of the site is suggested through the stripping of parts of the monument to chalk prior to construction (under bank sections inside Ditches 3 and 4: Curwen 1936, 66 and 74) and the construction of the internal banks which would have acted as barriers, channelling the natural movement of deposits within and around the monument. Whitehawk Camp's topography is likely to have had an influence on how this soil movement occurred, situated as it is on the saddle of a promontory hill with steep slopes to the east and west descending into Whitehawk and Baker's Bottom dry valleys respectively. The question is when, and how, this potentially once rich, deep soil degraded to the shallow, poor, downland soil present on the site today. Was soil loss a gradual process or were there major events? How was it affected by human activity and if some of this degradation process occurred during the neolithic use of the monument, did it influence how the neolithic artefacts were eventually distributed across the site? Is there surviving evidence for this, either on the site or buried beneath colluvial deposits in Whitehawk and Baker's Bottom?

Midden creation and post-depositional processes

Key to the issue of post-depositional processes on the site is the material described by Curwen as 'black mould', a secondary fill of all of the ditches which contained the majority of recovered finds (Fig. 10). Curwen believed it was evidence that the people who constructed Whitehawk Camp used the ditches as squalid pit dwellings, depositing their refuse where they lived (Curwen 1954, 75) and referred to it as an occupation level (Curwen 1934, 111). However, the reassessment suggests that this so-called occupation material is more likely to have been a midden deposit introduced into the ditches from another source, probably originally deposited as a nearby surface deposit. Middens are assumed to be a collection of discarded

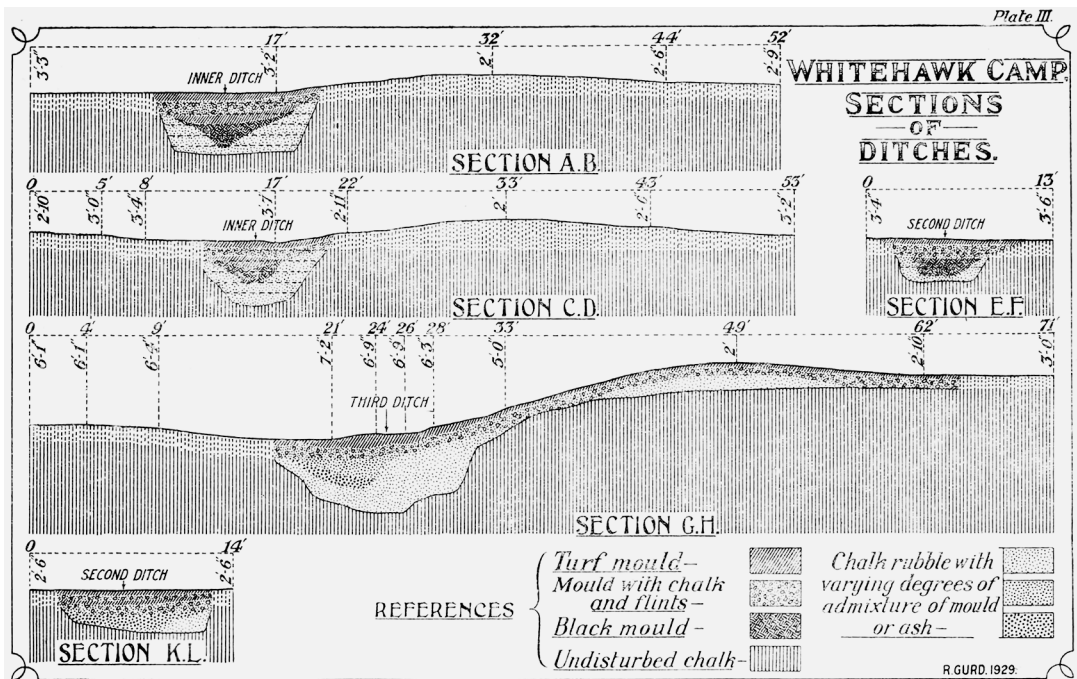


Fig. 10. Section drawings from the 1929 excavation showing the 'black mould' (from Ross Williamson 1930).

artefacts held within an organic or humic matrix. The taphonomic processes behind the discard of material into middens, and the redeposition of midden material, are likely to be complex and may involve natural processes and human action such as the use of midden material for manuring and intentional symbolic practices (Pollard 2002, 24–7). It is unclear whether the ditches acted as capture points for surface midden deposits, moved by post-depositional forces such as soil loss, or whether they were intentionally backfilled. However it was introduced, the midden deposit appears to have been generated from a significant period of activity after the initial construction of the monument. It is recorded as overlying primary ditch fills, either as the last of the neolithic fills (Curwen 1934, Fig. 1) or capped by fine chalk rubble (Ditch 3, Curwen 1934, Fig. 2). Its deposition therefore occurred late in the life of the monument, if not at the end of it, and appears to have occurred in a single event which was sealed relatively quickly by the formation of natural soils (Ditch 3, Curwen 1934, Fig. 2). The date when the black mould was deposited is at present unclear, as is the end date of the primary phase of activity at the site and the order in which the ditches

were constructed (Healy *et al.* 2011, 212–226). By analogy with Wor Barrow (Pitt Rivers 1898) and the experimental earthwork on Overton Down (Jewell and Dimpleby 1966; Bell *et al.* 1996), we can consider that the primary fills represent a period of about 60 years or more prior to the deposition of the midden. This period represents a significant portion of the life and use of the monument, estimated to be between 75 and 260 years (Healy *et al.* 2011, 226). Midden material is apparently not present within the lower fills which suggests that it was either a relatively late deposit in the history of the monument or that it was being managed by preventing its ingress into the ditches through re-cutting or cleaning.

Evidence from the reassessment of the Whitehawk archive indicates that the pottery (Fig. 11) and worked flint from within the midden deposits were moderately to heavily abraded (Doherty 2015a, 63; Le Hégarat 2015, 74). The pottery had a low average sherd weight of just 12g and sherds likely to have come from the same vessel were mixed both vertically and horizontally within the fills (Doherty 2015a, 63), supporting the conclusion that they came from a common

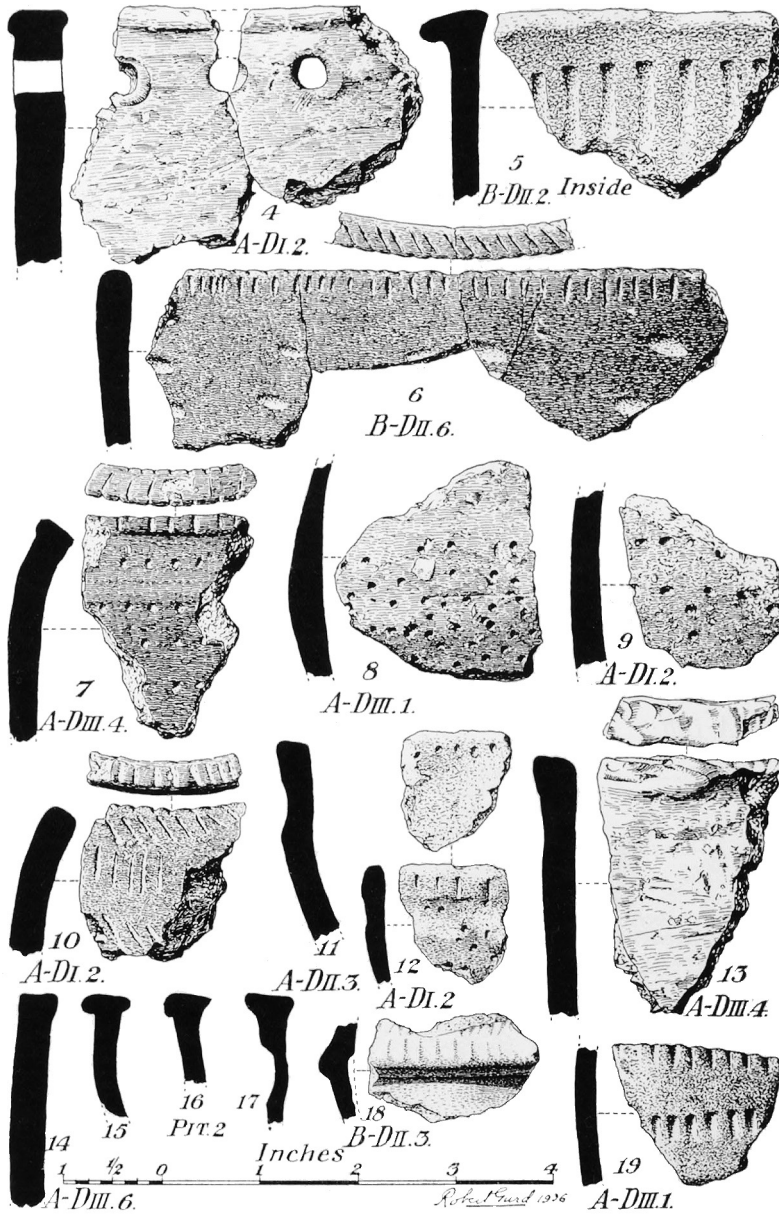


Fig. 11. Selection of early British neolithic pottery recovered during the 1935 excavation (from Curwen 1936)

source and had not been not placed intentionally. Specific items may have been placed within a matrix of general midden deposit within the ditches, but there is no direct evidence for this and no evidence that the pottery was deposited in the ditches at the time of the initial discard (Doherty 2015a, 64). Although highly mixed, further analysis of

the finds assemblage from within the midden material may reveal whether fragments of the same vessel are present in one ditch or occur in multiple ditches. Such spatial analysis may also indicate whether material stayed within the general area of its primary discard or whether it had been moved around the wider site. The monument's internal

banks may have also channelled the natural movement of deposits, and the finds contained within, around the monument. Potential for this is suggested by the uneven distribution of pottery across the site, commented on by Curwen (1934, 111) and supported by the recent reassessment work which has calculated that 54 percent of the total estimated number of vessels were recovered from Ditch 1, 15 percent from Ditch 2, 23 percent from Ditch 3 and only seven percent from Ditch 4 (Doherty 2015a, 62–3).

The nature of the ‘black mould’ deposits as described by Curwen suggest a high organic content, but whether this is due to the original organic content of the midden or to *in situ* pedogenesis (soil formation) in the top of the secondary fills (*cf.* Evans 1972, 321–334; Limbrey 1975, 290–300) is unclear. If the midden originally had a high organic content, a major component of this could have been cattle manure. Cattle bone formed the largest component of the animal bone assemblage; it included a higher number of non-meat bearing bones, in contrast to the pig, sheep and goat assemblage, suggesting that butchery was taking place on, or near, the site (Forsyth 2015, 105–6). That this deposit appears to be present in all of the ditches suggests a significant volume of midden deposit had accumulated and, by inference, a large number of cattle were present.

The deposition and subsequent movement of midden material on the site could be further investigated by surveying colluvial deposits in the neighbouring dry valleys for the presence of slumped midden material. The ground surface adjacent to the internal sides of the monuments banks could also be evaluated for captured surface midden material. The recovery of new environmental evidence from the site would also enable further understanding of the midden deposit.

SITE USE

The drawing in of resources

The finds from within the midden deposit and other deposits suggest Whitehawk Camp was drawing in resources, if not also people, from more diverse local sources than other contemporary nearby sites. The assemblage suggests a much greater variation in sources of pottery in comparison to those recovered from the broadly contemporary sites of the Lower Hoddern Farm pit group (Doherty 2015a, 58; Doherty 2015b) and a far greater volume and diversity of finds than those recovered from

Offham causewayed enclosure (Drewett *et al.* 1977). This greater contact with wider neolithic groups may also account for the more common occurrence of Ebbsfleet and Peterborough Ware in the Whitehawk assemblage, compared to that from Lower Hoddern Farm (Doherty 2015a, 66–67; Doherty 2015b, 220). However, the majority of the pottery sources still appear to be relatively local (Doherty 2015a, 58), as do raw material sources for the worked flint (Le Hégarat 2015, 94) and the geological material (Barber 2015, 94), with no conspicuous inter-regional objects. This could suggest that the sphere of Whitehawk Camp’s influence was solely regional, since obvious evidence of long-distance trade, including foreign material and prestige items, is absent from the existing archive. While such materials and items are not ubiquitous in contemporary enclosures, they are noted at enclosures of a similar complexity to Whitehawk, such as the continental jadeite axes present at Hambledon Hill (Foster Smith 2008, 630–633) and the non-local axes present at Etton (Edmonds 1998, 260–268). The absence of conspicuous inter-regional objects at Whitehawk, confirmed by the recent reassessment (Sygrave *et al.* 2015), concurs with a previous study of trade in southern Britain which noted an apparent absence of long-distance items in contemporary Sussex sites (Bayliss *et al.* 2011, 794–800). Further investigation is required to understand whether Whitehawk and other contemporary Sussex sites were truly isolated from long-distance trade networks.

The reassessment of the animal bone assemblage from Whitehawk suggests that cattle (Fig. 12) were more likely to have been slaughtered on, or near the site, while sheep, goat and pig were more likely to have been slaughtered elsewhere (Forsyth 2015, 102–6). This could suggest that live cattle, possibly in large numbers (if the main constituent of the midden material was cow manure), were being brought to the site along with the carcasses of other animals. Further study of the genetic heritage and isotopic signature of the domestic animals present at Whitehawk may indicate the extent of the potential trade network in livestock and whether they were also confined to the surrounding region or came from further afield.

Evidence for on-site activities

The finds assemblage also suggests that a wide variety of domestic or functional tasks were being undertaken on, or near, the site. As is common with flint assemblages from causewayed enclosures,



Fig. 12. Cattle bone recovered from the site during the 1932/3 excavation (from Archaeology South-East 2015). ©Royal Pavilion and Museums, Brighton and Hove

the Whitehawk assemblage contains evidence of on-site flint knapping and tool usage. Serrated pieces, scrapers and utilised pieces dominate the tool component, followed by piercers and a smaller number of leaf arrowheads, axe-heads and knives (Le Hégat 2015, 82–3). The flint assemblage is also comparable to other assemblages from nearby non-monumental sites (Le Hégat 2015, 83), such as the pit group at Lower Hoddern Farm (Anderson-Whymark 2015) and the un-enclosed settlement at Bishopstone, near Seaford (Bell 1977).

Bearing in mind the limitations of the archive, the majority of the pieces are well used and the assemblage is likely to represent deposits of utilised material including a toolkit of flakes, or blades, and other tools. Specific retouched pieces could have been placed in association with this material. One activity probably taking place which required the use of flint tools is the manufacture of bone points and awls employing the groove and splinter method, evidenced through worked antler and cattle bone (Fig. 13) (Clifford 2015, 86). These objects had previously been described as combs, with the assumption that they represent finished or broken objects rather than objects discarded during production (Clifford 2015, 86). This suggests that flint and bone tool manufacture was occurring on the site and that these tools were being used and disposed of there.

The stone artefacts from the site include numerous rubbing stones, used in the production of food, and polished flint tools (Barber 2015, 94). The majority of these are thought to have been recovered during the 1932–33 excavation (*ibid.*), although 51 pieces of quern were recovered from the 1929–30 excavation (Ross Williamson 1930, 80). This suggests the presence of a large volume of geological material on site, although the accession register and original quantification do not allow for an accurate assessment (Barber 2015, 93). Pryor describes querns from placed deposits in pits at the causewayed enclosure at Etton as items broken to remove them from the domestic sphere (Pryor 1998, 259). No fragments of querns were recorded from the Whitehawk pits, or in association with apparent placed deposits. All fragments come from various parts of the inner three ditches (Ross Williamson 1930, 80; Curwen 1934, 131; Curwen 1936, 87). The presence of a significant assemblage of utilised quern fragments at Whitehawk, from deposits which are not obviously placed and contained other abraded material, suggests that fragments of querns are more likely to have been introduced into the ditches via the midden deposits. They may represent genuine discard after use and evidence that the processing of grain was taking place on, or near, the site.



Fig. 13. Cattle bone showing evidence of groove and splinter work (from Archaeology South-East 2015). ©Royal Pavilion and Museums, Brighton and Hove

Area specific activities and chronology of the site

The assessment of the archive, despite the limitations described above, suggests that various activity areas and, or, periods of activity may be discernible in the spatial distribution of finds on the site. The pottery assessment indicates that the proportions of fabrics vary significantly between different areas of the site. As opposed to variations in the degree of decoration, for example, this trend is unlikely to be affected by selective discard and might represent a chronological trend, or a distinction in the functional or stylistic types of vessels being deposited in different areas of the site (Doherty 2015a, 58). It was also noted that the fourth ditch contained no chalk or worked bone artefacts (Clifford 2015), nor any quern fragments (Ross Williamson 1930, 80; Curwen 1934, 131; Curwen 1936, 87) and had a significantly lower volume of pottery than the other three main ditches, containing less than one per cent of the estimated number of vessels on the site (Doherty 2015a, 62). The 1929–30 excavations in the north-east of the site also recovered a disproportionate volume of pottery in comparison to other areas (Doherty 2015a, 62–3). If material had been deposited within one large surface midden from which all ditches had been intentionally backfilled, a much more mixed distribution of artefacts could be expected. This suggests that some degree of separation existed between surface midden deposits, potentially due to the internal banks channelling the natural movement of deposits within and around the monument.

However, it should also be noted that the site could have been remodelled through its use and this may have affected deposition. Curwen believed that some of the ditches in the south of the monument had begun as relatively shallow features which were later cut deeper (Curwen 1934, 107). The RCHME survey of the site also postulated that the monument could have been remodelled at some point in its history, with the possible amendment of Circuits 2 and 3 in the south-west of the monument and the possible re-cutting of Ditch 4 to the north-west, suggested by its width (RCHME 1995). This survey also suggested the presence of a possible earlier long barrow, respected by the monument. The RCHME survey of the Trundle undertaken in 1995 also suggested that this site had been remodelled through its primary use (Oswald *et al.* 2001, 76–7). Unfortunately the stratigraphic archive is not strong enough to address these issues.

Use of non-domestic species

While the majority of natural resources on the site came from domestic animal species, a significant component came from wild species, in particular red and roe deer, with evidence for the collection of shed antler and butchered bone (Forsyth 2015, 107–9). The burial of a near complete, partially butchered roe deer skeleton in a pit within a causeway in Ditch 4 is of particular note (Fig. 14) (Curwen 1934, 127; Forsyth 2015, 108–9). This deposit exhibits clear parallels to other neolithic bone groups (Forsyth 2015, 109). Edible marine shellfish are also present

within the assemblage (Mooney 2015, 15–8), with the majority coming from the 1929–30 (Ross Williamson 1930, 85) and 1935 (Curwen 1936, 91–2) excavations and very few from 1932–3 (Curwen 1934, 130), suggesting there may be some pattern to the distribution of marine shellfish on site. However, this may be a result of a collection or retention bias.

A permanent settlement?

The reassessment of the archive suggests that people were living at Whitehawk Camp for extended periods of time, if not permanently. Pottery sherds were numerous and those which still survive within the archive are estimated to represent between 500 and 2,000 vessels (Doherty 2015a, 65). If we view this in the context of the percentage of the monument so far excavated (about ten per cent of the main four circuits, Sygrave 2015, 51) and the period of primary use of the monument, between 75 and 260 years (95 percent probability; Healy *et al.* 2011, 226), it suggests that many thousands of vessels were deposited on the site in a relatively short time. The pottery assemblage contained a significant element of fairly utilitarian vessels, not necessarily associated with short-lived feasting (Doherty 2015a, 66). When this volume of pottery is viewed in combination with the large assemblages of other finds types and the evidence of the variety of other functional tasks which appear to have been undertaken at the site, it seems highly probable that Whitehawk Camp was being occupied for lengthy periods of time, if not permanently, during its primary period of use.

Ceremonial activity and placed deposits

Placed deposits occur on the site, but they are rare in comparison to apparently unstructured deposition and occur most frequently in pits (described by Curwen as holes). For example, Hole 5 (Fig. 14) contained an articulated roe deer skeleton



Fig. 14. The articulated roe deer skeleton excavated from a pit in the fourth ditch during the 1932/3 excavation ©The Sussex Archaeological Society

(Curwen 1934, 102) and Hole 51 the skeleton of a human infant (Curwen 1936, 72–3). In contrast, the majority of the ditches' infill appears to be slumping from the sides of the ditch cut and the mixed midden deposit. The obvious exceptions to the apparent lack of placed deposits within the ditches are the burials of the women in the third ditch (Fig. 15). Unfortunately the stratigraphic archive for the original excavations is not complete enough to understand how the burials relate to the subsequent infilling of the ditch with the mixed midden material, and whether these ditch sections were completely infilled at the time of burial. This comes back to the question of whether the ditches were intentionally backfilled with the midden material at the end of their use, or whether



Fig. 15. The burial of an adult female surrounded by chalk blocks, recorded during the excavation of the third ditch in 1932/3. ©The Sussex Archaeological Society

the material was captured by the ditches when it was redeposited through natural processes. The midden material may have held symbolic meaning, especially if it was intentionally redeposited within the ditches.

Other obviously non-utilitarian activity on the site is evidenced through the production of chalk objects including cup-shaped objects, perforated and partially perforated objects, worked large blocks, work surfaces and scored plaques (Clifford 2015, 88–92). These chalk objects appear to have been recovered at various depths within the fills of the first three ditches (Clifford 2015), but the lack of stratigraphic data prevents investigation as to whether they were intentionally placed.

Cannibalism, interpersonal violence, excarnation and the differing treatment of human remains

Curwen appears to have had a jaundiced view of the people of Whitehawk Camp, deciding during the 1932–33 excavation that they had cannibalistic tendencies which led to the headline ‘When cannibals lived in Brighton. Curious discoveries at Whitehawk’, in the Brighton Herald of 16 December, 1933, and his later interpretation of life at Whitehawk:

‘What were these children’s skulls doing around a domestic hearth unless the occupant of this piece of ditch was a cannibal? Not content, however, with living amid this filthy litter he must needs bury his young wife and her infant at the end of his little ditch, within 20 feet of his hearth (Curwen 1954, 76).’

The original reports on the human remains recovered from Whitehawk also state that there was an over-representation of children and young adults in the assemblage (Curwen 1934, 126), suggesting that they had been selected for death and, or, burial on the site. In recent years clear evidence of interpersonal violence and cannibalism during the neolithic period in Britain and across Europe has been recorded

(Schulting 2012). However, the reassessment of human remains from Whitehawk provides no evidence of cannibalistic activities taking place on the site and little evidence of interpersonal violence, aside from one individual with a possible head trauma and penetrating injury (Ponce 2015, 95–99).

In addition, non-articulated human remains are frequent on causewayed enclosure sites and are considered to result from special treatment of the dead. Disarticulated remains are often interpreted as the product of certain ritual or ceremonial practices. The exposure of bodies to scavenging, either in a sealed or open monument, and the collection and deposition of remains following their exposure (secondary and tertiary burial practices) are all

examples of neolithic mortuary practices (Fowler 2010). Body exposure results in scavenging animals causing pitting, punctures, furrowing, gnawing marks and spiral fractures, all of which have been suggested as evidence of excarnation (Smith 2006). The human remains from Whitehawk show no evidence of such marks, aside from the ribs of one articulated individual thought to have been marked by a burrowing animal (Ponce 2015, 99).

The question of soil loss or movement and the treatment of human remains on the site are potentially related. It has been previously postulated that human remains were mixed within midden deposits, after either a period of curation or as some form of immediate disposal following a funerary rite such as excarnation. This is in contrast to the articulated burials on the site which include burial within a ditch in a marked grave surrounded by chalk blocks (Fig. 15), burial within a ditch in a seemingly unmarked grave, burial within a discrete pit, burial under a bank or left on the surface of the chalk. As none of the disarticulated bones bears the marks of scavengers, it is safe to assume that burial occurred in a manner which kept the remains safe from animals. This initial burial may have been within a tomb elsewhere, from which bones were selected and curated before being deposited on the site. However, it could also have occurred on the site itself, within the assumed deeper soils which are thought to have been present at the time. Later soil loss or movement across the site would have resulted in the disturbance of these graves and could have led to their disarticulation and subsequent mixing with surface midden deposits before being captured in the tops of the ditch fills.

CONCLUSION

Causewayed enclosures are a rare and exceptional form of early neolithic monument. No other early neolithic sites provide such a variety and volume of stratified material culture or evidence of such a range of activities. The existing archive from Whitehawk Camp has been shown to be particularly large and diverse in comparison to other causewayed sites and, despite the limitations of the previous fieldwork and subsequent deposition and storage of the archive, it is still a valuable resource, capable of facilitating many avenues of research into early British neolithic society.

The project has shown that the vast majority of the monument, and its related cultural and environmental evidence, remains *in situ*. However, it experienced a rapid deterioration through the later 19th, 20th and early 21st centuries as Brighton expanded and surrounded it. The project has attempted to stem further deterioration by working with a variety of interest and community groups to join forces and protect what is a fascinating and beautiful site.

In an attempt to address the potential scope of further work, a series of research aims have been set out in the Post-Excavation Assessment and Updated Project Design, along with a commitment to continued community involvement (Sygrave *et al.* 2015, 126–32). The richness of data in the existing archive, and the potential volume of material left on the site, reinforce the need to protect it from further damage and to create better understanding and interpretation for the local audience. The fantastic response to the Whitehawk Camp Community Archaeology Project demonstrated the appetite for public archaeology and the protection of archaeological and ecological sites and open spaces within our cities.

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For a detailed account of how the various organisations and volunteers assisted the project please refer to the project's

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