Secrets of the High Woods Research Agenda

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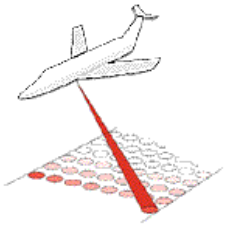
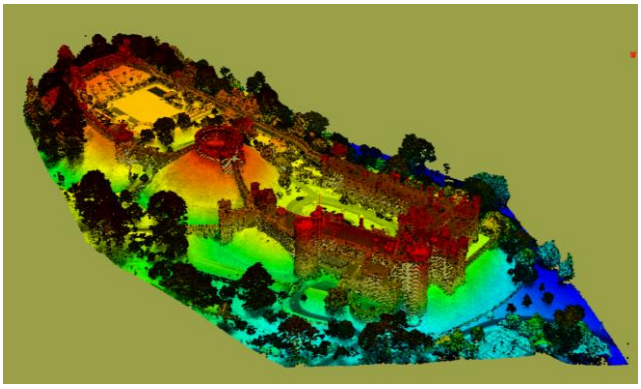


Introduction and Purpose

The "Secrets of the High Woods" project is a unique opportunity to investigate the "Wooded Estates"[1] of West Sussex and a part of Hampshire using airborne laser scanning, field survey and archival research. Whilst generous funding from the SDNPA and HLF has made this 3-year project possible, it is clear that the impact of new data and methods used as part of the project will be far more than could possibly be achieved in the project's lifetime or budget. This document has been produced both to help prioritise and clarify research during the project and to highlight potential for partnership work in order to more successfully understand the historic and natural environment in the area.

The document has two parts, starting with an assessment of the current archaeological knowledge in the vicinity of the project area. This provides context for the second section that details a series of research themes grouped under three broad headings; Continuity and Change, People in the Landscape and the Woodland Resource. These themes by necessity interlink, but are set out separately to reflect the structure of the project and the likely interests of research partners.



ALS Point cloud, Arundel Castle

[1] "Wooded Estates" character area is defined in the South Downs Integrated Landscape Character Assessment as "A distinctive ridge of chalk dominated by large woodland blocks and estates in the central part of the South Downs extending from the Hampshire/West Sussex border in the west to Worthing in the east." For full description see http://www.southdowns.gov.uk/__data/assets/pdf_file/0008/201212/LCT-B.pdf

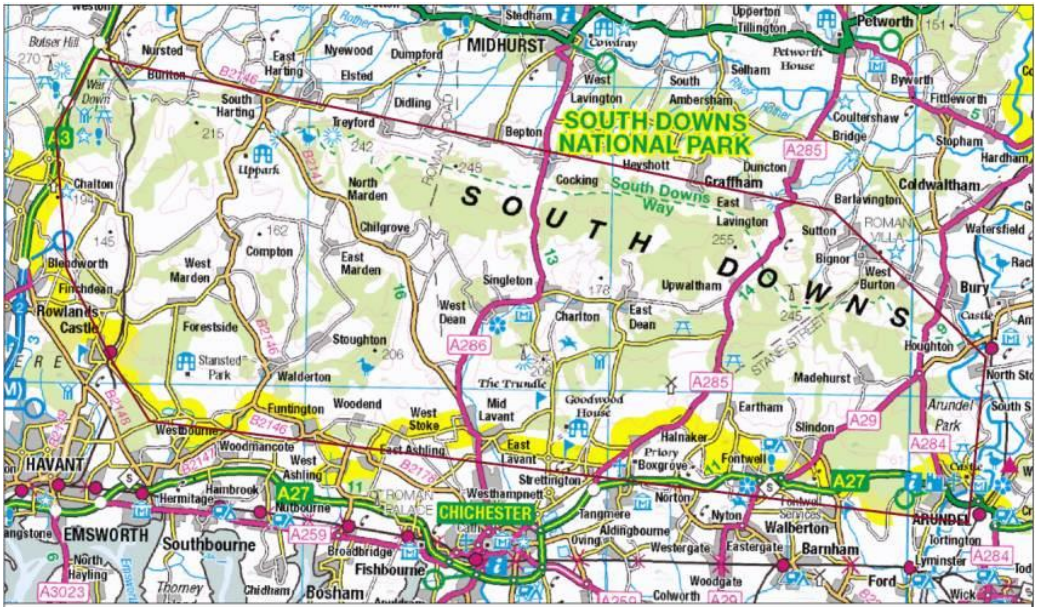
The Historic Environment of the Project Area

The Modern Landscape Context

The landscape of the South Downs attracted much attention from archaeologists in the 19th and 20th centuries (Brandon, 1999: 44). The wide areas of unploughed chalk grasslands were particularly rich in prehistoric remains and formed the bedrock of much early archaeological theory. Industrialisation of agriculture after the World Wars resulted in the ploughing of many of these areas, destroying much of the historic landscape in the process. For much of the eastern end of the South Downs archaeological remains are now most visible as isolated scheduled sites.

The exception to this is the wooded area of the central downland part of the National Park, where a tradition of arboriculture has afforded far greater preservation of the landscape. However, the wooded landscape presents its own challenges for archaeological prospection. Until the advent of airborne laser scanning, holistic study of the landscape was impossible. Knowledge of the features preserved within the woods came from glimpses in aerial photography of areas cleared during WWII and from the frequent, mostly unmapped observation of earthworks. The digital terrain model derived from airborne laser survey provides us with the unique opportunity to investigate this landscape in its entirety.

Much of the project area is wooded with a combination of semi-natural ancient woodland and mid-20th century plantation. The historic origins of this lie in the Forest of Arundel, which was divided in the later Medieval and Post-Medieval periods into a number of estates which dominate landownership in the area through to the present day. The project area contains a range of significant features covering all periods from the earliest human occupation of the landscape to the 20th century. The project aims to shed light on the changing patterns of human interaction with the landscape through time. So, first we can look by period at what is already known.



Overview of Project Area

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Palaeolithic

The evidence of the first hominin occupation of this landscape dates from 500,000 years ago as revealed in the Boxgrove excavations of the raised beach deposits at the southern edge of the project area. The evidence here for discrete periods of activity, including tool-making and butchery, gives clear indication of the exploitation of this inter-tidal landscape. Less well understood is the pattern of "inland" activity within the landscapes to the north of the raised beach. The nature of evidence from this period and subsequent glacial action on the landscape makes it unlikely that additional sites will be brought to light during the current project, however, geomorphological assessment of the terrain model may add to current theories regarding the formation of the post-glacial landscape and in doing so may add significant information to deposition models.

Mesolithic (c.10,000–4300 BC)

The landscape of c. 8000 to 6000 years ago is thought typically to have been dominated by woodland in natural succession from the arctic tundra of the late ice age. Pollen evidence suggests oak, elm, ash, elder and lime, with understory of hazel, holly and ivy occurring extensively across all geological zones. Our understanding of the landscape and environmental development of the chalk downland that dominates the project area is hampered by poor preservation and a limited number of environmental analyses (SERF, in draft, Environment Section, 4). However, it appears likely, from analogy with a site on the greensand at West Heath studied by Scaife (Butler in Manley, 2008: 28) and a geologically comparable chalk landscape at Winnall Down in Hampshire (Allen in Walker and Farwell, 2000: 159), that the first evidence for active landscape management in the form of localised clearance of woodland, took place during the late Mesolithic period. Within the study area the collated Historic Environment Records (HER) show evidence from this period in the form of finds of worked flint near Boxgrove, Stansted, Slindon, Harting Down and Barlavington Down. This hints at widespread use of the landscape during this period, despite no direct evidence for occupation on the chalk.[2]

The chalky cortex of the flint excavated at a knapping site at Iping Common to the north, also indicates that this resource was imported to the site from the downs. As with the Palaeolithic, the nature of evidence from this period makes it unlikely that the methods used for this project will add much to this evidence base. It has been noted that the provenance of the findspots of in-situ worked flint currently recorded in the Chichester District HER is not particularly convincing, but this may be because either the in-situ evidence has been ploughed away (and now resides in the valleys) or the evidence remains preserved beneath unploughed areas (Kenny, pers comm). If the latter hypothesis is true then the lidar data may contribute to our understanding by allowing us to identify those areas that have not been subject to the plough.

[2] According to Drewett (1988: 15) the Mesolithic evidence within Sussex tends to be clustered in the Weald (Lower Greensands) from Hassocks to Storrington and Iping to West Heath, however, discoveries from the coastal plain (especially the Westhampnett bypass) may prompt reassessment of this interpretation.

Neolithic (c.4300–2200 BC)

The Neolithic period marks the first point from which airborne laser scanning can detect direct evidence of human alteration of the land surface.

Neolithic Causewayed enclosure and Iron Age Hillfort, The Trundle, St Roches Hill, West Sussex

There are fundamental differences between perspectives concerning the advent of the Neolithic in Britain. Traditionally, the defining parameters of the period are seen as a sea-change in society with the development of agriculture, pottery, and the inception of major ritual and funerary monuments. However, other perspectives emphasise significant continuity from the Mesolithic, in terms of activity patterns, sedentism and a limited baseline in evidence for the adoption of agriculture in the early Neolithic. The concept of a 'single' Neolithic has also shifted to a perspective which encompasses much more regional variation. Some researchers suggest that the early Neolithic represents a period when Mesolithic populations adopted some of the elements of and ideas of the Neolithic, without fully embracing agricultural patterns (Thorpe 2009: 25).

There are also different perspectives concerning the mechanisms by which the Neolithic practises 'arrived' in Britain. Some perspectives emphasise the movements of populations (demic diffusion) whilst others emphasise local adoption of customs (acculturation). However, the two perspectives are not mutually exclusive, and the importance ascribed to each is often simply a question of emphasis.

A recent re-assessment of radio carbon dates for the region indicates the inception of Neolithic practices between 4065 and 3815 cal BC, with the earliest evidence coming from flint mines which may have their origins in the Mesolithic (Whittle et al 2011: 257). Examples in the study area include Long Down (Eartham), Nore Down and Robin Wood (Compton) and Stoke Clump (Funtington), with further potential workings also noted at Court Hill (Singleton) and Bow Hill (Stoughton).

Woodland clearance of the downland is attested during the Neolithic, although clearance may not have been uniform or constant. Excavations of some of the prominent Neolithic monuments have

shown that certain causewayed enclosures (Trundle, Whitehawk) were constructed in cleared areas and some (Bury Hill, Barkhale) in wooded environments or locally cleared areas (Drewett 1988: 24).

Excavations of dry valley colluvial sequences elsewhere on the South Downs have also suggested localised areas of cleared woodland (Wilkinson 2003: 747). However, problems with identifying datable colluvial sequences may hamper more widespread identification of cleared areas (Wilkinson in Rudling, 2002: 235). Wadsworth suggests that the overall landscape is likely to have remained a mosaic of woodland, interspersed with clearings across the downs, supporting a mixed agricultural community that included a strong hunter-gatherer component (in Manley 2008: 120).

A re-assessment of the success of early arable agriculture in the British Isles (Stevens and Fuller, 2012), paints a picture of a predominantly pastoral landscape. Corroborating this might be the fact that field systems of this period in the south-east are virtually unknown, with the exception of one example of a possible negative lynchet recorded during excavations at Rookery hill, Bishopstone (Bell 1977: 41). This lynchet was associated with a settlement site suggested by the presence of pits and gullies, located within an open environment near the summit of Rookery Hill.

Causewayed enclosures, along with flint mines and long/oval barrows, dominate the known evidence from this period. The South Downs, generally, and the project area, specifically, have a high concentration of these type of monuments. There are five known enclosures within the study area (Barkhale, Bury Hill, Court Hill, Halnaker Hill and the Trundle), of which all bar Bury Hill are causewayed or pit-dug (Whittle et al 2011:208). The excavator proposed however, that Bury Hill is simply a variant on the causewayed theme, with, in this case, the pits simply linking up (Bedwin 1984: 18). A recent survey has identified Bury as the oldest of the group with a likely build date of 3715–3660 cal BC, with the others following within 100 years. It appears that all except the Trundle underwent little in the way of modification, perhaps indicating a relatively brief period of initial use (Whittle et al 2011: 252).

Causewayed enclosures are often represented as ceremonial sites. However, Drewett has suggested a distinction between enclosures such as Whitehawk and the Trundle, which both have evidence which could be settlement related, and unfortified ceremonial enclosures (Bury Hill, Barkhale) (Drewett 1988: 42 and 61). Other perspectives emphasise the potentially defensive nature of causewayed enclosures (Thorpe 2006).

Long and oval barrows in the study area are generally clustered to the west of the causewayed enclosures, with their distribution extending into Hampshire (SERF, Healy: 9). Examples within the study area include long barrows at Bevis's Thumb (Compton, 3520–3005 cal BC) and Halnaker, and oval barrows at North Marden (dated to 3765–3475 cal BC) and Stoughton Down (two and a potential long barrow). Dating of these features regionally is noted to be in "chronological limbo" with little evidence from other sites to place the two known dates in context (Whittle et al 2011: 254).

One explanation for the cluster of monuments along the South Downs is that this area represents a ritual or respected landscape, a marginal domain between the coastal plain and the Weald to the north. There is an absence of confirmed evidence for other sites such as henges and cursus / processional ways within the study area. However, an unusual multiple-ditched enclosure at Chalkpit

Lane, Lavant, radiocarbon dated to the late Neolithic, produced evidence for the ritual deposition of red deer antlers and perhaps had an astronomical orientation (James Kenny, pers comm).

Lavant enclosure

Late Neolithic-Early Bronze Age (c.2200–1400 BC)

There is much debate about the evidence for a chalcolithic period in the British Isles from 2500BC onwards, but there is a growing consensus that the appearance of copper metallurgy in Britain and Beaker burial practises are broadly contemporary. In the period 3000–1400BC Drewett notes a rapid change in pottery styles, tool types and new emphasis on burial structures (1988: 63) associated with new cultural land- and sea-scapes involving long-distance movements of people and maritime interactions. Yates proposes a politically dominant English Channel /North Sea region developing with a concentration of settlements along the Thames, Fenland and South Coast (Yates in Manley, 2008: 35).

The beginning of the Beaker period is marked by a new burial rite involving single inhumation of individuals under round barrows, mostly concentrated on the top of the chalk escarpment. Garwood suggests that the location of round barrows may have been influenced by both cosmological alignments and by the presence of the earlier monuments which populated the downland landscape. He highlights that most of the biggest round barrows are to the west and the north of the Lavant, and are focused around and intervisible with the Trundle (in Rudling 2003: 60). The combined HER records cover 100 barrows or potential barrows in the study area dating from the Early to Middle Bronze age period and it is likely that more could be revealed as part of the present study. The best known of these sites are the multi-barrow cemeteries; The Devil's Humps (Stoughton), the Devil's Jumps (Treyford) and Heyshott Down.

The Devil's Humps, Bow Hill

One notable site is 'Racton Man', which provides the first example from within the project area of a type of very high status early Bronze Age burial. This is evidence for the development of a warrior elite and, potentially, a burgeoning tribalism. The inclusion of a bronze dagger, perhaps the earliest yet found in the country, represents the insular take up and improvement on an originally continental metallurgy and of sophisticated exploitation of raw materials. It marks the start of a new technological age.

Excavation of 'Racton man'

Environmentally, the Bronze Age is thought to have been a period of widespread woodland clearance in the British Isles in advance of an expanding agricultural economy. Regionally, excavation in advance of the Brighton bypass work identified colluvial deposits (suggestive of clearance or cultivation) dating to the early Bronze Age) and it is often supposed that barrows indicate an open environment at the time they were constructed, as many buried soils beneath barrows from across the southern downland have shown (Allen in Walker and Farwell, 2000:159). However, an example from Twyford Down of Early Bronze Age to Middle Bronze Age date has been proven to have been constructed in a locally cleared area of woodland (Walker and Farwell, 2000: 17), and current

research at the University of Reading, linked with the People of the Heath HLF project, seeks to re-assess the nature of buried soil deposits below barrows. As such our picture of the early Bronze Age environment of the study area is unclear. However, there may still have been substantial areas of the chalk downland remaining under woodland cover. Nick Branch records that the Yew expansion on the chalk downland dates from about 3500 uncal. BP (SERF, 'Environment': 3).

Evidence for settlement in this period is rare. This may be, in part, because the remains of domestic buildings were relatively slight (Bradley 2014, 104) or perhaps because settlement focused in valley bottoms have since been buried beneath deposits of hill wash. Beaker and early Bronze Age period activity is known from material in and sealed beneath colluvial deposits in the eastern end of the South Downs through work by Mike Allen and Martin Bell, but there has been little research on this subject within the project area. The handful of find sites relating to this period appear to be clustered in the southern part of the project area (Westhampnett, Stoke Down).

Middle and Late Bronze Age (c. 1400–700 BC)

From the middle Bronze Age onwards the breadth of our archaeological baseline improves dramatically, and shifts to incorporate more evidence of day-to-day existence, in the form of settlement and farming, contrasting with the apparent dominance of ceremonial monuments of the earlier prehistoric period.

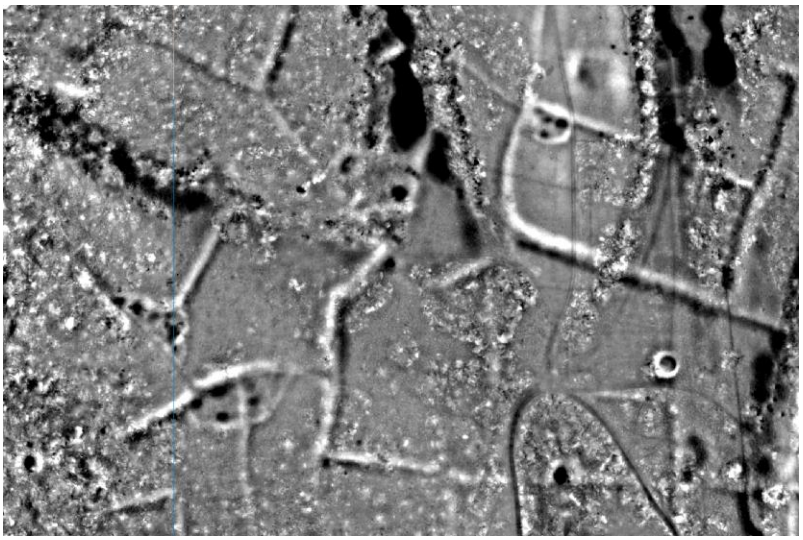
Pollen analysis in the Chilgrove valley has indicated that the mid–late Bronze Age saw the greatest period of vegetation change/clearance (Down 1979: 10). However, woodland clearance may not have been ubiquitous, and downland is likely to have been a mosaic of vegetation habitats (Allen in Walker and Farwell, 2000: 159). Wilkinson stresses the predominance of site specific variation, and highlights the importance of local studies and difficulties inherent in regional synthesis (Wilkinson, 2003: 750). Excavations in dry valleys in the eastern Downs indicate the first major datable episodes of sedimentation to have occurred late in the Bronze Age, giving evidence of very extensive woodland clearance followed by widespread cultivation in this period (in Rudling 2003: 236) (Wilkinson, 2003: 747).

The expansion and development of farming in the Bronze Age is evidenced by the development of extensive field systems and associated settlements. On the coastal plain to the south of the project area, excavations in advance of development have helped to date many of the sites to this period. However, on the South Downs, large-scale excavation is rare and consequently examples of dated field systems are elusive. Recent large-scale excavations at Peacehaven at the eastern end of the South Downs found evidence of MBA field systems as well as cremation burials and roundhouse settlement (Hart, forthcoming). Comparable examples on other chalk sites, including a lynchet excavated at Twyford Down, near Winchester, indicate a mixed environment of pasture and arable.

The Lidar data is providing extensive evidence of prehistoric field systems across the downland block. Phasing of these field systems is problematic. Dating from comparable lowland field systems indicates that many of the Bronze Age coaxial systems were maintained far into the Iron Age (Bradley and Yates, 2007: 96). Yates points out that networks of field systems cannot always be attributed to a Bronze Age or Iron Age period on the basis of morphology alone. However, some phasing in the landscape, particularly the presence of cross dykes cutting systems can sometimes be detected (Bradley and Yates, 2007: 96). Recent work by Judie English has proposed that an earlier

phase of ladder systems can be detected beneath the later middle Bronze Age fields at sites such as Kingley Vale and Plumpton Plain (English, 2013). The extensive topographic evidence for this landscape as derived from the digital terrain model may prove a crucial tool in addressing these questions of phasing.

Settlements of this period can be enclosed or unenclosed and are characterised usually by two to five houses, accompanied by ponds, granaries and storage pits. In a downland context, settlements are often represented by house platforms set within field systems, and/or within small enclosures such as was excavated at Black Patch (Drewett 1988: 97). This pattern is also mirrored on the coastal plain (Kenny, pers comm). Researchers such as Bruck characterise these as remains of individual households, probably single family groups, practising mixed farming and small scale inter-household exchange of goods, labour and marriage partners (2007: 25). Within the study area only one such settlement complex is known at Kingley Vale, leaving this aspect of domestic life relatively poorly accounted for.



ALS Image, Local Relief Modelling: Bronze Age settlement complexes, Kingley Vale

"Hillforts" in the form of hilltop or slope side enclosure also begin to appear in the record towards the end of the Bronze Age. It is now recognised that it is very unlikely that all the enclosures described as 'hillforts' had a common function, and there has been a concomitant shift from seeing these sites as centres at the top of a settlement hierarchy. The term 'hilltop enclosure' is now commonly preferred for this type of monument. Rudling proposes that while some enclosures may have been used for limited settlement, some may have been animal corrals (Rudling, 2002: 257). Hamilton has emphasised that these LBA/EIA 'hillforts' tend to occupy 'liminal' or peripheral zones, with sites seeming to be deliberately chosen so that they are intervisible with each other. They are located at the edge of the downland block, with views out over the landscape (Hamilton and Manley 1997: 100). Hamilton suggests these features as being foci for 'looking out', enabling co-ordination and planning of landscape use and exploitation. An example in the project area is Beacon Hill, Harting.

Harting Beacon: Late Bronze Age hilltop enclosure, with cross dykes visible to the east

The Late Bronze Age is also characterised by evidence of increased visibility of land divisions in the form of cross ridge dykes. These linear boundaries have been seen as evidence of increased territoriality potentially linked to increased pressure on the landscape/deterioration in productivity of the land. Cunliffe proposes that the emergence of cross dykes and the Late Bronze Age hilltop enclosures could indicate a decline in emphasis on cereal production, and an increased importance of animal husbandry during this period (2005: 421–423). Eighteen of these features are currently recorded in the HER for the project area but work by Judie English in the eastern South Downs indicates that a substantial number may be added through new research.

This period is also characterised by an apparent dwindling evidence for settlement during the Late Bronze Age/Iron Age transition (SERF, Hamilton: 12, SERF, Champion: 10), around the time of the emergence of the enclosures. However this apparent decline might be an artefact of the evidence base rather than a real change in demography. Some researchers have highlighted that this apparent hiatus is surprising, coming at a time when agriculture is thought to be intensifying as evidenced by the significant development of hillforts and the importance of grain storage (Bradley and Yates 2007: 97).

The Iron Age (c.700 BC–43 AD)

The Iron Age is characterised by a series of rapid social, economic and technological changes, resulting in larger and more varied archaeological record than the preceding Bronze Age. Recent approaches to the study of this period have seen a move away from broader narratives of cultural uniformity in southern Britain towards those which emphasise the regional characteristics of cultural patterns.

Despite being the principle social and economic units, early Iron Age rural or farmstead settlement in the Sussex region is hard to identify. This may be a result of potential social dislocation at the end of the Bronze Age, but an alternative theory is one of relative continuity, perhaps taking into account a preference for no longer clearly defining individual plots or doing so with hedges or fences that leave no permanent trace. In the project area, early Iron Age settlement is indicated by plough soil pottery finds at Barlavington, Harting Down, Stoke Clump and Compton, with a likely settlement boundary

ditch excavated at East Marden. However, there are too few known sites to characterise the nature of earlier Iron Age settlement in general within the study area.

Middle Iron Age settlement forms are better understood, with both enclosed and unenclosed sites known. Enclosures have been identified at Selhurstpark Farm, Boxgrove, Goosehill Camp, West Dean, and Carne's Seat, Westhampnett. However, much knowledge of the settlement pattern comes from excavation of sub-surface remains. Sites such as the hillslope enclosure at Rummages Barn (Kenny 1985) and unenclosed roundhouses, together with 4, 6 and 8 post structures excavated at Chalkpit Lane Lavant (Kenny 1993: 28) had no visible upstanding topography, and would therefore not be represented in the Airborne Laser Scanning data set.

Chalkpit lane Excavations

Chalkpit Lane MIA roundhouse

Hillforts are perhaps the most emblematic feature of the Iron Age landscape. While some hilltop enclosures have their origin in the later Bronze Age, by the Middle Iron Age, a new type of enclosure, commonly known as 'developed hillforts' characterise the period. These Middle Iron Age hillforts generally do not develop from the earlier forms, although they can contain general evidence for

earlier activity and occupation (Hamilton and Manley 1997: 101). Developed hillforts, following Barry Cunliffe's model for Danebury, are commonly interpreted as centralised places. They often display strong defensive capabilities, contain more evidence of settlement, and the term 'hillfort' (in the sense that is widely understood from other areas of the country) is much more appropriate than for the earlier enclosures (Rudling in Drewett, 1988: 151).

The Trundle Iron Age hillfort

Cunliffe suggests developed hillforts were defended, nucleated settlement centres, elite residences, controlling surrounding territories, which engaged in redistribution and storage, and acted as religious foci (2005: 309). Their defensive capabilities may be seen as a response to population growth and social pressure or unrest. Despite differences in size and the areas suitable for settlement, there are some similarities. All the hillforts contain substantial storage pits most likely used for grain (Hamilton and Manley, 1997), and there is generally a wider range of artefacts present among their assemblages. The traditional perspectives emphasising the defensive nature of these enclosures has been questioned, with researchers such as Hamilton suggesting that the ramparts could have as much to do with monumentalising the enclosures, providing symbols to unite dispersed communities. Hamilton suggests a shift in focus from an emphasis on intervisibility between hillforts to intervisibility between peripheral settlements and centralised hillforts dominating discreet areas (Hamilton and Manley 1997: 104; Hamilton and Manley 2001: 29).

The later Iron Age is characterised by evidence of increased population growth and intensification of use of the landscape for production and transport, both on and off the South Downs. There is increased evidence for settlement across the region but particularly on the coastal plain, which some researchers have linked to potential overpopulation and declining fertility of the downland soils (Drewett, Rudling and Gardiner 1988: 129). Settlement of the late Iron Age / Romano British period is often characterised by permanent agricultural systems, rectilinear fields, trackways and individual enclosed or unenclosed farmsteads often set within these systems. The small enclosures at Carne's Seat, and Selhurst Park are rare excavated examples in this area. The HER holds 33 records of field systems thought to date from the late Iron Age. However, dating lynchet features is notoriously difficult. Many are phased on form alone, and examples, such as at Lordington (Chich HER 138), can only be attributed broad dates (in this case Iron Age – Post-Medieval).

Evidence for increasing conflict and social unrest may help to account for the substantial earthworks which comprise the 'Chichester Entrenchments', some stretches of which are present in the south of the study area. These earthworks, identified as an example of 'territorial oppidum' have been interpreted as defining/ defending tribal territories, (Drewett, Rudling and Gardiner 1988:162). Other interpretations have been proposed including the possibility that they may have enclosed a number of discreet Iron Age estates, and questions have been raised about the contemporaneity of the network of ditches (Manley, 2008: 45).

Culturally, new elite structures in the south- east may have been developing during the late Iron Age, perhaps influenced by increasing continental contact (Cunliffe2005: 136). During the last century AD the western Sussex hillforts are abandoned and there is a surge in the production of coins with Romanised inscriptions. This has been interpreted by some as an indication of developing pro-Roman sympathies by local elites in this area (Cunliffe 2005). It has been suggested that following Cesar's invasion of AD 54, favourable trading treaties may have been devised with pro-Roman tribes in Britain (Drewett, Rudling and Gardiner 1988: 176) and so it is possible that this region of Sussex was the stage for dramatic geo-political strategy during the late Iron Age and early Romano-British period.

The Roman Period (c.43 AD—410 AD)

Perhaps the most extensively investigated archaeological period in the study area, the Roman period is well attested. Prior to the Roman invasion, the region seems to have been occupied by the Atrebates, a tribe who may have had pro-Roman sympathies prior to the Roman invasion (Cunliffe, 2005). Some researchers have suggested that parts of southern Britain may not have been invaded, but rather 'liberated', with local elites profiting from the Roman invasion. After the 'conquest' the region was ruled as a client kingdom, which was later subsumed into the Roman province of Britannia, and may have been split into three tribal units or civitates (Rudling 2003: 114). The presence of the palatial building at Fishbourne implies an international importance for the project area and surrounding landscapes– perhaps as testament to the success of the Atrebatic nobilities' relationship/alliance with the Roman world.

A large number of villas were established, with local examples at Bignor, Batten Hanger, Elsted, Chilgrove, West Dean (two), Didling, Harting, Duncton, Pitlands Farm, Upmarden, Selhurst Park, Boxgrove, Watergate Hanger, Compton and Welldown Farm (Lavant). The villas were located in agriculturally more productive areas: the coastal plain, the greensand ridge and the southern fringes of the South Downs. Some villa sites may have grown organically from pre-existing late Iron Age settlements (Rudling 2003: 118). The ALS data set provides an important opportunity to investigate these sites within their broader landscape context, and may provide important information regarding the extent and the economy of the villa estates.

Batten Hanger Roman villa bathhouse

Batten Hanger villa excavations from the air

Environmental and colluvial evidence from excavations in the eastern South Downs have highlighted the intensive utilisation of the landscape during the Romano-British period. Wilkinson suggests that both molluscan evidence and the sheer depth of colluvial deposits identified during the Brighton bypass excavations suggest arable cultivation on a scale not seen in any other period (2003, 748). It is possible that the western downland was subject to equally intensive utilisation during this time. However, a lack of local sequences hampers understanding of the environmental context of the western downland, and the balance of arable, pasture and woodland within the Romano-British estate structures.

Non-villa settlement is thought to be commonplace on the South Downs and coastal plain, given the intensive use of the landscape at this time. Given the history of excavation within the project area, which has historically focused on villa sites, non-villa rural settlement remains poorly understood. The best known example from the study area is perhaps Chalton Down, the discovery of which led to an extensive field campaign in the Chalton valley by Cunliffe in the 1960s. Sites could take the form

of traditional roundhouse settlements, although most sites are identified on the basis of other features, often a combination of long rectangular fields, trackways, house platforms, or excavated evidence for pits and postholes. Other settlements have been identified from the presence of corn dryers and threshing floors adjacent to ditched enclosures. The relationship between villa settlement and rural settlements remains unclear, and the potential offered by the ASL data to investigate the Romano-British landscape may be very significant in this respect.

Shrines, such as the famous example from Hayling Island were significant religious and ceremonial foci of the Romano-British landscape. Here an Iron Age circular structure was centrally placed within a courtyard, over which a Roman temple building was later constructed. Within the study area a possible temple site has been identified at Bow Hill. This was excavated in the 1920s and no report or plan was produced. Accounts seem to suggest a square building, with inner room and outer postholed veranda – so perhaps the shrine, cell and ambulatory of a Romano-Celtic temple. Roof tiles, painted plaster and coins, some from 1st century but mostly of 4th century date, were also recorded (Rudling 2008: 110). A Roman coin, together with sherds of pottery has also been recovered from a barrow nearby, indicating veneration/ritual reuse of Bronze Age barrows, an association that is seen elsewhere in Sussex and the south in general (Drewett, Rudling and Gardiner 1988: 212).

Stane Street Roman Road within the National Trust Slindon Estate

The Roman administration had a significant impact on the landscape. Perhaps the most obvious remains are the road network, of which Stane Street and the Chichester–Silchester road run through the project area. There is good potential for minor roads linking to the primary routes to be identified within the survey results. Other site types include evidence of industry, with the best known being pottery kilns at Rowland's Castle, just to the west of the project area, and in the Arun valley, just to the east. It is likely that tile and brick-making were also significant on the coastal plain and in the Weald, as well as salt production around the coast.

Aerial photograph showing the Chichester–Silchester Roman road crossing the EIA enclosure at Rummages Barn

From the 3rd century AD raiding along the coastline became an increasing problem, disrupting the relative peace and stability of the early Roman period. This instability saw development of the Saxon Shore Forts, and refortification of urban centres, which had often been walled for the first time during the late 3rd century (Drewett, Rudling and Gardiner 1988: 201). By this time many of the villas in the south-east show signs of decay or abandonment (Drewett, Rudling and Gardiner 1988: 216). Fishbourne Palace burnt down in the late 3rd century, but several of the villas in the study area continued to develop. Bignor, for example, which was transformed in to a courtyard villa, is representative of the 4th century pattern of super villas emerging, with concomitant decline of others. Chichester also saw a period of development during the early 4th century, but seems to have been in terminal decline by the second half of the century. With the virtual extinction of commerce in the later 4th and early 5th century, the surviving villas soon became unsustainable.

The Early Medieval Period (c.410—1066 AD)

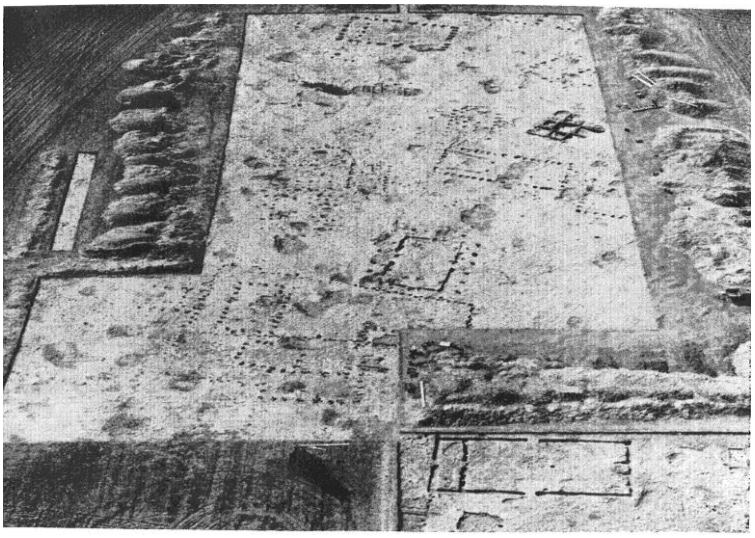
The transition between the Romano-British and Early Medieval period is traditionally dominated by invasion theories, based heavily on later Saxon writers such as Bede. The collapse of the Roman economy is seen as having left an economic and cultural vacuum into which Germanic people migrated. However, invasion theories may mask much more complex realities in terms of the relationships between native British populations and the Anglo-Saxon culture. Romanised burial customs in early cemeteries perhaps suggest a blurring of ethnic identities through intermarriage and cultural assimilation.

The Early Medieval period is traditionally seen as being characterised by a period of population decline and a shift from urban / villa based economy to that of predominantly dispersed rural settlement. In many respects the population of the early post-Roman period become almost archaeologically 'invisible' with a material culture that had returned to simple, local production and organic materials. Burial traditions often provide the most visible source of evidence for the early Saxon period, and within the study area funerary activity is demonstrated by a cemetery at Apple Down, as well as potential cemeteries at East Marden and at Walderton Down, Stoughton.

Secondary burials are noted in earlier barrow cemeteries such as West Copse, Funtington and Halnaker.

Excavations at Appledown Anglo-Saxon cemetery

Evidence of settlement of this period within the study area is scarce. Many of the downland villas had gone into decline before the end of the Roman period, and there is currently little evidence of reuse of these sites into the later centuries. Identification of settlement sites is difficult, as they often leave no visible upstanding topography, and tend to be identified through excavation or from aerial photo analysis. Mark Gardiner notes how settlements could be comparatively short lived and had a tendency to 'drift' (Drewett, Rudling and Gardiner 1988: 294). However, important settlement evidence has been identified at Chalton (Addyman and Leigh 1973), and middle-Saxon sunken floored buildings have been excavated at North Marden and Upwaltham.



The Anglo-Saxon village at Chalton. Plate 1, Addeyman and Leigh 1973

At a general level however, there is less evidence of early Saxon settlement and cemeteries in the study area, in contrast to a focus of early activity at the eastern end of the South Downs (between

the rivers Ouse and Cuckmere). Although this may be a bias of archaeological investigation, the concentration of early activity to the east is potentially significant as it appears to be located away from the earlier area of highly Romanised settlement on the western end of the South Downs and coastal plain (White 1999: 28).

A theory known as the 'Middle Saxon shift', proposed by Cunliffe suggested that by the 9th century the original ridge top settlements were abandoned or shrunk , with new daughter settlements established in the valleys or at the spring line of chalk scarp (Cunliffe 1973: 5–7). This theory is being revised, as researchers point to examples which defy the pattern, including early settlement in river valleys, (e.g. Botolophs in the Adur Valley), and note how early occupation on the valley floors may be masked by colluvium. Settlement is likely to have become more centralised in the later period, based upon villages and hamlets at the heart of the estates (Brandon, 1999: 56), and much evidence could lie sealed beneath the later Medieval settlement pattern.

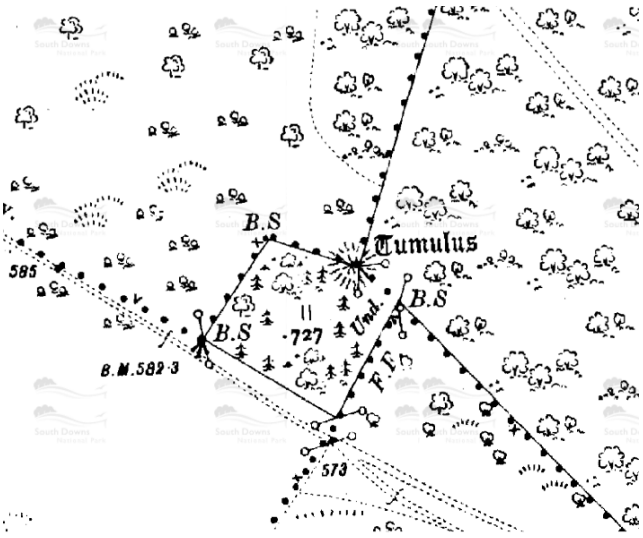
Given the lack of topographic signature for this class of site, it is perhaps unlikely that the Airborne Laser Scanning data will provide a great deal more evidence for settlement of this period. However, an interesting avenue of potential research within the study area relates to estate boundaries. Mark Gardiner questions whether the large Romano-British estates were completely abandoned, or if the estates continued into the Anglo-Saxon period, in some altered form following the collapse of the Roman economy. At least one 5th century Anglo-Saxon settlement (Bishopstone in East Sussex), was located over the tracks and field systems of a late Roman farm –but with no regard for the earlier layout (Drewett, Rudling and Gardiner 1988: 267). Further work researching persistence of cultivation, authority structures, and continuity of boundaries and settlement is required (Gardiner in Manley 2008: 57). It is possible that information gleaned from the ASL data in respect to the Roman estate structures could provide an invaluable addition to the research for this subject.

The balance between woodland, arable and pasture during the post Roman period is also particularly important for the study area. Placename evidence in particular, suggests the presence of woodland on the downland block (Gardiner 2008: 59), although a lack of environmental work in the area inhibits scientific analysis. The extent of post-Roman woodland regeneration (as opposed to development of pre-existing woodland is clear). Undoubtedly wood was an important resource for Anglo-Saxon communities, for the production of timber for housing and tools, for fuel and for fencing. This period may have seen a shift from arable cultivation to pasture, although this is difficult to identify in the pollen record due to the similarity of cereal and grass pollen (Brandon, 1998). The ALS data set may also aid investigation of the pastoral economy through providing important evidence of route ways and droving networks. A combination of ASL data, placename evidence and environmental sequences could provide a strong package for unravelling post-Roman woodland management/regeneration, and the balance of woodland and arable/pasture within the study area.

By the middle and late Anglo-Saxon period there are increasingly complex patterns of landscape management and ownership. The final conversion of Sussex to Christianity in the late 7th century is important to researchers, as it marks the beginning of documentary records of land charters. Land which had notionally belonged to the kingdom of the south Saxons was made over to noblemen in return for loyalty. By the time of Domesday, a concentration of landed estates in the South Downs were held by the Crown, great magnates and the Church. The late 7th and 8th centuries also

probably saw the foundation of minster churches, often located close to estate centres (Winchester 2000: 12). Examples of such foundations within the study area could be provided by churches such as Singleton and Stoughton.

Other landscape features of this period are represented by manorial and parish boundaries and hundred meeting places. These features can re-use elements of earlier features within the fabric of the Anglo-Saxon landscape. The site of the 'Moot mound' in Barkhale Wood, is just one such example. It is thought to represent the re-use of a Bronze Age bowl barrow as a hundred meeting place during the Anglo-Saxon period. This mound is located at the junction of the parishes of Bignor, Bury, Houghton and Madehurst – the parishes over which the moot court is thought to have had had jurisdiction (West Sussex HER).



Ordnance Survey 25" 1912. The Moot Mound and parish boundaries, Barkhale woods

The Medieval Period (1066–1540 AD)

Following the Norman Conquest, the new ruling elite inherited developed administrative systems. Hundreds and parish systems were already broadly in place and the Rapal system may have had its origin in the pre-conquest period (Gardiner in Rudling, 2003:159). A hierarchical, social and political structure known as feudalism characterised the Medieval period. Under this system all land belonged to the king, with landholdings gifted to followers. By the 14th century, the Sussex estates of the Earls of Arundel were huge, comprising 64 manors, 12 forests and 13 deer parks, 13,000 arable acres and 10,000 woodland acres (Brandon and Short, 1990: 118).

Settlement was characterised by dispersed hamlets and villages, which could be surrounded by common fields. These field systems, unlike the classic midlands system of open field common farming, could be irregular, and could be separated from the main village. Freeholders could also manage their land in independent closes. As villages grew, common fields were enlarged, often distinguished by names such as –breche, –broc, and –rede signifying the reclamation of Downland, woodland or heath, especially by the 13th century. Common fields are known to have extended onto the South Downs crest at Harting, but in general, flights of Medieval lynchets cut into the down scarps are not as prevalent as in Wiltshire (Brandon and Short 1990: 60).

In the eastern South Downs, the classic sheep-corn system dominated the economic structure. In the western downs the situation is likely to have been more complex, with a mixture of sheep walk and pasture, alongside hunting parks and wood pasture. Sheep were present, but may also have run in forests, deer parks and common woodlands (Brandon 1999: 61).

The term *forest* or *chase* in a Medieval context, applies to the hunting grounds of royal or great lay or ecclesiastical magnates. Forests were royal hunting territories and functioned under their own forest law. Although designed for livestock rearing, people lived and worked within the forest perimeters, and peasants had common rights within them. Part of Forest of Arundel (which perhaps should properly be termed a chase*)* was commonable to peasants in Bury, Eartham, East Dean and Singleton manors (Brandon 1999: 65).

Within Arundel Forest there are several deer parks, including examples at Downley, Halnaker, Selhurst, East Dean and Stansted. While there may be Early Medieval originators, deer parks largely owe their origin to the Norman practise of deer husbandry and the introduction of fallow deer (Brandon and Short, 1990:70). To possess a park was a clear mark of status as a gentleman. Other animals could be kept (ie typically rabbits), and other domesticates could be allowed to graze within the park outside the fawning season. Sheep and goats were often prohibited as their grazing interfered with that of the deer (Brandon and Short, 1990:72). The park environment is best described as wood pasture, with timber production, bracken and wood fuel also influencing the management of the park structure. ALS data provides an exciting new tool for exploring the plan, internal features and development of the Medieval parks within the study area.

Fallow Deer

The population growth of the 12th and 13th centuries led to increasing settlement of the South Downs. There was a concomitant increase in arable cultivation, with a gradual spread of agricultural land outwards from the villages, and upland enclosure of fields for pasture (for example, the large and generally regular fields on tops of South Downs around Gumber above Slindon). Brandon states that we can probably envisage woodland being increasingly degraded to open common or heath though the period in part as a consequence of population pressure (1999: 65). From the mid 14th century the population fell into decline following the Black Death, famine and deterioration in the climate. There is evidence of contraction of settlement in the form of deserted or shrunken Medieval villages; a well-known example within the study area is Monkton. ALS provides an exciting tool for investigating the changing pattern of medieval settlement within the study area.

Monkton Deserted Medieval Village

ALS image: Slope analysis, Monkton DMV

The Post–Medieval Period (1540–1900 AD)

By the 16th century the population was on the rise again, and trade patterns emerged which were to culminate in the modern market economy. The coastal plain, always one of the most prosperous agricultural regions of southern England, had extensive sheep-corn agriculture, and produced huge quantities of wheat and barley. Alluvial pastures and downland common supported cattle, sheep and pigs (Brandon and Short 1990: 207–208). Rising demand for wool meant that during the 16th and 17th centuries the eastern downland tops were largely reserved for sheep walk and common pasture. The western end of the South Downs may have functioned differently, in a way more akin to Wealden districts, with timber reserves important. There are records of pigs being sent from Arundel to the 'hogg commons' at Singleton and East Dean (Brandon and Short 1990: 175). However, sheep gazing played a part in the economy in the western downland regions as well, and there are even records of sheep grazing in woodland environments (Brandon and Short 1990: 175).

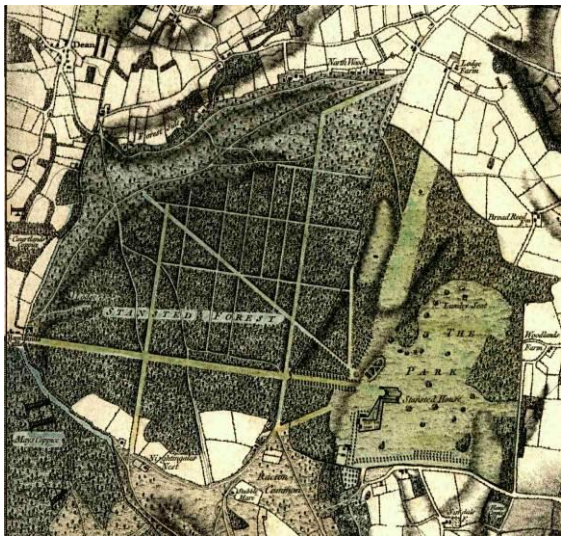
From the 16th and 17th centuries, enclosure of land became increasingly frequent throughout Britain. Both small and large landowners began to define and enclose land which had previously been common land or waste. Brandon records that the enclosure of common waste started particularly early in the western downs (Brandon, 1999). From the 16th century in particular, there is increasing pressure for the enclosure of land, often by the tenants themselves, to prevent overstocking by the landlord, other tenants or other inhabitants of the estate. Early enclosure by small cultivators could result in a network of small irregular fields and planted hedgerows. Open field systems were also enclosed, with some strip fields fossilised in permanent boundaries; for example, near Northwood cottages, Slindon, (Whitfield: 48).

Initial small-scale enclosure was increasingly replaced by larger scale enclosure, accelerated by parliamentary acts from the 17th century. At this time glebe terriers (records of enclosures of endowments belonging to the church) were required in all parishes of the Diocese of Chichester, and these terriers make it clear that in the project area at Harting and Treyford, the enclosure of common fields had been completed by 1635 (Brandon, 1999: 94).

The 16th and 17th centuries also saw enclosure of large expanses of common woodland, as a result of the increasing demand for fuel from Wealden industries. The central South Downs near East Dean were enclosed c1630s and over 400 acres of Singleton forest and 600 acres of Charlton forest in 16th and 17th centuries, (Brandon 1999: 100). There are records that this process of enclosure led to fuel poverty for residents in areas such as Houghton and Amberley, as so much wood was being taken to support industry (*ibid*: 101).

From the 18th century, the great landed estates developed, often based on earlier Medieval or Post-Medieval structures. By the mid-19th century the Sussex Downs (along with the coastal plain, the lower greensand/scarp foot zone and the North Downs) had the highest proportion of 'close' parishes in Sussex, basically meaning the parishes were mostly or all in a single estate, and dominated by single families (Brandon and Short 1990: 317). In the project area, Goodwood Park, which in 1873 encompassed more than 17,000 acres and worth nearly £20,000 in rent, was owned by the Duke of Richmond. The Arundel estate of the Duke of Norfolk covered 19,000 acres and was worth nearly £30,000 (Brandon and Short, 1990: 319).

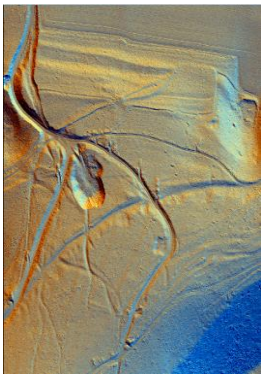
Rich landowners bought up huge blocks of land to create parkscapes around country seats and to plant new woodlands around earlier woodland blocks. Initial schemes were usually formal, comprising large geometrical wooded landscapes, with long avenues cut though woods (i.e. Stansted Park). The formal designs were replaced from the mid 18th century by more naturalistic schemes, although they still involved designed views, vistas and walks.



Yeakell and *Gardner's Sussex 1778–1783, 2inch to 1 mile, Stanstead Park*

The agricultural revolution of the 18th and 19th centuries saw developments in livestock, crops and technology. This period saw changes to the sheep-corn husbandry system, with new crops and new grasses, which supported more sheep, resulting in more manure, thus increasing soil fertility. The demand for corn and growing population following the Napoleonic wars resulted in a booming economy, a so-called golden-age of high farming from 1840–70 (Brandon and Short 1990: 322). This period increased arable encroachment on downland, particularly in the eastern end of the South Downs where it is estimated that even at the height of the war effort in the 1940s, 1/3 less land was under arable than had been a century earlier(Godfrey 2002).

The western end of the South Downs also saw landscape changes as a result of the agricultural and industrial revolutions, but appears to have had a more diverse economic base. The impact of economic drivers and downturns is relatively poorly understood in comparison with the east. Silviculture was certainly an important element of the economy of the west, and beech plantations were established from the 18th century over areas of earlier sheep pasture at Up Marden, Woolavington and Cocking Downs (Brandon, 1999: 100). The landscape also became increasingly industrialised, and features such as railways, quarries and transport networks are particularly well represented in the lidar dataset.



ALS Image: Composite hillshade of quarry in Bignortail wood

After 1851, the dominant trend in the south east was for rural de-population, increasing unemployment and poverty with agricultural workers wages below those of the midlands and north (Brandon and Short, 1990:333). The final years of the period were marked by a deep agricultural depression, with the importation of grain from abroad. Regionally, both arable and livestock farming suffered, signalling the end of the sheep–corn economy that had been the mainstay since the medieval period. There was a retreat from upland areas, with pasture increasingly dominating and many farms sold off. Structural change within the great estates is evident, with those who failed to diversify increasingly selling off portions of land, often to pay death duties. In this, it appears that the project area bucked the major trends in changing landownership from large scale landowners to owner-occupiers in the late 19th and early 20th centuries. Much of this may be due to the fact that estates in the western South Downs had a broader economic base that was complemented by a burgeoning "countryside tourism" as people strove to escape the dismal and polluted cities for leisure.

Study combining cartography, documentary records (particularly estate records) and ASL data could provide a powerful method of studying Medieval to Post-Medieval landscape development.

The Twentieth Century and Beyond

The 20th century brought with it the largest changes to economy, society and landscape for a millennium. The impact of the two world wars on the landscape and landcover of the project area was pronounced, with widespread deforestation and the impact of military activities. Much land, formerly abandoned during the depression was put back into cultivation during the wars, with more arable cultivation made possible by chemical fertilisers and mechanisation. At Slindon for example, Canadian Forestry Corps stationed from 1914–18 systematically removed almost every trace of woodland for the war effort. In the 1920s and 1950s quick-growing coniferous plantations were commonly established in an effort to boost the severely depleted timber reserves. A collapse in the price of timber in the late 20th century due to cheap Scandinavian imports, means that many of these plantations have been relatively unmanaged. Regionally, many of the great estates were decimated following their requisition for wartime activities and the deep social changes brought about by the conflict. However, in the project area once again the continuation of large-scale landholding bucks the trend.

During both wars the South Downs were used to accommodate troops awaiting deployment, hospitals for the wounded and as training grounds, with much of the western area being restricted. There were numerous firing ranges in the valleys for weapons training, and to provide access to these areas a number of concrete 'tank roads' were constructed onto the South Downs, many of which survive as farm tracks today. There was an observation balloon station at Slindon in WW I near what was to become a decoy airfield in WW II. There was a radio direction finding station at Halnaker Hill (Boxgrove) and a radar station at Harting Beacon (on the site of a Napoleonic Wars semaphore signal station).

Military trenching within Valdoe woods

Despite the acknowledged deforestation during WWII, many hundreds of troops were concealed within temporary camps in the South Downs woods in advance of D-Day, giving some indication of the contemporary land cover. Other less obvious changes were also brought about by the area's use as a "springboard" for the allied assault of 1944, including the provision of mains water and electricity to rural areas, as well as new roads and metalled byways (Brandon and Short, 1990:363).

Additionally, the South Downs landscape was the home of the home guard auxiliary units (Angell 1996) set up in case of invasion. Men who knew the area intimately were picked from local communities, trained in the use of weapons, avoiding detection, explosives, how to plan and to lay booby traps in the event of an invasion. Most of these activities left little trace in the landscape, with structures demolished, sold off and land re-purposed, but with the centenary of WWI and the increasing loss of first-hand accounts, there is renewed purpose in investigating the local, landscape and social impacts of the first half of the 20th century.

Research Themes

The importance of the archaeology and history of the wider region is indicated by the range and depth of previous research summarised above. However, the project area itself has been largely overlooked. Consequently the themes below are specifically tailored both to the landscape of the project area and the resources at our disposal. Each theme is presented with specific sub-questions that would contribute to improving our overall understanding of the project area.

Continuity and Change

Landscape Formation and Processes

- Can the 3D model of the current landscape be used to better understand the formation and location of colluvial deposits in the study area? Specifically does this help us to understand;
  - the distribution of Palaeolithic material?
  - the levels of erosion related to agriculture on the higher ground throughout the prehistoric and historic periods?
- Is it possible to better understand the exploitation of natural resources such as flint, chalk and stone using the 3D landscape model?
- What evidence for climate fluctuation over time can be seen in the project area, for example, water meadows beside winterbournes, shift in species as identified in pollen records?

Environment and Land Cover

- How does evidence of agricultural exploitation reflect variations in landform?
- How extensive was deforestation and the uptake of agriculture during the Neolithic, Bronze Age and Iron Age and Roman periods in the study area?
- Can we successfully distinguish between periods of establishment, use, re-use and abandonment of field systems, allowing the extent and nature of agriculture to be assessed in relation to other evidence?
- Can targeted geophysical survey help us to identify whether gaps in field systems are genuine absences or a result of taphonomic processes?
- Using place-name evidence, can we map the earliest occurrences of place names that are descriptive of wooded (ie *leah, hyrst, graf*) and open environments?
- Can we reconstruct the landscape setting of the later prehistoric burial/ceremonial monuments?
- Can the 3D model be used to quantify the most heavily “used” areas of the landscape in terms of agriculture? Do these relate to hypotheses of aspect and land viability? Are there areas that deviate from the general pattern of exploitation?
- Can the 3D model be used to quantify the least heavily ‘used’ areas of the landscape. Do these areas contain evidence of prior exploitation?
- To what extent can the PAS data set contribute towards refining dating of features identified via remote sensing methods?
- Can the lidar data and NMP transcription be used to add significant time-depth to the Historic Landscape Characterisation for the area?

People in the Landscape

Settlement and Communications

- Can we move closer to understanding the pattern of settlement in later prehistory?
- Using documentary evidence along with the lidar data, can we define the pattern of deserted/shrunken Medieval settlement?
- Using map and place-name evidence can we establish locations of early-Medieval settlement?
- In recreating the landscape and dominant vegetation, are we better able to capture the connectivity between prominent locations through viewshed analysis? Likewise are we able to identify "hidden" locations?
- How can we better understand the relationship of vernacular and polite buildings to their landscapes?
- Can we gain greater insight into the overland routes that were used to traverse the study area?

- To what extent do these deviate from expected routes based on least-cost analysis (for example)?
- Can we identify phasing (establishment, deviation, abandonment) and purpose (drove roads, access, leisure) to these routes?
- How did these link to "external" landscapes of the Weald and Coastal plain?
- What is the relationship of well-known routes such as Stane Street with features such as field systems in their surrounding landscape?

Understanding how the landscape influences experience

- Are we able to reassess current theories of prehistoric ritual landscape by shedding light on the spatial distribution of prehistoric funerary and ritual monuments?
- Can we capture a "day-in-the-landscape" type narrative typical of each period?
- Can we see evidence of everyday experience of the landscape in literature and art?
- Does the oral tradition of song and verse provide an insight into experience of living in the area?
- To what extent does the literary tradition of the area reflect the landscape (and for whom and what time period does this experience hold most true)?
- Can we collect the memories of residents, woodsmen and farmers from the area to elucidate "hidden" or forgotten aspects of life in the project area in the 20th century?

Ownership and Control

- What influence has the pattern of land ownership had on the project area?
- How can boundaries and landmarks (ie barrows, fords) help shed light on the tenurial and territorial development of the landscape?
- Is it possible to identify organised groups or networks of fields that may indicate the influence of prehistoric, Roman or Medieval "estates"?
- Can the ALS data contribute to the understanding of the Medieval deer parks in the study area, and their relationship with the free chase of Arundel?
- How can we better understand ecclesiastical influence within the study area during the Medieval period?
- How did the estate economy develop in the 18th and 19th centuries and what is its significance for the area?
- What evidence of the ancestry of the estates is visible in the landscape?
- Why have estates in the project area survived through periods when others have failed?
- What was the impact of the requisition of property and landscape management during the two World Wars?

Past archaeological investigations in the area

- Can we re-examine the archives for key mid-20th century archaeological investigations within the area to place these necessarily site-focused projects in their wider landscape context?
- Through oral-history capture, can we share the experience of people who have worked on archaeological excavations in the area?

The Woodland Resource

- Can we quantify the extent to which the woodlands in later periods were managed for predominantly local (estate) use or as part of a wider regional economy?
- What evidence is there of industrial activities in the woodland (saw pits, charcoal platforms etc)? How does this compare with the Wealden woodlands?
- Given the extensive clearance and introduction of coniferous plantation of the 20th century are there any specific woodlands in the study area that might be representative of woodlands managed in more traditional ways e.g. evidence of pollarded and coppiced woodland
- Can we quantify the requirements both for timber and strategic / training activities, and the impact of WWI and WWII on the woodlands in the project area?
- To what extent can the identification of veteran trees add to our understanding of the changing or continuity of woodland cover?
- To what extent can the ALS data set be used for charting the gentrification of the landscape from the 18th century onwards, though identification of dense exotic planted species such as Rhododendron?
- What changes have we seen in the last 100 years with respect to woodland management in the area and how has this influenced popular perceptions of woodland?
- What will the woods of the project area look like in 50–100 years from now? How will management have changed?

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