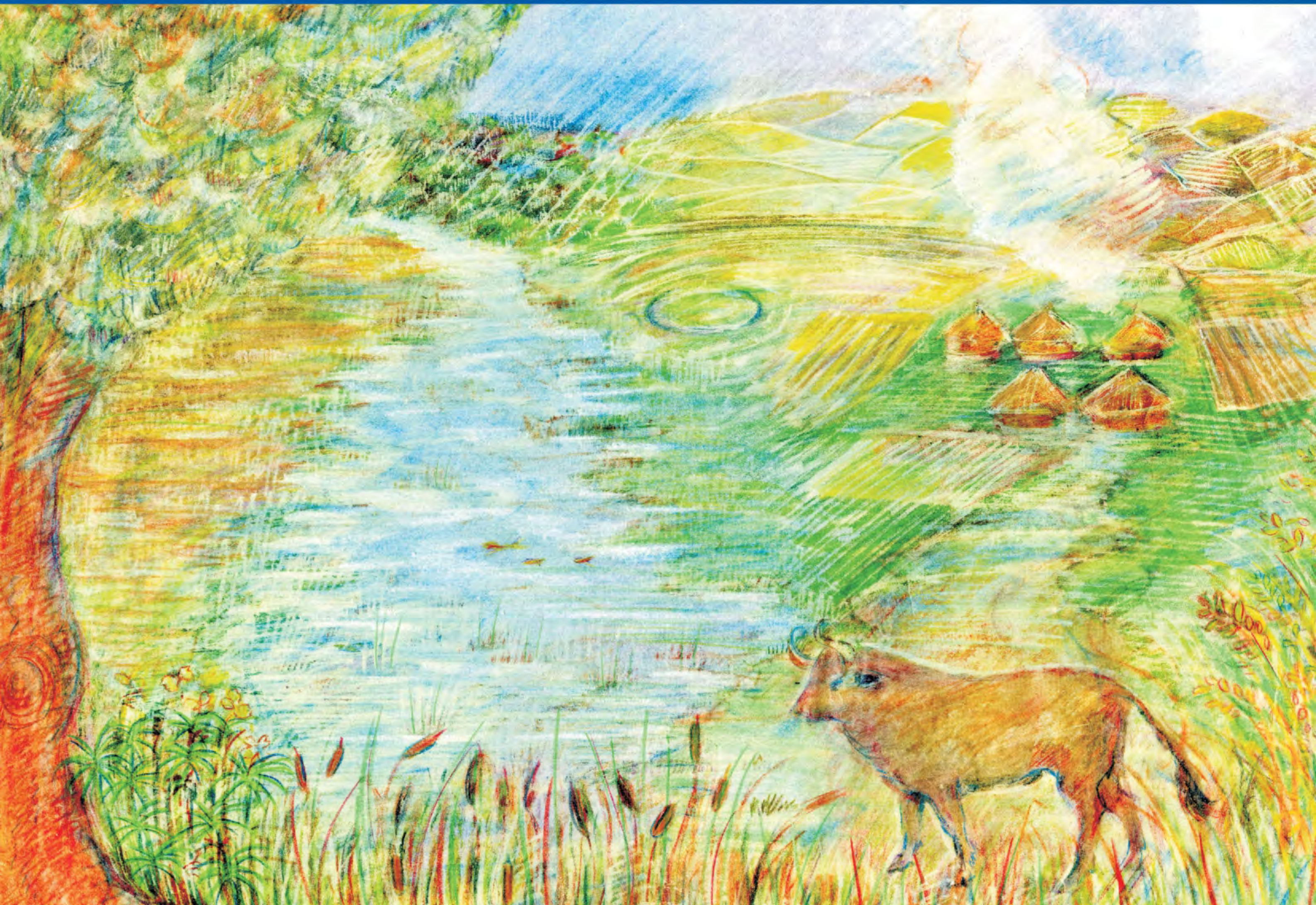
Archaeological Excavations on the Route of the A27 Westhampnett Bypass West Sussex, 1992

Volume 1: Late Upper Palaeolithic–Anglo-Saxon



By A.P. Fitzpatrick, Andrew B. Powell and Michael J. Allen

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with contributions from

Neil J. Adam, Alex Bayliss, H.F. Beamish, Vaughan Birbeck, W.A. Boismier, D. Bonner, Rod Brook, the late A.J. Clark, Nigel Cameron, John A. Davies, Brenda Dickinson, Rowena Gale, Martin Henig, Pat Hinton, S.E. James, Richard I. Macphail, Frances McLaren, Lorraine Mepham, R. Montague, Jacqueline I. McKinley, J.E. Robinson, Robert G. Scaife, Dale Serjeantson, Pippa Smith, David Starley, D.F. Williams and Sarah F. Wyles

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The excavations were completed through the hard work of the field staff in unrelenting conditions from January to April 1992. Area 1 was supervised by Rod Brook, Area 2 by Bob Davis, Area 3 by Andrew Powell, Area 4 by David Bonner, Area 5 by Vaughan Birbeck, Areas 6 and 7 by Andrew Powell, and Area 8 by Hugh Beamish. The watching brief was largely undertaken by David Bonner. The Project Officer was Neil Adam and Mike Allen was Deputy Project Manager. On-site finds processing and conservation was undertaken by Lorraine Mepham, assisted by Melanie Gauden, and the on-site environmentalist was Joy Ede. Much of the processing and sorting of the environmental samples was undertaken by Sarah Wyles.

The landowners, Mr Geoffrey Heaver and John Pitts, and their Agents, Tom Bodley Scott of Strutt and Parker and Simon Lush of Henry Adams provided much practical assistance, as did Andrew Hack of Tarmac Roadstone and Dr Sundt of Maudlin Farm. Help was given by Ron Scailes and Andrew Thynne of the then Department of Transport, Philip Edwards (Resident Engineer) and Richard Canning of Gifford Graham, Colin Wickham, Project Manager for Fairclough Civil Engineering and Geoff Morris, Hinton and Higgs (Health and Safety). Plant and site facilities were ably provided by Nigel Allmark of Thomas King and Sons. The logistical difficulties of accommodating a large excavation team at short notice were resolved with the assistance of Steve Flanigan of Southcoastworld (better known as Butlins) in Bognor Regis and the hire of a coach from Yellowline Tours through N.E. Fisher.

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Outreach activities formed part of the project design. Many local schools visited the excavations and between 3–4,000 people visited during an open day on Sunday 23 February 1992. The discoveries formed part of several exhibitions at Chichester Museum organised with Su Fullwood, including ‘Westhampnett Excavations. From the Ice Age to the Romans’ between February and May 1993, before they became part of the permanent displays of the museum. Kate Boatfield of K.B. Graphics designed the popular booklet about the project that was funded by English Heritage.

The decision to put Volume 2 into production ahead of the completion of Volume 1 and the demands of other major fieldwork projects shortly afterwards (e.g. Fitzpatrick *et al*. 1999; Booth *et al*. in press) has resulted in the singular distinction of having Volume 1 published several years after Volume 2, despite the report being closed in 2000. Thanks are due to the contributors for their forbearance.

Assistance has been provided in many areas by the staff of Wessex Archaeology. Karen Walker, Julie Gardiner and Catriona Gibson helped with the compilation of the report, and the computer-based analysis was programmed and run by W.A. Boismier. All the line drawings are by S.E. James and consequently she is one of the named contributors to this report. Plates 1 and 22 are by Steve Patterson and plates 3, 7, 9, 11, 14, 18, 21 and 23 are by Elaine A. Wakefield. The project was directed in the field and managed throughout for Wessex Archaeology by A.P. Fitzpatrick.

Summary

Five main excavations and a number of smaller ones were undertaken in advance of the construction of the A27 Westhampnett Bypass near, Chichester, West Sussex, in 1992. This volume presents the evidence for settlement and related evidence that spans 11,000 years from the Late Upper Palaeolithic to the medieval. The Iron Age, Romano-British and Anglo-Saxon cemeteries set on a low hill in excavation Area 2 are published in volume 2.

The excavations provide the first archaeological transect across part of the West Sussex Coastal Plain and provide a useful contrast to the well-explored Sussex Downs immediately to the north. The route also passed through relatively complex drift geology and the excavations provided the opportunity to examine the relationships between early settlement and the landscape.

The earliest evidence from the scheme dates to Late Upper Palaeolithic and was discovered in a test pit excavated to examine the geology rather than the Holocene archaeology. In Area 3, a Devensian Late Glacial deposit was found 1 m below the modern ground surface. This Allerød soil contained a single worked flint flake and a range of environmental evidence that allowed the characterisation of the Lateglacial environment around *c.* 11,000 BC.

By the early Mesolithic, Area 3 had become a seasonal river or lagoon and the slightly higher grounds either side of it in Areas 1 and 4 were used as the sites of temporary residential base camps.

In Area 1 the flints had become incorporated into the subsoil in an argillic brown earth (sol lessivé) and although not *in situ*, it seems likely that they had not travelled far from their point of discard or deposition. The flint assemblage is earlier Mesolithic in date and its composition is typical of those interpreted as base camps. A single radiocarbon date falls in the late 9th millennium BC. In Area 4 a larger area was examined by fieldwalking and test pits. The topsoil was then removed by mechanical excavators, revealing a number of hollows but it could not be established if these were natural or artificial in origin. The flint assemblage from Area 4 is also typical of a base camp and two radiocarbon dates fall in the eighth millennium.

Few features dating to the Neolithic were found but in Area 4 one small pit contained Peterborough Ware and another Grooved Ware. An isolated, unaccompanied, inhumation burial in Area 3 yielded a radiocarbon date in the earlier third millennium, dating it to the late Neolithic.

Bronze Age evidence was the most frequent, with a few features or finds occurring in many of the excavation areas. One large pit in Area 4 contained a quantity of Collared Urns radiocarbon dated to the early second millennium BC. The associated finds suggest that the material may derive from Early Bronze Age domestic activity. Adjacent to the pit were the heavily truncated remains of a Middle Bronze Age settlement. No buildings could be identified amongst the postholes, pits and, unusually for a settlement of this date, gullies. The quantity of Deverel-Rimbury pottery, querns, and charred plant remains are typical of settlements of this date, in this case dated to the second half of the second millennium BC by three radiocarbon dates.

Early Bronze Age funerary activity might be represented by a large portion of a Beaker from Area 4 but no grave was identified. By the Early Bronze Age, Area 3 was no longer seasonal river or lagoon and a small funerary monument defined by a penannular, ditched, enclosure was built. The central burial was a cremation burial accompanied by a Collared Urn and dated to the third quarter of the second millennium BC. In contrast a large undated ring ditch in Area 2 was found at the very end of the excavation. It did not contain a central burial but only very limited examination of the ditch, which may well have contained graves, was possible.

In comparison with the evidence from the Neolithic, the Bronze Age finds represent a significant increase and suggests that the Coastal Plain was first intensively settled in the Bronze Age, and not as previously thought, in the Iron Age.

The most important evidence from the Iron Age is represented by a unique Late Iron Age religious site in Area 2 that contains a large and unparalleled cremation burial cemetery. Other Iron Age evidence comes from Area 1 where an unenclosed Middle Iron Age settlement, dating to between the fourth and first centuries BC, was sample excavated: the complete excavation of the hundreds of postholes was beyond the resources available. Partly because of this no circular buildings could be identified with certainty but a number of four-post structures were. Other features included a well, and the foundation trenches for a rare Iron Age rectangular building.

The route of the Bypass runs close to the road between the nearby *civitas* capital of Chichester and London. The Iron Age settlement in Area 1 appears to have continued in use into the Roman period but the focus of occupation shifted away from the excavation Area. In Area 3 almost all of an unusual site was examined. The first phase was a 20 m square timber palisade set within a ditched enclosure. This palisade was then incorporated with a larger rectangular, ditched, enclosure, forming the north-eastern corner of it. Neither enclosure contained many internal features and while some aspects of the layout of the enclosures find their best parallels in temples and other religious sites, the finds assemblage is (as with many temples)

apparently typical of a settlement. The site was founded at about the time that the small cremation burial cemetery on the nearby hill in Area 2 passed out of use.

A single Anglo-Saxon sunken-featured building was found in Area 7. It is likely to date to the 5–7th centuries and to pre-date the small inhumation cemetery, probably of 7th-century date, found in the immediately adjacent Area 2. A small number of features and finds certainly or possibly of Anglo-Saxon date, including another possible sunken-featured building, were found in other Areas. Although modest in quantity, these discoveries provide some of the first excavated evidence for the Anglo-Saxon settlement of the West Sussex Coastal Plain.

In contrast, medieval and later activity is, apart from a small group of 13–14th century pottery, notable mainly for its absence, supporting the argument that the location of many modern farms as well as villages is a settlement pattern that is based on a medieval one.

Although this aspect of the settlement pattern might suggest continuity, the evidence from the project as a whole is for discontinuity. There are gaps of several millennia between the uses of many of the individual excavation Areas for settlement, burial and religious sites. However, those sites – some of which are very important individually – and the changing landscapes in which they were set provide a valuable insight into the development of the settlement of the West Sussex Coastal Plain.

Résumé

Cinq excavations majeures et un certain nombre d'autres de moindre importance furent entreprises en 1992 avant la construction de l'A 27, voie de contournement de Westhampnett, près de Chichester, West Sussex. Ce volume présente les témoignages d'occupation et les vestiges associés qui s'étendent sur une période de 11 000 ans allant du paléolithique supérieur final jusqu'au moyen âge. Les cimetières de l'âge du fer, romano-britannique et anglo-saxon, situés sur une colline peu élevée dans la zone de fouilles 2 sont publiés dans le volume 2.

Ces fouilles fournissent la première coupe archéologique à travers une partie de la plaine côtière du West Sussex et offrent un contraste utile avec la région bien explorée des Sussex Downs qui se trouve immédiatement au nord. La route traversa aussi une géologie erratique relativement complexe et les fouilles donnèrent l'occasion d'examiner les relations entre les occupations primitives et le paysage.

Le plus ancien témoignage du projet date du paléolithique supérieur final et fut découvert dans une fosse d'exploration fouillée pour en examiner la géologie plutôt que l'archéologie holocène. Dans la Zone 3 on a découvert un dépôt de la fin du glaciaire Devensien à un mètre en dessous de la surface du sol moderne. Ce sol Allerød contenait un seul éclat de silex travaillé et une gamme de témoignages environnementaux qui permirent de le caractériser comme environnement de la fin du glaciaire, vers 11 000 av. J.-C.

D'ici au mésolithique ancien la Zone 3 était devenue une rivière ou un lagon saisonnier et, de chaque côté, les terres légèrement plus élevées dans les Zones 1 et 4 servaient de sites pour des camps de base pour des séjours temporaires.

Dans la Zone 1 les silex s'étaient retrouvés incorporés dans le sous-sol dans une terre brune argileuse (*sol lessivé*) et bien qu'ils n'étaient pas *in situ*, il semble probable qu'ils n'avaient pas voyagé loin de leur lieu de rejet ou de dépôt. L'assemblage de silex se rattache par sa date au mésolithique ancien et, par sa composition, il est typique de ceux qu'on interprète comme des camps de base. La seule datation au carbone 14 indique la fin du 9ème millénaire av. J.-C. Dans la Zone 4, une aire plus étendue a été examinée au moyen d'arpentage et de fosses d'exploration. La couche supérieure a ensuite été enlevée par des pelles mécaniques, révélant un certain nombre de creu, mais il n'a pas été possible d'établir si ceux-ci étaient d'origine naturelle ou artificielle. L'assemblage de silex de la Zone 4 est également typique d'un camp de base et deux dates au carbone 14 correspondent au huitième millénaire.

On n'a trouvé que peu de traces datant du néolithique, mais dans la Zone 4 un petit puits contenait de la céramique de Peterborough et un autre de la poterie cannelée. Dans la Zone 3 une sépulture à inhumation isolée, dépourvue de mobilier, a révélé une datation au carbone 14 du début du 3ème millénaire, ce qui la situe au néolithique tardif.

Les témoignages de l'âge du bronze étaient les plus fréquents, certains indices ou trouvailles figurant dans de nombreuses zones de fouilles. Une grande fosse dans la Zone 4 contenait une certaine quantité d'urnes à col datées au carbone 14 du début du second millénaire av.J.-C. Les trouvailles associées donnent à penser qu'il se peut que ce matériel provienne d'une activité domestique de l'âge du bronze ancien. Adjacents à cette fosse se trouvaient les restes fortement tronqués d'une occupation de l'âge du bronze moyen. Il a été impossible d'identifier tout

bâtiment parmi les trous de poteaux, les fosses et, fait inhabituel pour une occupation de cette période, les rigoles. La quantité de poterie de Deverel-Rimbury, de meules, et de restes de plantes carbonisées est typique des occupations de cette période, dans ce cas la seconde moitié du second millénaire av.J.-C. grâce à trois datations au carbone 14.

Il se pourrait que l'activité funéraire de l'âge du bronze ancien soit représentée par un gros morceau de vase campaniforme provenant de la Zone 4, mais on n'a pas identifié de tombe. D'ici l'âge du bronze ancien la Zone 3 n'était plus désormais une rivière ou un lagon saisonnier et on construisit un petit monument funéraire défini par un enclos avec fossé formant un cercle presque complet. L'inhumation centrale était une inhumation à incinération accompagnée d'une urne à col datée du troisième quart du second millénaire av.J.-C. Par contraste, un grand fossé en anneau non daté fut découvert dans la Zone 2 tout à la fin des fouilles. Il ne contenait pas d'inhumation centrale mais seul un examen très limité du fossé, qui aurait très bien pu contenir des tombes, a été possible.

Si on les compare aux témoignages du néolithique, les trouvailles de l'âge du bronze représentent une augmentation significative et donnent à penser que la plaine côtière fut occupée de manière intensive pour la première fois à l'âge du bronze, et non, comme on l'avait cru auparavant, à l'âge du fer.

Le plus important témoignage de l'âge du fer consiste en un site religieux exceptionnel dans la Zone 2, il date de l'âge du fer final et contient un grand cimetière à incinérations qui n'a pas d'équivalent. D'autres vestiges de l'âge du fer viennent de la Zone 1 où on a fouillé un échantillon d'une occupation de l'âge du fer moyen non enclose, datant d'entre le quatrième et le premier siècle av.J.-C.; l'excavation complète des centaines de trous de poteaux dépassait la limite des ressources disponibles. En partie à cause de cela, il a été impossible d'identifier avec certitude aucun des bâtiments circulaires, mais un certain nombre de structures à quatre poteaux ont pu être identifiées. Les autres vestiges comprenaient un puits et des tranchées pour les fondations d'un exceptionnel bâtiment rectangulaire de l'âge du fer.

Le tracé de la déviation passe près de la route qui reliait les proches capitales *civitas* de Chichester et Londres. L'occupation de l'âge du fer de la Zone 1 semble avoir continué à être utilisée pendant une partie de la période romaine mais le point focal de l'occupation s'est éloigné de la zone de fouilles. Dans la Zone 3 presque la totalité d'un site insolite a été examinée. La première phase consistait en une palissade de bois de 20 mètres carrés située à l'intérieur d'un enclos avec fossé. Cette palissade fut ensuite incorporée dans un plus grand enclos rectangulaire avec fossé, elle en formait le coin nord-est. Ni l'un, ni l'autre de ces enclos ne contenait beaucoup de traces à l'intérieur, et, tandis que certains aspects de la disposition des enclos se rapprochent surtout des temples et autres sites religieux, l'assemblage de trouvailles est (comme c'est le cas pour beaucoup de temples) apparemment typique d'une occupation. Le site fut fondé à peu près à l'époque où le petit cimetière à incinération sur la colline proche dans la Zone 2 cessa d'être utilisé.

Un seul bâtiment anglo-saxon aux traits encaissés fut découvert dans la Zone 7. Il est probable qu'il date des 5–7èmes siècles et qu'il soit antérieur au petit cimetière à inhumations, datant probablement du 7ème siècle, qu'on a découvert dans la Zone 2 qui lui est immédiatement adjacente. On a trouvé dans d'autres zones un petit nombre de traces et de trouvailles qui sont certainement ou probablement de date anglo-saxonne, y compris peut-être un autre bâtiment à traits encaissés. Bien que modestes en quantité ces découvertes fournissent certains des premiers témoignages mis au jour d'une occupation anglo-saxonne de la plaine côtière du West Sussex.

Au contraire l'activité au moyen-âge et plus tard, mis à part un petit groupe de poteries des 13ème et 14ème siècles, est remarquable essentiellement par son absence, ce qui va dans le sens de la théorie que l'emplacement de nombreuses fermes modernes ainsi que de villages correspond à un modèle d'habitat basé sur le modèle médiéval.

Bien que cet aspect du modèle d'occupation pourrait conduire à envisager une certaine continuité, les témoignages du projet dans leur ensemble pointent vers la discontinuité. Il y a des lacunes de plusieurs millénaires entre les utilisations de bien des zones de fouilles individuelles comme lieux d'occupation, d'inhumation et sites religieux. Toutefois, ces sites – dont certains ont une grande importance individuellement – et les paysages changeants dans lesquels ils étaient installés nous donnent un précieux aperçu du développement de l'occupation de la plaine côtière du West Sussex.

Traduction: Annie Pritchard

Zusamenfassung

Anläßlich des Baus einer Umgehungsstraße der A27 bei Westhampnett in der Nähe von Chichester, West Sussex, wurden 1992 fünf größere und eine Reihe kleinerer Ausgrabungen durchgeführt. Im vorliegenden Band werden die Ergebnisse der Untersuchungen vorgelegt, die Hinweise auf Besiedlung und damit zusammenhängende Aktivitäten aus einen Zeitraum von 11.000 Jahren geliefert haben, der vom Ende des Spätpaläolithikums bis ins Mittelalter reicht. Die auf einem kleinen Hügel in Area 2 gelegenen eisenzeitlichen, romano-britischen und angelsächsischen Gräberfelder sind in Band 2 publiziert.

Mit diesen Ausgrabungen erfolgte erstmals ein archäologischer Schnitt durch die Küstenebene von West Sussex, was einen nützlichen Kontrast zu den unmittelbar nördlich gelegenen, gut erforschten Höhenzügen der Sussex Downs bietet. Die Trasse verläuft zudem durch ein quartärgeologisch komplexes Gebiet, und die Ausgrabungen boten hier erstmals die Möglichkeit, die Beziehungen zwischen früher Besiedlung und Landschaft zu untersuchen.

Die frühsten archäologischen Belege datieren ans Ende des Spätpaläolithikums und wurden in einer Testgrube gefunden, die eigentlich der Untersuchung der Geologie und nicht der holozänen Archäologie galt. In Area 3 wurde 1m unter der modernen Geländeoberkante eine spätglaziale, devensische Schicht gefunden. Dieser Allerød-Boden enthielt einen einzelnen bearbeiteten Flintabschlag sowie eine Reihe von paläo-ökologischen Resten, die eine Charakterisierung der spätglazialen Landschaft um ca. 11.000 BC erlaubten.

Spätestens im frühen Mesolithikum hatte sich Area 3 zu einem saisonalen Fluß oder einer Lagune entwickelt, und die beiderseits davon etwas höher gelegenen Bereiche in Areas 1 und 4 wurden als kurzzeitige Basislager benutzt.

In Area 1 wurden Flintartefakte im Unterboden in eine *sol lessivé* eingelagert, und obwohl sie nicht *in situ* gefunden wurden, ist es wahrscheinlich, daß sie nicht weit entfernt von der Stelle lagen, an der sie weggeworfen oder deponiert wurden. Die Flintartefakte datieren ins frühe Mesolithikum, und ihre Zusammensetzung ist typisch für Fundplätze, die als Basislager interpretiert werden. Ein einzelnes Radiokarbondatum fällt in das späte 9. Jahrtausend v. Chr. In Area 4 wurde ein größerer Bereich zunächst mit Hilfe von Feldbegehungen und Testgruben untersucht. Das darauf folgende Abschieben des Oberbodens führte zur Auffindung einer Reihe von Vertiefungen oder Senken. Ob diese jedoch natürlichen oder anthopogenen Ursprungs waren, konnte nicht festgestellt werden. Die Sammlung der Flintartefakte von Area 4 hat ebenfalls eine für Basislager typische Zusammensetzung, und zwei Radiokarbondatierungen fallen in das 8. Jahrtausend v. Chr.

Nur wenige Befunde datieren in das Neolithikum, jedoch wurde in einer Grube in Area 4 Scherben von 'Peterborough Ware' und in einer weiteren von 'Grooved Ware' gefunden. Eine vereinzelte, beigabenlose Körperbestattung in Area 3 lieferte ein Radiokarbondatum im frühen 3. Jahrtausend, was eine Datierung ins Spätneolithikum bedeutet.

Am häufigsten waren Hinweise auf bronzezeitliche Aktivitäten, die in Form von einigen Befunden oder Funden in den meisten Grabungsflächen nachgewiesen wurden. Eine große Grube in Area 4 enthielt eine Anzahl von 'Collared Urn'-Gefäßen, die in das 2. Jahrtausend v. Chr. radiokarbondatiert wurden. Damit vergesellschaftete Funde lassen vermuten, daß das Material auf hauswirtschaftliche Siedlungsaktivität der frühen Bronzezeit zurückzuführen ist. In der Nähe dieser Grube fanden sich die stark gestörten Reste einer mittelbronzezeitlichen Siedlung. Es war nicht möglich, aus den Pfostenlöchern, Gruben und – für eine Siedlung dieser Zeitstellung ungewöhnlich – Abflußgräbchen Hausgrundrisse zu rekonstruieren. Die Anzahl von 'Deverel-Rimbury' Keramik, Mahlsteinen und verkohlten Pflanzenresten ist für eine Siedlung dieser Zeitstellung typisch, in diesem Fall durch drei Radiokarbondaten in die zweite Hälfte des 2. Jahrtausends v. Chr. datiert.

Hinweise auf frühbronzezeitlich Bestattungsaktivität lassen sich aufgrund großer Teile eines Bechers aus Area 4 vermuten; es konnte aber kein zugehöriges Grab gefunden werden. Spätestens seit der frühen Bronezeit befand sich Area 3 nicht mehr im Bereich eines saisonalen Flusses oder einer Lagune, und eine kleine, von einem offenen Kreisgraben umgebene Bestattungsstätte wurde errichtet. Das zentrale Grab enthielt eine Brandbestattung, der eine 'Collared Urn' beigegeben war, die eine Datierung in das dritte Viertel des 2. Jahrtausends v. Chr. erlaubt. Ein undatierter Kreisgraben wurde am Ende der Ausgrabung in Area 2 gefunden. Dieser enthielt kein zentrales Grab, aber da nur eine begrenzte Untersuchung des Grabens möglich war, konnte nicht geklärt werden, ob dieser möglicherweise ein oder mehrere Gräber enthielt.

Verglichen mit den Funden und Befunden des Neolithikums sind jene der Bronzezeit weitaus zahlreicher und lassen darauf schließen, daß die Küstenebene erstmals bereits in der Bronzezeit und nicht, wie ursprünglich angenommen, erst in der Eisenzeit intensiv besiedelt war.

Der wichtigste Befund der Eisenzeit ist ein einzigartiger Kultbereich der späten Eisenzeit in Area 2 mit einem großen Brandgräberfeld, für das es bislang keine Vergleiche gibt. Weitere eisenzeitliche Befunde stammen aus Area 1, wo eine uneingefriedete mitteleisenzeitliche Siedlung des 4. bis 1. Jahrhunderts v. Chr. in Suchschnitten erfaßt wurde: eine vollständige Ausgrabung der mehreren Hundert Pfostenlöcher war aufgrund der vorhandenen Ressourcen nicht möglich. Teilweise auf diesen Umstand ist es zurückzuführen, daß kein Rundhaus mit Sicherheit nachgewiesen werden konnte, allerdings gelang dies für eine Reihe von Vier-Posten-Strukturen. Weitere Befunde umfassen einen Brunnen und die Fundamentgräben eines seltenen eisenzeitlichen Rechteckbaus.

Die Trasse der Umgehungsstraße verläuft in unmittelbarer Nähe zur Straße zwischen dem nahegelegenen *civitas*-Hauptort Chichester und London. Die eisenzeitliche Siedlung in Area 1 scheint bis in die römische Kaiserzeit fortbestanden zu haben, aber der Siedlungsschwerpunkt hat sich außerhalb der Grabungsfläche verlagert. In Area 3 wurde fast das gesamte Areal einer ungewöhnlichen Siedlung untersucht. Die erste Phase bildete eine 20 × 20 m große Holzpalisade innerhalb einer von einem Graben umgebenen Anlage. Diese Palisade wurde später in eine größere, rechteckige und von einem Graben umgebene Anlage einbezogen, deren nordöstliche Ecke sie bildete. Keine der Anlagen enthielt zahlreiche Befunde, und obwohl einige Aspekte der Grundrisse der Anlagen ihre besten Vergleiche in Tempeln und anderen kultischen Plätzen finden, sind die Funde (wie bei vielen anderen Tempeln auch) anscheinend typisch für eine Siedlung. Der Fundplatz wurde ungefähr zur selben Zeit gegründet als das kleine Brandgräberfeld auf dem nahegelegenen Hügel in Area 2 aufgegeben wurde.

Ein einzelnes angelsächsisches Grubenhaus wurde in Area 7 gefunden. Es datiert wahrscheinlich ins 5. bis 7. Jahrhundert und ist früher als ein kleines Körpergräberfeld, wohl des 7. Jahrhunderts, in der unmittelbar benachbarten Area 2. Einige wenige sicher oder vermutlich angelsächsische Befunde und Funde stammen aus anderen Flächen, darunter wahrscheinlich ein weiteres Grubenhaus. Wenn auch insgesamt nur von geringer Zahl, so bieten diese Resultate doch den ersten archäologischen Beleg der angelsächsischen Besiedlung der Küstenebene von West Sussex.

Im Gegensatz hierzu fehlen bis auf eine kleine Gruppe von Keramik des 13.–14. Jahrhunderts Hinweise auf mittelalterliche oder jüngere Aktivitäten nahezu vollständig. Dieser Umstand unterstützt die Vermutung, daß die Lage vieler neuzeitlicher Höfe und Dörfer im Wesentlichen ein Besiedlungsmuster spiegelt, das dem mittelalterlichen entspricht.

Obwohl dieser Aspekt des Besiedlungsmusters auf Kontinuität hinzudeuten scheint, legen die Ergebnisse des Projekts als Ganzem eher einen Schwerpunkt auf Diskontinuität. Zwischen den Nutzungsphasen der einzelnen Grabungsflächen als Siedlungs-, Bestattungs- oder Kultplatz liegen zum Teil Lücken von mehreren Jahrtausenden. Diese Fundplätze – teilweise für sich allein genommen schon von großer Bedeutung – sowie die sich verändernde Landschaft, in die sie eingebettet sind, bieten einen wichtigen Einblick in die Siedlungsentwicklung der Küstenebene von West Sussex.

Übersetzung: Jörn Schuster

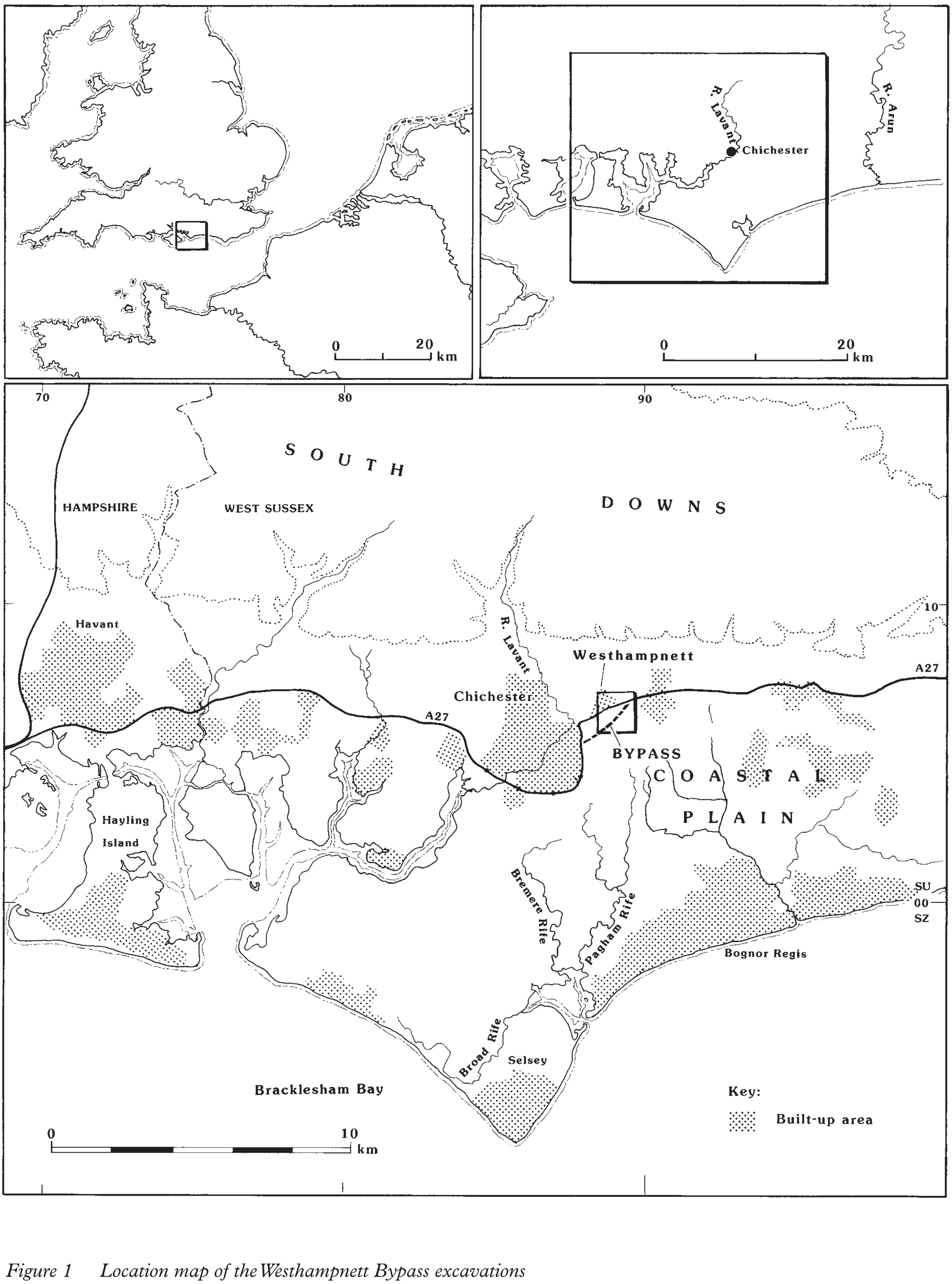


Figure 1 Location map of the Westhampnett Bypass excavations

1. Introduction

A.P. Fitzpatrick

The excavations reported here were undertaken in advance of the construction of the A27 Westhampnett Bypass, 3 km to the east of Chichester, West Sussex (Fig. 1). The new 2.8 km dual carriageway ran from the east of Chichester (SU 877 054) to Tangmere (SU 900 069) bypassing the village of Westhampnett and hamlet of Maudlin and linking existing lengths of dual carriageway. Approximately 16.8 hectares of land were taken for the new road and its junctions, providing an east–west transect across the West Sussex Coastal Plain, with the Sussex Downs rising less than 5 km to the north.

The programme of archaeological works entailed a desk-based assessment, followed by field evaluation of the route that included fieldwalking, manually excavated test pits and machine-cut trenches. This was followed where appropriate by excavation, with a watching brief being maintained over topsoil stripping.

The desk-based assessment and field evaluation were undertaken in November–December 1991. The westernmost kilometre of the route could not be evaluated as only a narrow spur of land with a rough access track survived between two quarries (Pl. 1) and most of the new road would have to be on a new causeway. With the exception of one field at the western end of the route, surface artefact collection was undertaken along the entire route, although one field was under stubble. Twenty-five test pits were manually excavated and 35 trenches were excavated by machine (Fig. 2).

The fieldwalking revealed a consistent scatter of finds of Mesolithic, Neolithic, Iron Age, Romano-British and post-medieval date but one dense scatter of prehistoric lithics, largely of Mesolithic date, was identified and subsequently examined as Area 4.

During the machine trenching, 150 litre samples of topsoil from each trench were sieved through a 10 mm mesh in order to provide control data for the retrieval of artefacts from the topsoil obtained during the surface artefact collection. The manually excavated test pits did not reveal any archaeological features, but most contained artefacts within the ploughsoil, and in general corroborated the results of the surface artefact collection and machine-cut trenches.

Plate 1 An aerial view of the route of the A27 Westhampnett Bypass looking north-east, following the completion of the archaeological works and before construction. The excavation areas clearly mark the line of the new Bypass up to the point where it runs between the two quarries. The road running north–south across the centre ground is Dairy Lane (see Figs 1 and 2)

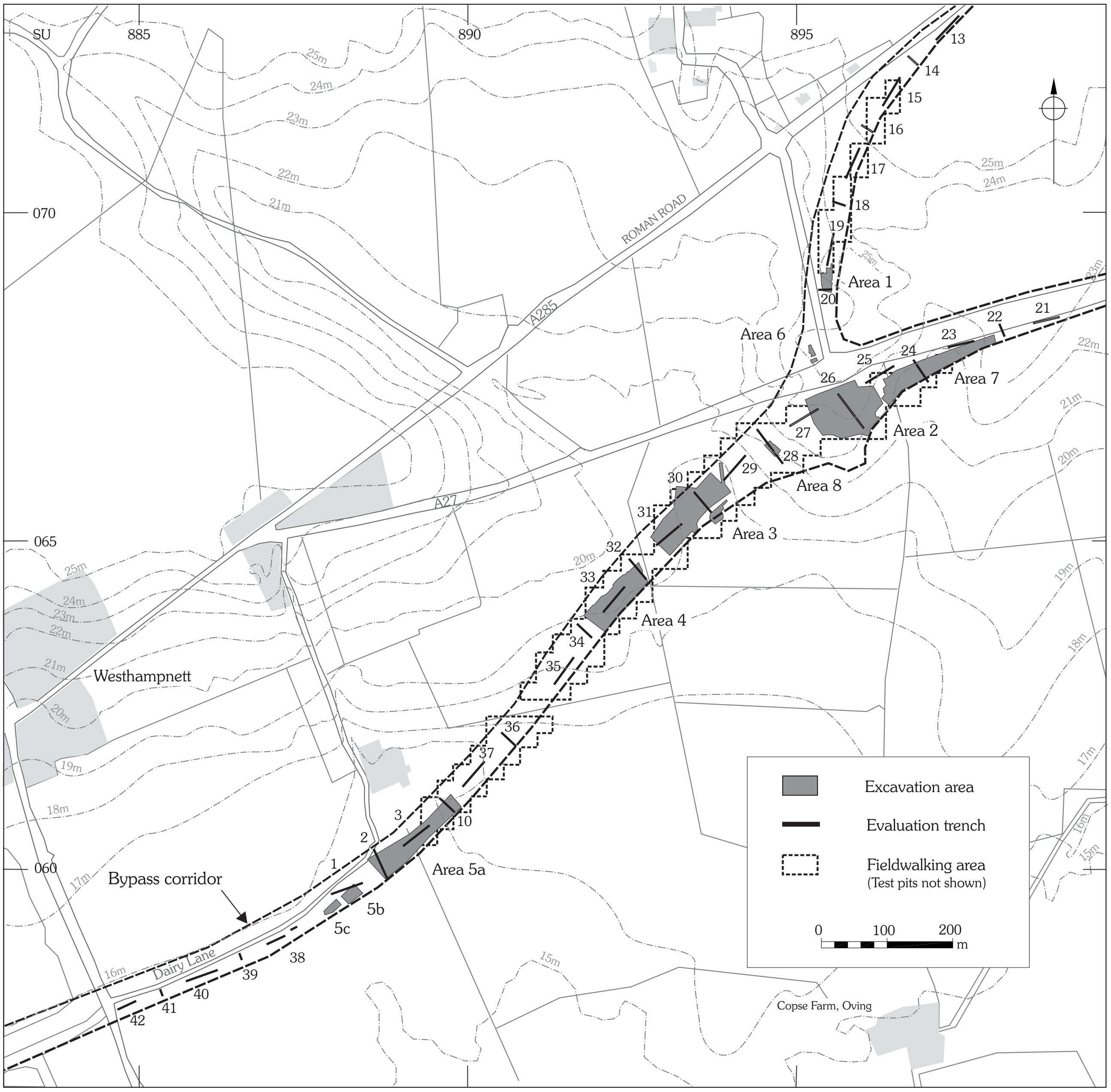


Figure 2 The Bypass corridor showing fieldwalked areas, evaluation trenches and excavation areas. Test pits are not shown

Thirteen of the trenches (37%) contained archaeological features. Mesolithic activity was identified in what became Areas 1 and 4, Neolithic activity in Area 2, an Iron Age settlement in Area 5, an Iron Age cemetery in Area 2, and Romano-British settlement in Areas 3 and 5. No further work was recommended on an undated, but possibly Romano-British, field ditch adjacent and parallel to the Roman road of Stane Street (evaluation trench 13). The excavations, including topsoil stripping, were undertaken in January–March 1992, immediately prior to the commencement of the road construction with a team of, on average, 50 people. The watching brief over the remaining topsoil stripping was maintained in April 1992.

On the basis of the results of the field evaluation five principal areas were selected for excavation (Fig. 3). The areas were numbered 1–5 from east to west. Two smaller areas (6 and 8) were subsequently opened during the course of the excavations, while Area 2 was subdivided, the eastern part becoming Area 7.

These stages of the project were supported by English Heritage, to whom detailed Project Design Specifications were submitted before each stage. During the course of the excavations, further important discoveries were made, notably Lateglacial Interstadial deposits in Area 3 and the extent of the cremation burial cemeteries in Area 2, which necessitated the preparation of amended Project Design Specifications. On the completion of the excavations an Assessment

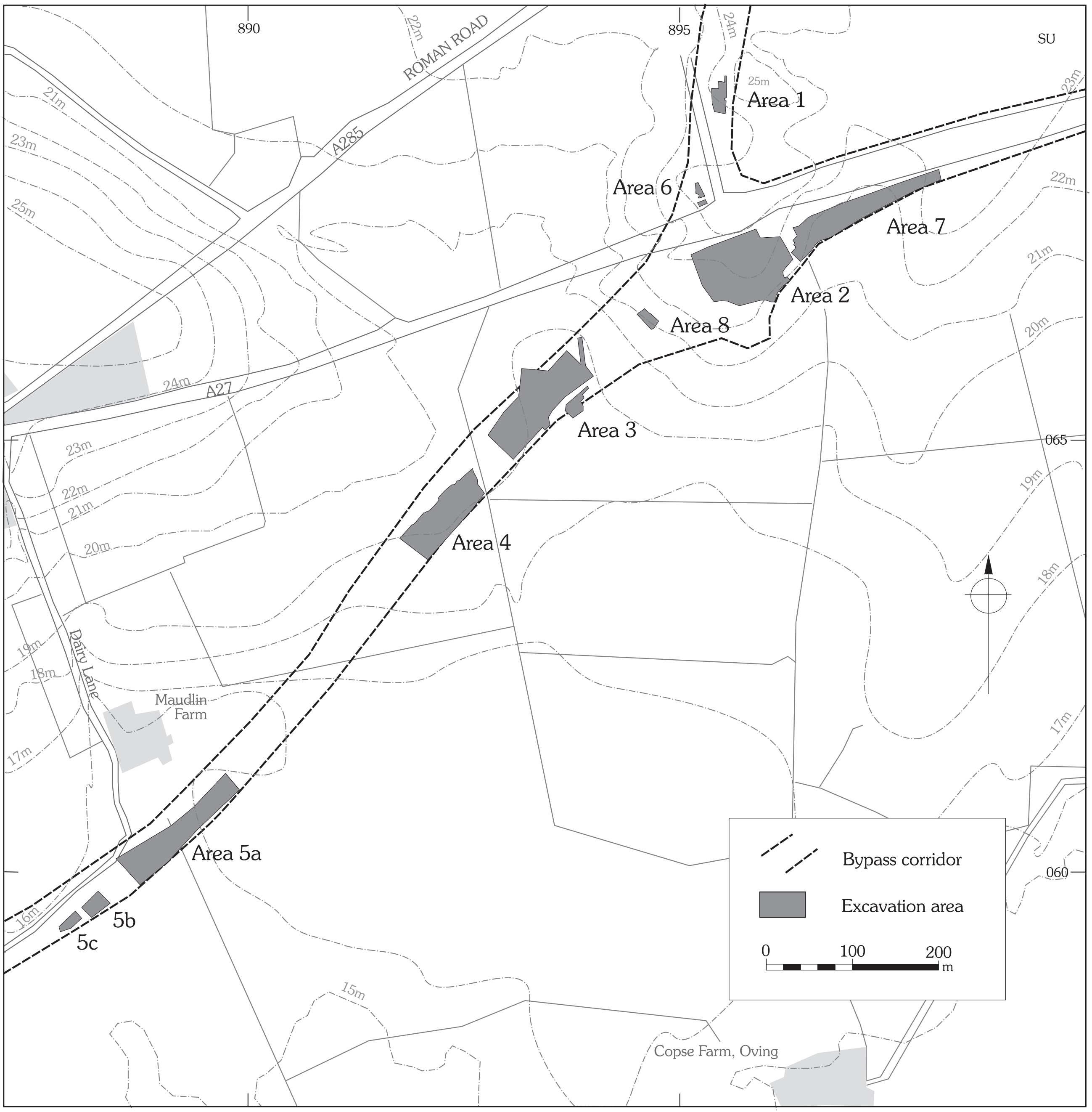


Figure 3 The excavation areas

Report on the potential for analysis was prepared. That report was approved in March 1993 by the Ancient Monuments Advisory Committee for English Heritage, before the funding of the analysis stage was passed to the Highways Agency in April 1994, with the exception of a research sub-project on the geology of the West Sussex Coastal Plain from an archaeological perspective that was supported by English Heritage (summarised in Chapter 2).

The length of time encompassed by the different sites and the changes that they represent were important considerations in determining how the excavations should be reported. However, the size and character of the Iron Age, Romano-British and Anglo-Saxon cemeteries in Area 2 were such that it was decided to publish them in a separate volume, *Archaeological Excavations on the Route of the A27 Westhampnett Bypass, West Sussex, 1992, Volume 2: The Cemeteries* (Fitzpatrick 1997). The publication of that volume, the draft of which was completed in December 1995 before the draft of the present one was complete, was undertaken at the request of the Highways Agency.

By its nature as a report on a series of excavations, this volume can make only a modest contribution to the history of the ways in which the West Sussex Coastal Plain has been used by succeeding generations. Instead it is concerned primarily with the local siting of these activities and, to a lesser degree, their relationships to the changing landscapes. The name Westhampnett itself means 'at the high farmstead' (Glover 1975, 179).

The time explored by the project is considerable, some 11,000 years. For this reason the excavated areas are not presented on a 'site-by-site' or area basis but largely on a chronological basis, in which period-based chapters include the results from individual excavation areas as appropriate. In an attempt to avoid being overly prescriptive in the application of this presentation and to avoid over-dividing some datasets that are already small, some flexibility in approach has been employed in the hope that it will make the report more accessible. To orientate the reader, summaries of what was found in each excavation area are presented in Chapter 2.

Following a consideration of the geological context, the methods that were employed in the fieldwork, assessment and analysis stages are presented below, except where this is relevant to a single archaeological period only. In these cases the method statements are retained with the analytical report in the relevant chapters (e.g. pollen, ostracods and diatoms with regard to the Late Upper Palaeolithic in Chapter 3).

The Coastal Plain: a Topographical and Geological Context, by Michael J. Allen and Robert G. Scaife

The West Sussex Coastal Plain is probably best known archaeologically for its Pleistocene sediment record, which includes the important Slindon Sand facies, and their relation to the upper and lower raised beaches (e.g. White 1913; Fowler 1932). Also from this epoch is the famous Lower Palaeolithic site of Boxgrove (Roberts 1986; Roberts and Parfitt 1999; Roberts *et al.* 1997) and other findspots on the same cliff margin (Woodcock 1978a; 1978b), including a flint axe from the gravels at Chichester (Curwen 1946). These sites, however, are not geologically relevant to the archaeological remains reported here.

The localised nature of the geology (Fig. 4), Pleistocene history, and superficial deposits along the route of the A27 Westhampnett Bypass is, however, very relevant both to our understanding of the landscape and to the choice of site locations within it, particularly in the prehistoric period. Because of the juxtaposition of a former stream course (marked by calcareous alluvial gravels), and the Norton–Brighton cliff-line, which it crosses, the relief and topography of areas of archaeological activity on the route of the Bypass are locally complex.

As a two-dimensional map does not readily convey these complexities, topographic details are highlighted where thought relevant. The varied drift geology and the pH value of the soils and sediments were important in determining the preservation of the palaeo-environmental assemblages from the excavated areas.

There are numerous geographical, geological and topographical publications concerning, in whole or in part, the formation and characteristics of the Sussex Coastal Plain. The Pleistocene deposits and the raised beaches in particular have been reviewed in various publications for 150 years (Dixon 1850; Fisher 1862; Reid 1892; Palmer and Cooke 1923; Melville and Freshney 1982; White 1913; Fowler 1932; Oakley and Curwen 1937; Martin 1937; 1938), and more recently by Bates (1998a; 19998b) and Bates *et al.* (1997; 1998; 2000). Many of these refer to deposits that can be related to those observed at Westhampnett. The information reviewed here is related to the more detailed mappings of the upper 1.4 m of superficial deposits along the Bypass, which expand upon published summaries of the geology at Westhampnett itself.

Topography

The Coastal Plain covers about 520 km² (*c.* 200 square miles), and is low-lying (typically 5 m OD at Selsey) with a low relief that is seemingly almost devoid of any major topographical features. Although relatively flat, there is considerable topographic diversity. The Coastal Plain is bounded by the dip-slope of the chalk escarpment of the South Downs to the north, and by the English Channel to the south, and extends from the margins of Portsmouth in the west to the Adur valley in the east. It is broadest in the region of Chichester and Westhampnett itself where, to the south at Selsey Bill, it forms a low plateau 13 km wide. It narrows progressively to the east where it meets the steep chalk cliffs on the East Sussex coast at Black Rock, Brighton. To the west of Chichester, the Coastal Plain is dissected by Chichester harbour, which comprises a number of inlets between Havant, Bosham and Fishbourne. The region is drained by several river courses that run into the English Channel. To the east is the River Arun, and further east, where the Coastal Plain is near its narrowest, is the River Adur. To the west, around Chichester, the present and former courses of the Lavant system are less well defined in their routes to the sea, partly as a result of anthropogenic changes. A number of streams drain into the Chichester, Langstone and Portsmouth harbours.

The Coastal Plain supports a relatively complex localised drift geology, which is a result of its Pleistocene history (Melville and Freshney 1982). It is a complex feature with thick Eocene deposits largely, but not wholly, comprising gravels and brickearths. Although a detailed discussion of the Coastal Plain is not entered into here, it is considered to be a planation surface, which is likely to be a polygenetic feature. It can be broadly divided into two basic topographical units (Figs 4a and 4b) that are the product of former higher Pleistocene sea levels: the Upper (Higher) and Lower Coastal Plain (Hodgson 1964, fig. 1; Wymer 1999, fig. 52). The Upper Coastal Plain consists of land above

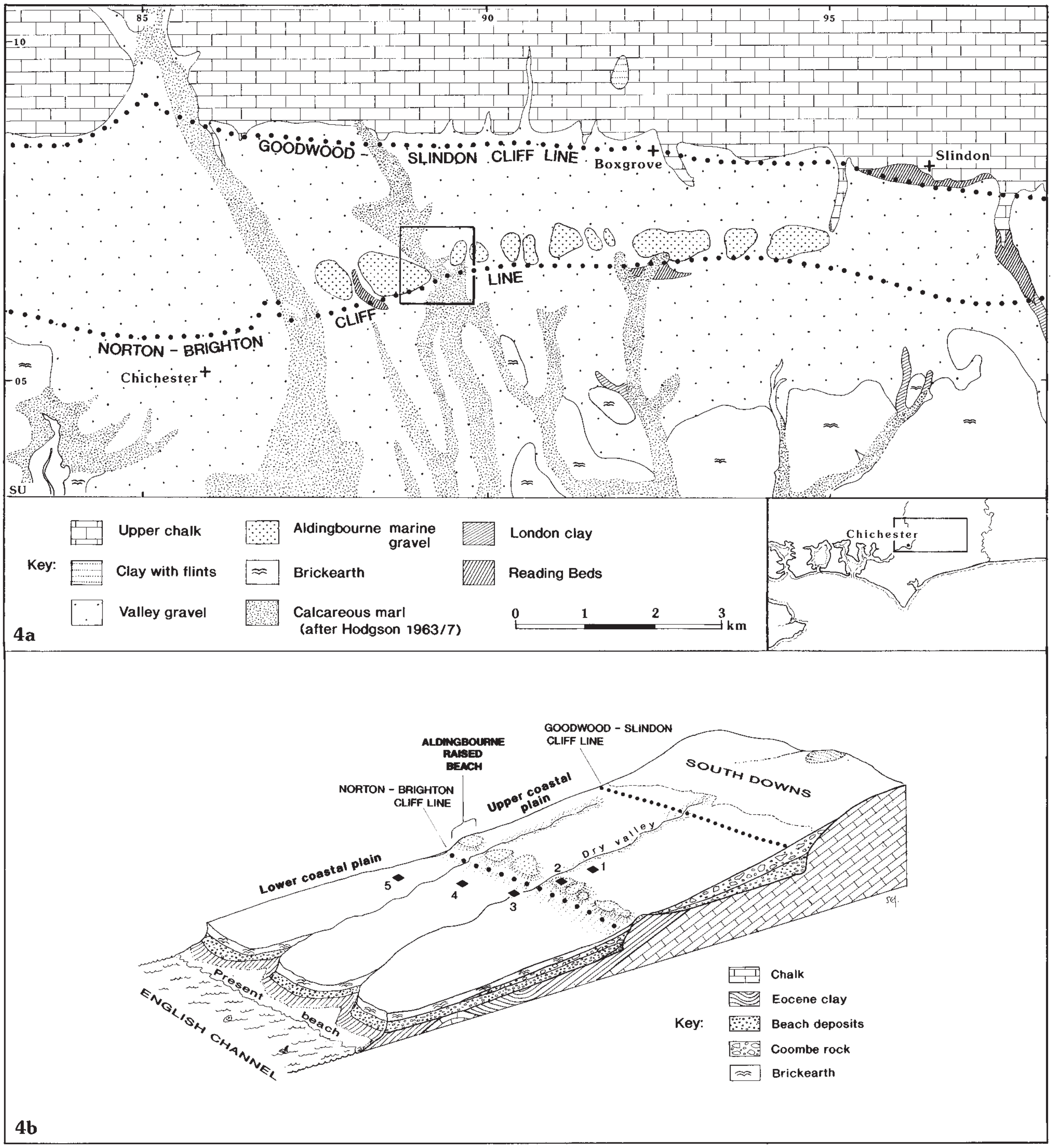


Figure 4 Map (Fig. 4a) of geology of the West Sussex Coastal Plain and South Downs and (Fig. 4b) summary schematic isometric cross-section of the West Sussex Coastal Plain and the South Downs (after Hodgson 1964; Jones 1981; and Shephard-Thorn et al. *1982)*

15 m OD and is restricted to a narrow strip of land extending from the foot of the South Downs (at about the 45 m contour) to the Norton–Brighton cliff-line. It encompasses the Goodwood–Slindon raised beach at 32–43 m OD. The Upper Coastal Plain is separated, at about the 15m contour (see Hodgson 1964, fig. 1), from the Lower Coastal Plain by a small bluff, representing the Norton–Brighton cliff-line of Oxygen Isotope Stage (OIS) 7 to Ipswichian date (Bates *et al.* 1997; 2000), and extends to the present-day coastline. The Lower Coastal Plain is now known to contain a succession of low-level raised beach deposits and 'cliff-lines' below 12 m OD (Bates *et al.* 2000).

These two complex landscape zones are relicts of former beaches and wave-cut platforms with their respective cliff-lines (Bates 1998a; Bates *et al.* 1997; 1998; 2000; Wymer 1999), which are the locations of significant archaeological finds of Palaeolithic date (see below).

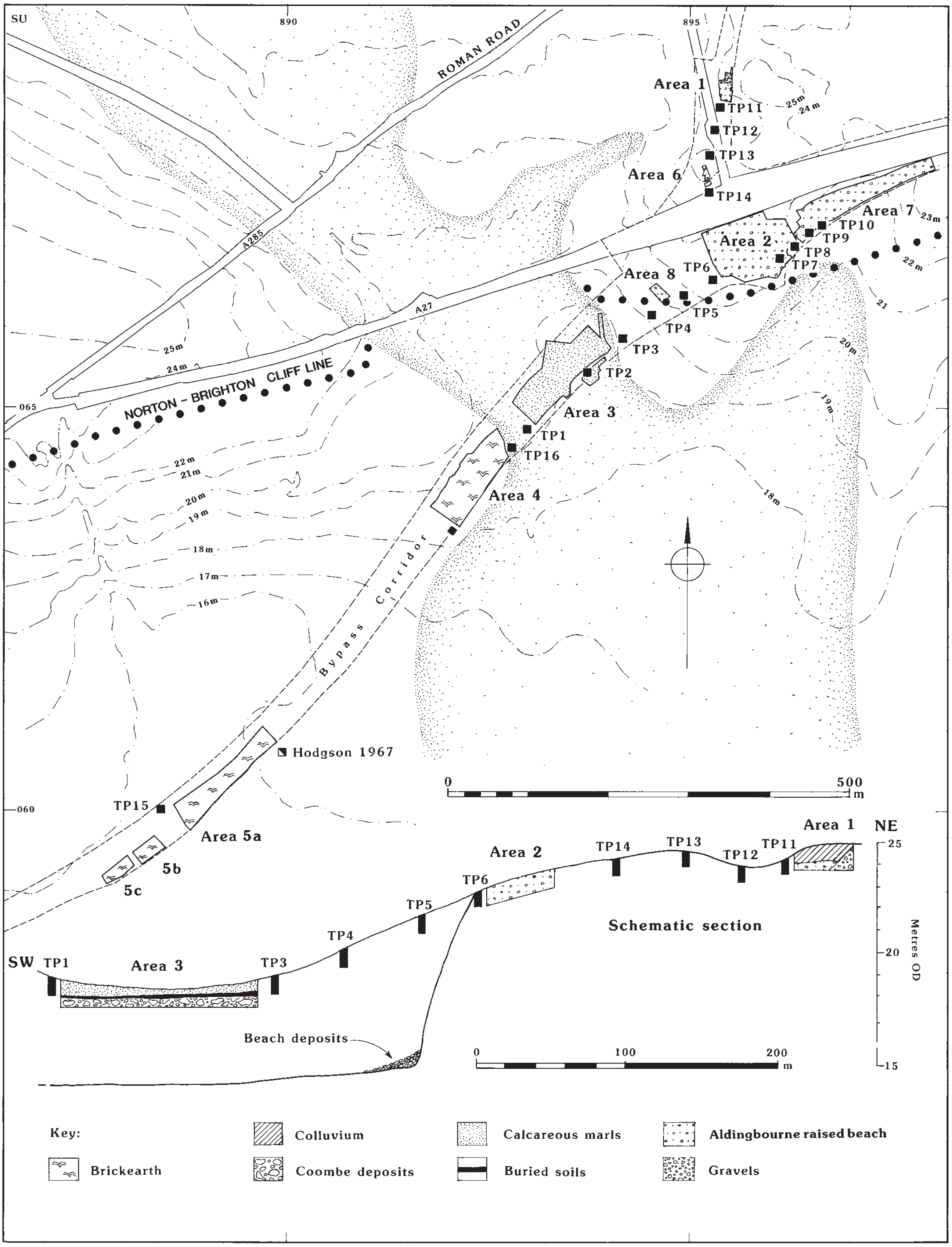


Figure 5 Geological test pits (TP) and schematic section through Areas 1–3

Drift Geology

The complex drift geology of the West Sussex Coastal Plain has been reviewed by Shephard-Thorn *et al.* (1982), Bates *et al.* (1997; 1998) and Wymer (1999). The 'solid' geology comprises the Upper Chalk, which forms the downland escarpment to the north and underlies the Coastal Plain at some depth. Overlying the chalk, the Coastal Plain itself is formed of Eocene clays that have been eroded at periods of higher sea-level. These, in turn, are covered by numerous drift and superficial deposits.

The superficial deposits were originally mapped by the British Geological Survey (hereafter BGS), but the 1872–95 survey, which was published in 1881, was based on the work of Bristow and Drew and was last revised by Reid, Hawkins and others in 1882 (published in 1902) and reprinted in 1972. A summary map of these superficial deposits (soil parent material) was prepared by Hodgson (1967, fig. 8). Most of the Coastal Plain (Lower Coastal Plain *sensu* Hodgson 1967) is mapped as brickearths (silty drifts). The northern fringe (Upper Coastal Plain), to the south of the Upper Chalk escarpment, is mapped as clay-with-flints and associated drift (Hodgson 1967, fig. 8), and valley gravels (BGS), both of which are bisected by alluvial valleys.

The BGS map shows most of the Coastal Plain in the vicinity of Westhampnett as valley gravels, with brickearths *sensu stricto* occurring slightly further south (and occupying the majority of the Lower Coastal Plain). While it shows no differentiation between the superficial deposits of the Upper and Lower Coastal Plains, Hodgson records flinty silty head on the Upper Coastal Plain and brickearth (silty drift) across all of the Lower Coastal Plain locally.

As it was apparent from the field evaluation that the superficial drift geology varied significantly along the route of the Bypass, seventeen 1.5 m square geological test pits (GTP 1–17) were machine excavated to a depth of *c.* 1.4 m to reveal the upper elements of the deposits (Fig. 5). They showed that the Upper Coastal Plain at Westhampnett comprises largely periglacial drift gravels with local outcrops of Reading and Woolwich Beds, and a ridge of marine gravels of the Aldingbourne raised-beach, while the Lower Coastal Plain is largely composed of brickearths overlain by calcareous alluvial marls and gravels.

The superficial deposits, at points where the Norton–Brighton cliff-line is overlain by marine gravels (Aldingbourne raised beach deposits), and where later stream channels coincide, are significantly more complex than present mapping indicates. However, the archaeological excavation of eight areas over a distance of 2.8 km has enabled these drift deposits to be exposed, recorded and reviewed in the context of the Pleistocene history.

Pleistocene Raised Beaches

The higher and older raised beach, in which Acheulian palaeoliths occur (Woodcock 1978a), abuts the chalk downs and is considered to be of Cromerian age (Bates *et al.* 1997; 1998). It is referred to variously as the Hoxnian raised beach, Goodwood, Higher or Upper raised beach of the Coastal Plain, or the 100ft raised beach. It extends for 25 km along the downs from Slindon in the east, past Chichester and into Hampshire in the west (Fig. 4). Here the Slindon Formation (Slindon Sands) is overlain by soliflucted coombe rock comprising chalk and flint debris from the downs.

The cliff-line to the north of the Goodwood–Slindon raised beach is now totally obscured by up to 15 m of marine deposits and other drifts (Fowler 1932; Shephard-Thorn *et al.* 1982; Roberts 1986; Roberts and Parfitt 1999), underneath which hominid remains and artefacts have been recovered at Boxgrove (Roberts 1986; Roberts and Parfitt 1999; Roberts *et al.* 1994; 1997; Gamble 1994). These littoral sands and beach pebble deposits occur extensively across the Upper Coastal Plain and are often associated with artefacts (Calkin 1934). Reid (1903) records a temperate marine fauna from the bedded sands at Waterbeach (SU 889 084). The recovery of marine molluscs in these sands, which were previously thought to be sterile (Hodgson 1964; Shephard-Thorn and Kellaway 1978), and excavations of the old shoreline, clearly show a marine origin. The cliff-line can be recognised as a fairly well-marked break of slope, and is dramatically recorded in section in the present cliff sections at Brighton (Williams 1971), although it is now obscured by the marina.

The Lower Coastal Plain contains between 3 and 5 altitudinally discrete sets of marine deposits (Bates *et al.* 1997; 2000), although previously it had been ascribed to a single beach referred to as the Selsey, Ipswichian, or 11ft, 15ft or 4.5 m raised beach (West and Sparks 1960; West *et al.* 1984). This has now been revised in light of recent studies between Slindon and Chichester (Bates 1998a; 1998b; Bates *et al.* 1997; 2000), and Bembridge, Isle of Wight (Holyoak and Preece 1983; Preece and Scourse 1987; Preece *et al.* 1990). The surface of the Norton–Brighton raised beach deposits of the Lower Coastal Plain has been recorded at 14.3 m in the Portfield gravel immediately west of Westhampnett (Hodgson 1964, 557; Jones 1981, 171), and recent work has amplified the nature of associated deposits (Bates 1998b). The Norton–Brighton cliff-line, which can be mapped from Chichester to Slindon, survives as a low linear bluff accentuated by the presence of the Aldingbourne raised beach deposits (Fig. 4). The Aldingbourne raised beach deposits represent a high sea-level event late in the Goodwood–Slindon raised beach formation, but which pre-dates the cutting of the Norton–Brighton cliff-line.

The cliff-line separating the Upper from the Lower Coastal Plain is significant to the Westhampnett area, as the route of the A27 Bypass crosses it and the former trunk road was largely routed along it. Archaeological excavations and limited geological test pits, as a part of the research described in this volume, have helped to provide the local geological background to the archaeological activities recorded.

These relict topographic features are a constant reminder of the drastic changes in the former sea-level and shoreline. Although this is not the place to discuss sea-level changes in any detail, it must be remembered throughout, and particularly in the earlier prehistoric periods represented, that the 'Coastal Plain' was often far from being coastal. In the Late Upper Palaeolithic it extended to what is now continental Europe and in the early Mesolithic probably extended several kilometres to the proto-Solent valley. Even in the Neolithic period sea-level was lower by about 3.5 metres OD (Smith *et al.* 1981).

Former Stream Courses/Hydrology

The small streams, or rifes, of the present drainage pattern flow from the chalk springline into Chichester Harbour, and the Lavant, a seasonal bourne, takes a humanly modified course around the west of Chichester before debouching into Fishbourne Harbour to the south-east (Fig. 1). However, at the end of the Pleistocene period a number of larger springline rivers, incised deeply into the Eocene clay and chalk, emanated from the chalk and traversed the Coastal Plain (exposed at Earnley in Bracklesham Bay: West *et al.* 1984) to Selsey (Hodgson 1963; 1967). Following sea-level rises, these became choked with sediments and gravel terraces were formed. The Lavant traversed the entire width of the Coastal Plain and entered the sea at Bracklesham Bay via either the Bremere or Pagham Rife and Broad Rife (Fig. 1). Its former course, and that of many other streams, is recorded by the alluvial calcareous gravels mapped by Hodgson (Fig. 4). These deposits are visible on air photographs and an extensive series of them was plotted around Copse Farm, Oving, and subsequently revealed in archaeological excavations (Bedwin and Holgate 1985). They extend across the route of the Bypass, and one stream course was examined in Area 3.

Soils

The soils of the Coastal Plain are detailed specifically by Hodgson (1967), but generally support typical brown earths of the Hamble Series, or non-calcareous gley soils of the Park Gate Series over brickearths, but with brown earths with gleying (Hook Series) in some of the minor valleys. Brown earths (Hamble Series) and rendzinas occur on most of the marine gravels and other deposits on the Upper Coastal Plain, and ground-water Gley soils (Gade Series) occur locally over the calcareous alluvial marls and gravels.

Modern Landuse of the Coastal Plain

Much of the narrow portion of Coastal Plain surviving in East Sussex and the east of West Sussex has been engulfed by the urban development of Brighton, Hove, Worthing and Littlehampton. In West Sussex, however, it largely retains its rural character, its landuse being predominantly one of arable farming, with rich agricultural land, first class horticultural soils and drained fields supporting market gardening, cereal crops and fruit growing since the middle of the last century (Brandon 1974; Hodgson 1967). The stone-free soils of Hamble, Hook and Park Gate Series (brown earths and calcareous gleys) are easily cultivable, leading Brandon to describe the Coastal Plain as the chief cornland of Sussex throughout history (Brandon 1974, 30). The deeper Hamble Series soils (brown earths) are probably the best horticultural soils in West Sussex. The Hook Series soils (gleyed brown earths) are similar, but suffer from potential groundwater-logging in the winter, which can cause problems, especially for the cultivation of root crops, and fields on these soils generally require drainage.

Excavation Methods

Although the detailed excavation strategies for each area varied according to the archaeological remains that were anticipated as being present on the basis of the results of the field evaluation, the same basic approach was employed on all areas.

Before excavations commenced the project conservator, Margaret Brooks, provided advice on the likely conservation requirements based on the evidence of the field evaluation, a site visit and consultation with Chichester and District Museum. Most members of the project team made visits to the excavations.

The topsoil over all areas was removed using machine excavators under archaeological supervision. In the two areas in which concentrations of lithics of Mesolithic date had been identified (Areas 1 and 4), a series of 2 m square test pits were manually excavated through the ploughsoil to provide a controlled sample of the lithics within the ploughzone, as it was recognised that these 'sites' might exist solely in this context. Following this, as in the other areas, the ploughsoil was removed using machine excavators to reveal subsurface archaeological features that were cut into the 'natural' drift geology. Subsoil features were then sampled by hand excavation. All spoil had to be stored on site (Pls 4, 6, 8, 16, 18, 24–5, 28).

It had been hoped initially to strip the topsoil from as much of the route corridor as possible beyond the excavation areas but this proved not to be possible.

Instead it was more effective, and indeed necessary, to continue to use the machine excavators on the excavation areas throughout the course of the fieldwork. For example, the colluvial and geological sequences in Area 1 could not have been determined in the time available without the use of the excavators, nor could the Devensian Late Glacial palaeosol in Area 3 have been examined. In particular, extensive use was also made of the machinery during the excavation of Area 2 (Vol. 2, 6, pls 4–5). In addition, a series of test pits was machine excavated for geological purposes. Without this use of machine excavators the project would not have been able to achieve as much as it did in the time and with the resources available.

A general sampling policy was formulated for both environmental and artefactual data (see below). Each area had an individual and explicit sampling policy for environmental and artefactual data tailored to the chronological and archaeological nature of the deposits thought likely to be encountered. This was prepared in collaboration with the specialists.

Finds were processed on-site, including wet-sieving most of the samples from the test pits through the ploughsoil over the 'sites' of Mesolithic' date, which allowed rapid spot dating. Environmental samples were, however, processed off-site.

Ploughzone Test Pit Strategy

It was considered likely that the concentrations of lithics of Mesolithic date identified during the field evaluation might survive largely, if not exclusively, in the ploughzone rather than in subsoil features. Nonetheless, the ploughsoil still had to be removed to determine if there were any subsoil features; and it would all be removed during the building of the Bypass.

The aims of the test pitting in Areas 1 and 4 were, therefore:

- to provide a controlled sample of the ploughzone assemblage,
- to define approximately the concentration of artefacts, and to attempt to isolate areas of higher density Mesolithic lithic scatters in order to ensure the correct location of the area to be stripped by machine,
- to enable the recovery of lithic assemblages that might survive wholly within the ploughzone and,
- to attempt to use these data to provide some limited spatial parameters and to determine internal patterning/distribution.

An array of test pits was excavated within the Bypass corridor over the two areas identified in the field evaluation. Although the initial intention was to excavate a complete grid of test pits in each area, the pattern was modified during the fieldwork in the light of the preliminary results. In total, 109 test pits were manually excavated in 0.1 m spits, 21 in Area 1 (69 samples/spits) and 51 in Area 4 (158 samples/spits).

After a 15 litre environmental sample was taken from the north-eastern quadrant of the test pits all the excavated soil was screened, 75% from each spit being dry-sieved and sorted during excavation adjacent to the test pit (Pl. 2), with the remaining 25% bagged and then wet-sieved on a 5 mm or 2 mm mesh. Most of

Plate 2 Excavation of test pits in Area 4 looking north to the Downs. The Trundle is to the right

these were processed on site until it was necessary to allocate resources elsewhere and the remainder were processed at the offices of Wessex Archaeology.

This exercise represented a major wet-sieving and sorting programme, with a total of 227 samples, averaging 95 litres each. In total, some 21,360 litres of soil (about 50 metric tonnes) were wet-sieved and sorted for lithics. Although the recovery was good and the quantity of flint relatively high (about 9000 struck pieces), the dry-sieving in the field (although time-consuming and sometimes frustrating) was significantly more cost-effective in terms of its return than the wet-sieving programme. Conversely, wet sieving was the appropriate method for the cremation burial cemeteries in Area 2 (Vol. 2, 6).

In addition, 10% of the test pits (two from Area 1 and three from Area 4) were also selected for the recovery of environmental data. From these, a further 10 litres of soil from each spit were processed by standard flotation for charred remains, with the flots retained on a sieve of 0.5 mm mesh aperture, and the residues on a 1 mm mesh.

Recording

As five substantial excavations had to be undertaken concurrently and processed centrally, a clear and simple recording system was essential. This was based on Wessex Archaeology's standard *pro forma* context-based system, with each area being allocated a unique number sequence for its records (with the exception of Area 8, which used a small block of Area 2 numbers).

Five-figure context, sample and object numbers were allocated to each of the remaining areas, each prefixed by the number of the area to which they related: i.e. all the records from Area 1 were prefixed with 1[0000], in Area 2, 2[0000] and so on. Graphics and photographic numbers were also prefixed by their area number. As similar criteria applied in the analysis phase of the project, the numbering system has been retained, the (slight) temptation to renumber anything for publication being resisted. Within each area, common subdivisions were allocated as follows:

Contexts	*0,000–*6,999
Object/special find numbers	*7,000–*7,999
Artefact samples	*8,000–*8,999
Environmental samples	*9,000–*9,999
Graphics	*000–*999
Photographic (Film nos)	*00–*99

Any four-figure context, sample and object numbers refer to the field evaluation that was conducted before the excavation areas were defined.

The specific excavation methods that applied to the cemeteries in Area 2, including the conditions of preservation with regard to inhumed bone and grave goods, are set out in Volume 2 (6–7) and are not repeated here.

Environmental Sampling Programme, by Michael J. Allen

If the West Sussex Coastal Plain has received relatively little archaeological attention in recent years, it has received even less considered and competent environmental research, except for sites such as Boxgrove (Roberts 1986; Roberts and Parfitt 1999), and research upon the Pleistocene geology and sedimentology (Bates *et al.* 1997; 2000). Previous work and reviews of the archaeology of the area (e.g. Bedwin 1983a) have emphasised the paucity of comparative palaeo-environmental data for most archaeological periods.

The main reasons for this are the generally poor and sparse preservation of remains such as snails, the lack of suitable deposits such as valley mires or alluvium and floodplain stratigraphies for pollen preservation, and the absence of relatively large-scale recovery programmes for charred plant remains and charcoals.

In previous work, therefore, inferences about environmental conditions and agricultural practices have been drawn either directly from appropriate local sites situated on the chalk, or from our national perceptions of landscape and landuse (see Simmons and Tooley 1981). However, as this report shows, there are some very localised occurrences within the Coastal Plain, where some categories of environmental material are preserved; often dependant upon the nature of the variable local drift geology. From the archaeological information generated by the field evaluation, a palaeo-environmental research design, by period, was formulated on site, addressing the regional questions that analysis could seek to answer. Although it was modified and enhanced during the assessment, enabling the appropriate selection of samples to be made so that more specific questions relating to individual material types could be addressed, the general framework of the research design remained basically unaltered. Its aims, dictated to a certain extent by the varied nature of the archaeological resource, were designed to examine the changing nature of the landscape, landuse and farming economy of the West Sussex Coastal Plain. The environmental analyses, therefore, can be divided into two categories, Landscape and Economy, to which specific period-related questions can be addressed.

Landscape

The palaeo-environmental research design aimed to determine the processes of change on the Coastal Plain, by defining the landscape resource (i.e. floral, faunal and pedological resources) for each period of human activity, and by seeking to understand the role of human populations exploiting those changing resources. Although the excavations were located within a single landscape zone, considerable local variation over both time and space is evident. The programme of analyses has sought to understand the changing landuse and economy of that landscape, and to determine whether there is evidence for the exploitation and use of other landscape zones, such as the coast (at present 15 km to the south) and the chalk downs (5 km to the north).

Economy

The farming economy of the populations on the West Sussex Coastal Plain can, to some extent, be determined by the remains from the Westhampnett Bypass excavations. An attempt has been made to record the changes over time, to determine any environmental parameters leading to those changes, and to compare these with the broadly recorded economy from the adjacent chalk landscape.

The route of the Bypass acts as a sample transect through the Coastal Plain, a sample that, unlike many projects in this rural area (e.g. the Field Archaeology Unit Coastal Plain project), was not dictated by archaeological criteria. It may, therefore, provide some indication as to the scale of settlement, use, exploitation and farming of this landscape zone, and the general degrees of preservation and palaeo-environmental potential across it. The West Sussex Coastal Plain is of particular importance in understanding the prehistoric communities in southern England, the study of which has been biased largely in favour of the monumental archaeology on the chalklands. This project involved the intensive study of *c.* 11,000 years of human activity on the Coastal Plain. It has enabled the role of the chalk landscape to be put into perspective, and a reassessment to be made of the contribution of the Coastal Plain to the prehistoric economy of the region.

Sampling policy

The basic bulk sampling policy for the project was to take a suite of 10 litre samples from a number of dated, or datable, contexts from each phase/period, and from a range of context and feature types from each of the areas. Specific attention was paid to Mesolithic and Neolithic features and main pit fills. Where series of ditches were present (Areas 3 and 5), samples were taken of the basal and upper fills of the main ditches from a range of locations to examine spatial variation. Sampling for pollen, land snails, diatoms, ostracods and soil micromorphology were all undertaken on a more specific feature and context level. Environmental samples were also taken from the north-eastern quadrants of the test pits in Areas 1 and 4. Pollen was poorly preserved and only the samples from the lateglacial palaeosol in Area 3 yielded useful assessment results, but even here pollen was not preserved in sufficient numbers to allow a full interpretation to be made from any of the samples.

The exception to this was Area 2 where a whole-earth sampling policy was adopted for the cremation burial cemeteries. A 10 litre subsample from each whole-earth sample was processed by flotation for charred remains, the remainder being sieved to 2 mm for human bone and artefacts (Vol. 2, 6).

Preservation of palaeo-environmental material and soil pH

The variable pattern of soils recorded during the excavations was reflected in the highly variable preservation of both shells and animal bones. All the excavated deposits were essentially dry and thus soil pH largely determined the preservation of shell and bone, etc. A limited programme of pH readings were taken with a standard PhEP meter, both from samples in the field (during the watching brief) and from environmental samples as they were processed.

The soils of the Hamble Series (over brickearths) are naturally acid (Hodgson 1967, 92) and topsoil readings over brickearth (Areas 4 and 5 (a–b)) varied between 6.3 (slightly acid) to 5.4 (moderately acid), while the ditches in Area 5 (main area) were more consistent and slightly more acidic; 5.7–5.3. Area 2, situated on an Eocene outcrop/Aldingbourne raised beach deposit produced topsoils of a highly variable nature (6.8 to 5.2) probably due to the presence of chalk-filled drains, but the features were consistently more acidic 5.7–5.2. (slightly to moderately acid).

These readings contrasted markedly with those from the alluvial calcareous marls and gravels in Area 3 which were alkaline, varying from 7.9 to 8.3 where bone and shells were preserved.

Artefact Sampling

Targeted artefact sampling was undertaken in relation to i) the ploughzone lithic assemblages, ii) the small surviving areas of the Lateglacial Interstadial palaeosol, and iii) whole-earth sampling from the cremation burial cemeteries (for both human and animal bone and artefacts). There was no need to sieve for unburnt animal bones as larger animal bones did not survive in the aggressive soil conditions apart from in the calcareous marls of Area 3.

Palaeo-environmental and Scientific Analyses, by Michael J. Allen

Environmental Assessment and Sample Selection, by Michael J. Allen and Sarah F. Wyles

The project took 440 bulk soil samples (including those from 10% of the test pits as part of the ploughzone recovery strategy, see above), principally for the recovery of charcoals or charred plant material (Table 1). Most of these (415, *c.* 94%) were processed. When combined with the 279 samples from the fills of the burial urns and other vessels from the Iron Age and Roman cemeteries (Area 2), this constituted a substantive processing and assessment programme.

Table 1 bulk samples by excavation area

Area	*Total samples*	*Samples processed* *No.*	*%*	*Samples analysed (charcoal/seeds)* *No.*	*% of processed*	*% of total*
1	11	11	100	4	36	36
2	306	298	97	70	24	23
3	62	46	74	28	61	45
4	35	35	100	24	69	69
5	20	20	100	13	65	65
6	3	2	67	1	50	33
7	2	2	100	2	100	100
8	1	1	100	1	100	100
Total	**440**	**415**	**94**	**143**	**35**	**33**

Standard flotation methods were employed, using a double tank internal-weir flotation machine based on the Siraf technique. For most samples the residues were retained on a 1 mm mesh, and flots on a 0.5 mm mesh; only a few samples which were found to be of poor quality, undated, or duplicate sequences were not processed. A few samples (about 0.2%) were not processed because of loss or illegibility of labels, or through loss of sample through split bags; this is considered to be well within acceptable loss and tolerance limits.

Flotation and selection

Following processing, the flots (0.5 mm) were assessed by Sarah Wyles by rapid scanning under a ×10–×30 stereo-binocular microscope to record and quasi-quantify the presence of charcoals, charred grain, chaff and weed seeds. These data were tabulated by excavation area and by period, feature type and location (Tables 2–3), and the samples were selected for analysis in consultation with the relevant specialists. This attempted to provide a balanced sample suite for each phase and feature type, while enabling the selection of the samples on the basis of their archaeological context in conjunction with those with better preserved and higher diversity of remains. Following this, the entire residue fraction (5.6 or 4 mm, 2 mm and 1 mm), from all samples selected for analysis, was sorted to extract all identifiable charred plant remains and all charcoals to 2 mm (except the Devensian Late Glacial palaeosol where extraction of charcoal fragments was undertaken to 1 mm). From the 415 processed samples, 143 (*c.* 35%) were selected for analysis of charred plant remains and/or charcoals, in many cases both elements being identified from the same sample; a further ten samples from pot fills were also analysed. Therefore, although the samples from some areas yielded poor assemblages, those analysed were the best available. Although about 65% of samples were rejected for analysis, all of these flots are retained in archive.

Analytical Method Statements

Charcoal, by Rowena Gale

Charcoal was extracted from the bulk soil samples using standard flotation methods with all flots retained on a 0.5 mm aperture mesh and residues on a 1 mm aperture mesh. Suitable fragments were prepared for identification (see archive for method) and matched to reference material. For identification, samples weighing >40 g were subsampled. In all samples, charcoal fragments measuring >2 mm² in the transverse plane (TS) were examined. In some instances fragments had transverse surfaces (TS) smaller than 2 mm² and these were too small to warrant examination, with the exception of samples from the Lateglacial Interstadial and Mesolithic contexts where identification was more important. Where possible, the age and maturity of the wood from which the fragments had originated was assessed. Narrow roundwood (diameter <25 mm, when charred) was categorised as stem, other fragments were noted as sapwood or heartwood. Growth ring width of fast- or slow-grown specimens was measured or noted. During the process of carbonisation the weight and volume of wood is considerably reduced and measurements taken from charred wood do not represent those of the tissues when living. The rate of reduction is influenced by the density of the wood (size of cell and cell wall thickness) and the temperature of burning (Prior and Alvin 1983). Such parameters are unknown in archaeological specimens and comparative assessment of such material can only be speculative. Under controlled carbonisation, the radial axis of thin-walled cells in taxa such as *Corylus* may be reduced to almost half their original dimensions.

Seventeen taxa, families or subfamilies were identified and the classification follows *Flora Europea* (Tutin *et al.* 1964–80). The samples examined are detailed in full in the archive report. In samples where the material was too poorly preserved to verify an identification, names have been prefixed by '?'. In some instances, where closely related genera are anatomically

Table 2 samples analysed for charred plant remains

Area	*L Glacial*	*Meso*	*test pits*	*Neo*	*EBA*	*M–LBA*	*IA*	*Roman*	*Total*
1	–	1	1	–	–	–	2	–	4
2	–	–	–	–	–	–	61	6	67
3	9	–	–	–	4	–	–	12	25
4	–	6	2	–	6	9	–	–	23
5	–	–	–	–	–	–	12	–	12
6	–	–	–	–	–	1	–	–	1
7	–	–	–	–	–	–	–	2	2
8	–	–	–	–	–	1	–	–	1
Total	**9**	**7**	**3**	**0**	**10**	**11**	**75**	**20**	**135**

Table 3 samples analysed for charcoals

Area	*L Glacial*	*Meso*	*test pits*	*Neo*	*EBA*	*M–LBA*	*IA*	*Roman*	*Total*
1	–	–	–	1	–	–	–	–	1
2	–	–	–	–	–	–	50	4	54
3	9	–	–	–	3	–	–	5	17
4	–	4	–	–	3	7	–	–	15
5	–	–	–	–	–	–	6	–	5
6	–	–	–	–	–	1	–	–	1
7	–	–	–	–	–	–	–	1	1
8	–	–	–	–	–	1	–	–	1
Total	**9**	**4**	**0**	**1**	**6**	**9**	**56**	**10**	**95**

similar or very difficult to distinguish securely, groups of names or family names have been given. For example, family Salicaceae, *Salix* (willow) and *Populus* (poplar); subfamily Pomoideae which includes *Crataegus* (hawthorn), *Malus* (apple), *Sorbus* (rowan, whitebeam, wild service); and family Leguminosae *Ulex* (gorse) and *Cytisus* (broom); and in poorly preserved material, some unrelated taxa can be difficult to separate, e.g. *Cornus* (dogwood) and *Viburnum* (guelder rose, wayfaring tree).

Charcoal from most contexts of prehistoric date can generally be attributed to native species but identification to species level, using anatomical wood features, is not generally possible. For taxa represented by a single British species the specific epithet has been given in parentheses in the following list.

Taxa, families or subfamilies identified:

Broadleaf trees and shrubs

Aceraceae: *Acer* sp. L. (*A. campestre* L., field maple)
Betulaceae: *Alnus* sp. Miller (*A. glutinosa* (L.) Gaertner, alder); *Betula* sp. L., birch; *Corylus* sp. L. (*C. avellana* L., hazel)
Caprifoliaceae: *Viburnum* spp. L., guelder rose and wayfaring tree
Cornaceae: *Cornus* sp. L. (*C. sanguinea* L., dogwood)
Ericaceae: *Calluna vulgaris* (L.) Hull, heather; *Erica* sp. L., heather
Fagaceae: *Fagus* sp. L. (*F. sylvatica* L., beech); *Quercus* sp. L., oak
Oleaceae: *Fraxinus* sp. L. (*F. excelsior* L., ash)
Leguminosae: *Cytisus* sp. Desf. (*C. scoparius* (L.) Link, broom); *Ulex* sp. L., gorse
Rosaceae:
Pomoideae: *Crataegus sp*. L., hawthorn; *Malus* sp. Miller (*M. sylvestris*, crab apple); *Sorbus* sp. L. rowan, wild service and whitebeam
Prunus sp. L. (*P. avium* (L.) L., cherry and *P. spinosa* L. blackthorn)
Salicaceae: *Populus* sp. L., popular; *Salix* sp. L., willow

Conifers and taxads

Pinaceae: *Pinus* sp. L. (*P. sylvestris* L., Scots pine)
Taxaceae: *Taxus* sp. L. (*T. baccata* L., yew)

Charred plant remains, by Pat Hinton
Soil samples were processed by standard methods and the flots retained on a 0.5 mm aperture mesh and the residues on a 1 mm aperture mesh. After preliminary assessment, appropriate flots were selected for analysis and all the relevant fractionated residues were sorted using a ×10–×30 stereo-binocular microscope. Sorting and identification was carried out with a stereo microscope at ×7–×40 magnification, and higher magnification (usually *c.* ×160) was used for the surface details of some taxa.

The identification of wheat species is unsatisfactory by grain alone. Although some have 'classic' morphological features there can be such overlap between some species, even in well-preserved examples, that it is preferable to record all wheat grains 'comparatively', as for example, *Triticum* cf. *dicoccum*. However, when there is reliably identifiable chaff available the presence of that species is confirmed. To avoid repetition the qualification 'probable' emmer will not be used with every mention in this report, but only when particularly relevant.

Identifications have been checked with a reference collection, and ecological information about non-cultivated species was taken from several sources, notably Ellenberg 1974; Fitter 1978; Grime *et al.* 1988; Jermy *et al.* 1982; Long 1929; and Stace 1991.

Where there are large numbers of seeds, for example in some of the Iron Age postholes in Area 5, the whole flot has been searched and all more or less complete cereal grains and all weed seeds have been counted, but the totals of the grains represented by the very many small fragments have been estimated from weighed subsamples. Average weights of individual cereal grains were reckoned from weighed selected grains and these were found to conform to average weights calculated from counted and weighed totals from the Netherlands (van Zeist 1970). The figures in the tables must represent estimated minimum numbers since there is so much very fine charred material.

Nomenclature and order (except for cultivated cereals) accords with Stace 1991. The term 'seeds' is used loosely to include caryopses, nutlets, etc. and all taxa are represented by seeds unless otherwise stated.

Arable weeds, waste and grassland species are listed together in the tables as many plants may be common to both categories. Ancient fields probably included more species than those now known as field weeds and grasses and other plants such as tares and medicks might invade from their borders.

Mollusc analysis, by Michael J. Allen

Soil samples were taken in the field largely as contiguous columns, taking care not to cross horizon boundaries. The samples were processed following the methods outlined by Evans (1972, 44–45). The pre-weighed air-dried samples were placed in a bucket of water and the resistant soil crumbs were disaggregated with the addition of small quantities of 30% (100 vol.) hydrogen peroxide (H_2O_2), the floating shells being decanted on to a sieve of 0.5 mm mesh aperture. The mineral fraction was passed through a nest of sieves of 5.6 mm, 2 mm, 1 mm and 0.5 mm mesh aperture, oven dried at low temperatures and sorted under a ×10–×30 stereo-binocular microscope.

The samples were taken from Area 3, and were all less than 25 m apart. In order to examine the local landscape change, the assemblages were divided into local landscape zones on the basis of the mollusc assemblage composition, combined with the details of the deposits from which they derived. This has enabled distinct changes in the local landscape within Area 3 to be discerned from the Lateglacial Interstadial soil and marls, the Bronze Age penannular ditched enclosure and the Romano-British enclosures.

Absolute Dating

A modest programme of radiocarbon dating complemented the chronological framework provided by typologically distinct and datable artefacts. The main aim of the programme was to provide a general chronology, rather than detailed intra-site temporal information. Radiocarbon dating was not employed for either the Iron Age religious site in Area 2 or the Iron Age settlement in Area 5. While radiocarbon dates might have provided a very crude chronological relationship between the two sites, the likely dates would have fallen in the later Iron Age where oscillations in the calibration curve currently prevent a finer resolution of existing typo-chronometric chronologies by radiocarbon dates. When combined with the absence of *sequences* of stratified deposits, it was considered that the dates derived from typological considerations, especially the metal objects, would be more accurate.

Archaeomagnetic dating was undertaken, with ambiguous results, in Area 4 and was considered but rejected for Area 2 (Vol. 2, 7).

The Archive, by Sarah F. Wyles

The project archive (Accession Number 7221) has been deposited at Chichester and District Museum, 29 Little London, Chichester, West Sussex PO19 1PB, under the accession number 7221. Throughout the field evaluation, excavation and watching brief phases the project was assigned the Project Code W474 (= Wessex Archaeology project number four hundred and seventy-four) and this is used throughout the archive. The fully indexed paper archive includes all excavation records and drawings, and post-excavation data and analyses. Microfilm copies of the paper archive are held by Chichester and District Museum, the National Archaeological Record, and Wessex Archaeology.

The material archive includes artefacts (including a pottery fabric type series), human and animal bone, identified environmental materials (snails, charcoals, charred plant remains etc.), all the environmental flots and sorted snail residues. All the artefacts have been retained with the exception of burnt flint and ceramic building material that is later than Romano-British in date; these were weighed and recorded before being discarded. The extensive residues (4 and 2 mm) from artefact (lithic) sieving have been discarded.

Owing to the comprehensive sampling and processing programme, the environmental archive is more complex. It contains all analysed and identified environmental remains (charcoal, charred plant remains, snails and small mammal bones). Only the pollen slides, soil micromorphology slides and ostracods are retained by the institutions of the respective analysts. All flots not selected for analysis are also retained in archive (though their accompanying unsorted residues were discarded). All the sorted residues (except the coarse 5.6 mm fraction) of the snail samples (Area 3) are retained and those of bulk samples from the Late Glacial buried soil (Area 3). The flots (0.5 mm) of all bulk samples are retained, but the fractionated residues (5.6 mm/4 mm, 2 mm and 1 mm) were assessed, extracted if analysed, and discarded.

Details of the environmental archive from the Iron Age and Romano-British cemeteries in Area 2 are more complex and are presented in Vol. 2, 8.

The Archaeological Background

The study of the archaeology of Sussex has a long and distinguished history and needs no repetition here. Perhaps the only point that needs to be made here in relation to the sites reported on in this volume is that from the earliest days through to Cecil Curwen's *The Archaeology of Sussex* (1937), and the 1978 review, *Archaeology in Sussex to AD 1500* (Drewett 1978a), research on the prehistoric periods was, understandably, largely directed to the well-preserved monuments on the South Downs, the study of which played a vital part in understanding the prehistory of England. In contrast, the Romano-British period on the West Sussex Coastal Plain has been relatively well, if somewhat selectively, studied, benefiting from the energetic and promptly published campaigns of Alec Down in Chichester and the villas in its hinterland in the downs, and of Barry Cunliffe at Fishbourne. Less has been said on the archaeology of the early Anglo-Saxon period, and less is known.

The mid–later 1970s and earlier 1980s saw the Field Archaeology Unit of the Institute of Archaeology, University of London, make a concerted attempt to characterise the prehistoric settlement of the West Sussex Coastal Plain through targeted excavations to assess the impact of plough damage. In large measure the sites selected for examination, such as at Copse Farm, Oving (Bedwin and Holgate 1985), or Carne's Seat, Goodwood (Holgate 1986), were determined by their archaeological visibility as crop marks. In parallel, a series of excavations examined the Neolithic and Romano-British monuments of the western Downs (Bedwin 1981a; 1981b; 1981c; 1992; Bedwin and Aldsworth 1981).

Concurrently, fieldwalking around Oving (Pitts 1975; 1976) and the collation of older 'stray finds' by Mike Pitts allowed the first syntheses of the Mesolithic and Romano-British periods on the West Sussex Coastal Plain (Pitts 1979b; 1980). The context of a number of recent discoveries was also examined (Pitts 1979a) leading, in the case of North Bersted, to the first major publication of a settlement of later prehistoric date on the West Sussex Coastal Plain (Bedwin and Pitts 1978).

On the basis of this work it was possible by 1983 for Owen Bedwin to write on the development of prehistoric settlement on the West Sussex Coastal Plain (1983a). The pattern that emerged was of a paucity of finds until the Iron Age, leading to the suggestion that the Coastal Plain was not extensively settled until the Iron Age when extensive drainage systems were created. In part this suggestion reflected the archaeological visibility of some types of site and the continuing need to rely on older syntheses, such as Leslie Grinsell's on the Bronze Age of Sussex (1931). In other regards the dominance of the Downs was reflected in the suggestion that in the Neolithic the Coastal Plain was woodland and marsh, providing resources that were used by groups based on settlements on the Downs. In some small measure the pattern was also at odds with the fertile, if heavy, soils and the modern agricultural and horticultural richness of the area. As Bedwin emphasised, the evidence for both the Neolithic and Bronze Age was limited to the point that 'discoveries from a single site could radically alter our understanding' (1983a, 43). The intervening years have seen the presumption of permanent settlements for much of the Neolithic and the Early Bronze Age challenged (Thomas 1991; Brück 1999a).

The principal contributions of the present project to the study of the archaeology of Sussex have been to confirm that much of this pattern was, as suspected, simply due to difficulties in identifying archaeological sites and the archaeological correlates that might be expected of a settlement, and to reveal a range of sites spanning 11,000 years within a very short transect across the West Sussex Coastal Plain.

2. Archaeology, Drift Geology and Radiocarbon Chronology

The Excavation Areas, by A.P. Fitzpatrick and Andrew B. Powell

Throughout this volume, the excavations are presented chronologically so as to provide details of the development of the social and physical landscape, and consequently the excavation of each area is not detailed in its own right. However, in order to give the reader an introduction to each area, including the area-specific methods employed, and an outline of their results by period, area summaries are presented below. In addition to Areas 1–5, and the smaller subsidiary Areas 6–8 (Fig. 3), the watching brief was called 'Area 9.'

Area 1: Mesolithic Flint Scatters and Colluvium

Area 1 (Fig. 6), centred on SU 8954 0691 north of the former A27 trunk road, was excavated in an area shown by fieldwalking and machine trenching to contain Mesolithic flints. Although no subsoil features were identified, the quantity and condition of the material suggested that it had not been transported far or seriously damaged and disturbed by ploughing.

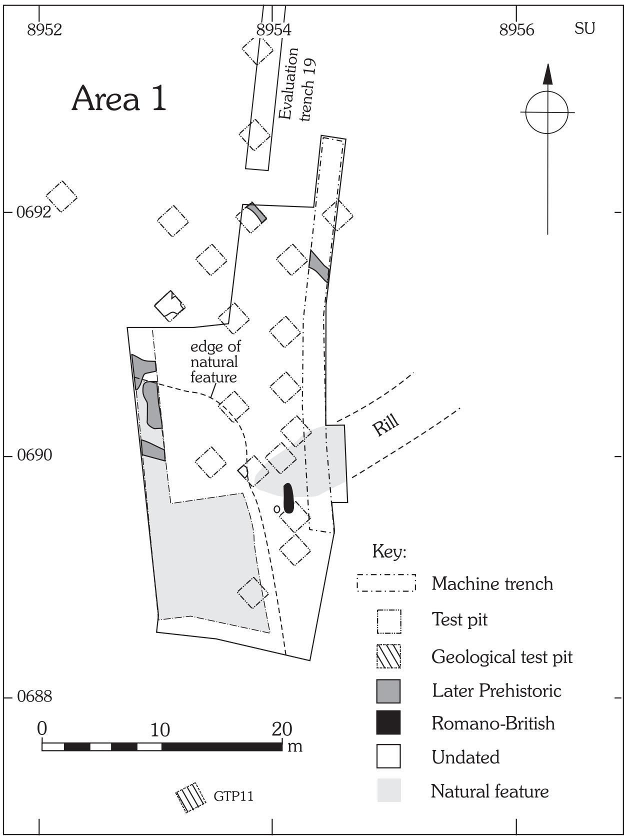


Figure 6 Area 1 phase plan, showing test pits

The excavation area measured 30 by 15 m, covering a total area of 450 m². It was located on flat ground at about 23.5m OD, downslope from, and *c.* 100 m to the north of, the Norton–Brighton cliff-line and the low hill created by the Aldingbourne raised beach deposits (Areas 2 and 6).

Initially, as part of the Ploughzone Test Pit Strategy, 20 probabilistically-selected 2 m square test pits were excavated. These were aligned on a 5 m grid and represented a 20% sample. After this most of the topsoil was removed by machine, revealing a much more complicated sequence of deposits than had been anticipated, including extensive colluviation in the south-western part of the area. In order to help elucidate this sequence, sections were mechanically excavated along the eastern and western edges of the excavation area and a further test pit was manually excavated at the south-west corner.

The Mesolithic flints in the eastern part of the area appear to have been incorporated into the upper profile of the clay subsoil as an argillic brown earth (*sol lessivé*). Therefore, although the flints were not *in situ*, they will not have travelled far from the point of discard or deposition. The site appears to represent a residential base camp. After the Mesolithic there is a hiatus in the direct evidence for both archaeological activity and site formation processes. However, charcoal in the top of a rill/gully gave a radiocarbon date of 3040–2610 cal BC, perhaps indicating local deforestation and erosion during the Neolithic, associated with more widespread denudation of the argillic brown earth.

The colluvial deposit to the west of this sealed a number of irregular features cut into gravel beds which are considered to have been created by fluvial action and a few archaeological features of Late Bronze Age and Late Iron Age date. It seems likely that the bulk of the colluvium was deposited in the later prehistoric and Romano-British periods, perhaps associated with the gathering of timber for pyres at the Late Iron Age and Romano-British cremation burial cemeteries. That this should occur in what today appears to be a flat landscape is noteworthy and suggests that the modern and Mesolithic topographies may have been significantly different.

Area 2: Bronze Age Ring Ditch and Iron Age, Romano-British and Anglo-Saxon Cemeteries

Area 2 (Fig. 7), centred on SU 8957 0670, was located on a low hill comprised of raised beach deposits above the Norton–Brighton cliff-line, to the south of the former A27 trunk road. Although the hill rises to only 6 m above the surrounding Coastal Plain, it is

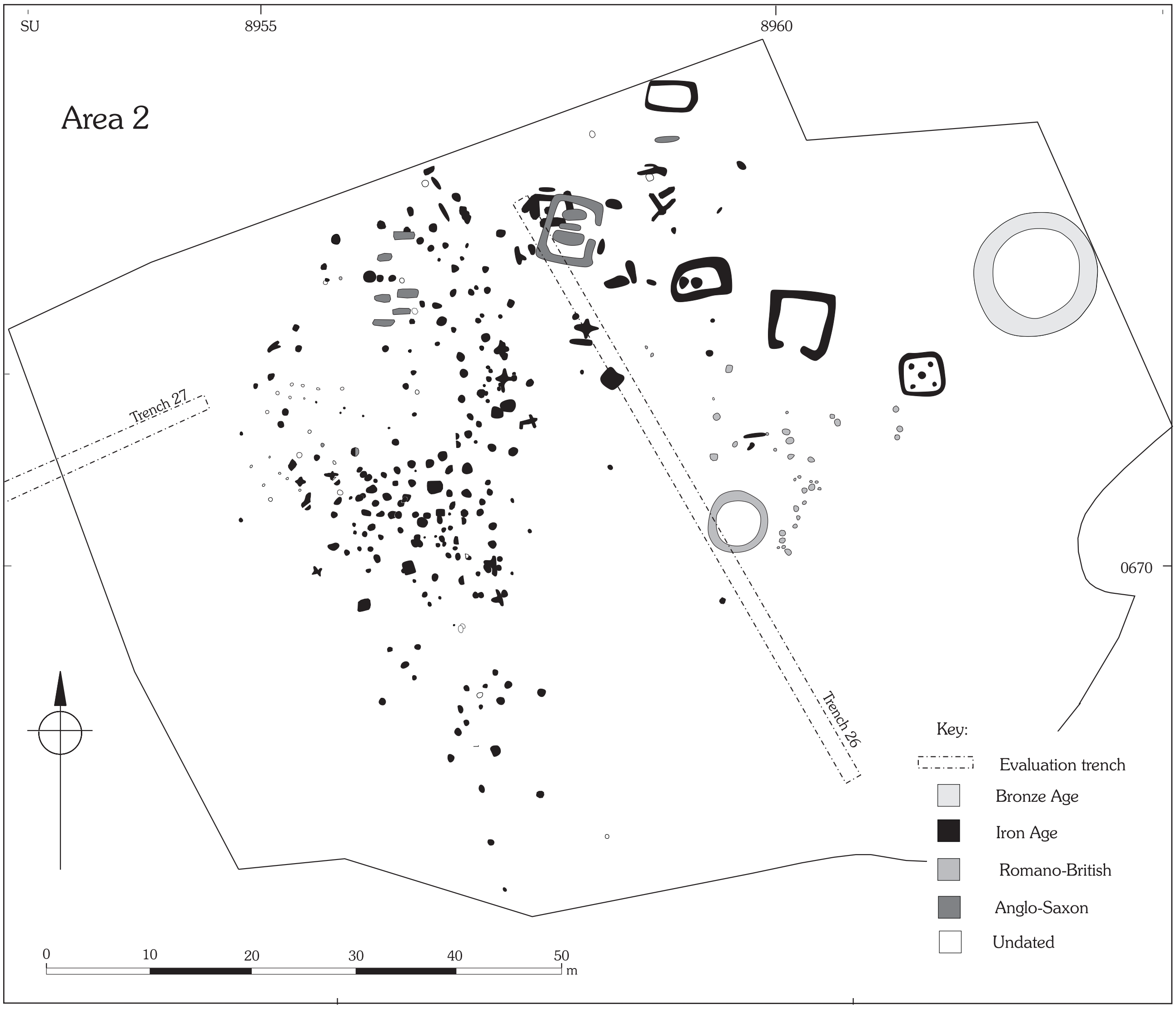


Figure 7 Area 2 phase plan

prominent in the low-lying landscape, perhaps partly explaining in part its intermittent use as a burial ground over two millennia. Trial trenching identified a single Late Iron Age cremation burial.

It was originally intended that what became Areas 7 and 8 should be examined together as part of Area 2 but the scale of the Late Iron Age site made it necessary to separate them. Even then in order to ensure that the limits of the Iron Age site were fully defined, the area of the excavation was enlarged twice, covering at the end an approximately rectangular area of *c.* 6700 m². Area 6 was also excavated to establish if the site had extended to the north of the modern road. The evidence from Areas 1 and 6 suggested that it had not.

In Area 2 a series of periglacial stripes and polygons were recorded in the gravels of the Aldingbourne raised beach deposits. A background scatter of flints of Mesolithic and Neolithic date was recovered but any features of this date had been disturbed or totally destroyed in antiquity or by recent cultivation. The earliest archaeological feature was the Bronze Age ring ditch that was uncovered, almost inevitably, on the penultimate day.

The Late Iron Age religious site is so far unique within England in its size, spatial organisation, and range of associated features. These included two, and perhaps four, enclosures, a range of pyre sites and related features, and 161 cremation burials. Most of the burials were grouped around the south-eastern circumference of a circular space, and were largely bounded by the pyres. The site may only have been in use for 40 years, *c.* 90–50 BC.

The smaller Romano-British cremation cemetery contained 36 graves and a single pyre site lay south-east of the Iron Age site. The burials, which spanned approximately 80 years (*c.* AD 70–150), appeared to cluster around a small, but undated, ring ditch.

Cutting through the northern part of the Iron Age site there was a small early Anglo-Saxon inhumation cemetery. Owing to the very acidic soil conditions no inhumed bone survived but, on the basis of a small number of grave goods, ten features were suggested to be graves. Three of the graves lay within a rectangular enclosure. The cemetery was used between the 5th and 7th centuries AD and is one of the first cemeteries of this date to be found on the West Sussex Coastal Plain.

Area 3: Upper Palaeolithic Sequence, Neolithic Inhumation Burial, Bronze Age Penannular Burial Enclosure and Romano-British Enclosures

Area 3 (Fig. 8), centred on SU 8932 0655, was aligned south-west to north-east, to the south of the former A27 trunk road and traversed the former Waterbeach-Tangmere stream course (Fig. 5). Evaluation trenches in this area had revealed a series of Romano-British ditches containing quantities of finds. As a result, the entire road corridor covering these trenches was excavated. The area of excavation was *c.* 130 m long and between 40 m and 70 m wide, comprising an area of *c.* 5600 m^2. Permission was obtained to extend the excavation area outside the road corridor. On the south-east side this was in order to expose the south-east corner of the Romano-British enclosure, and the full extent of the Bronze Age penannular burial enclosure, which was completely excavated. On the north-west side it was to expose the north-west side of the enclosure.

Following the removal of the topsoil an 'alluvial soil' (Bw) about 0.1 m thick, but in places up to 0.2 m thick, was found to cover most of the area, effectively concealing the presence of many of the smaller features cut into it. It was decided to remove this soil by machine and in consequence most of the features from Area 3, which were already truncated by recent ploughing, were further slightly truncated, leading probably to the loss of a number of very shallow features. However, once this deposit had been removed, a large number of features became apparent which would otherwise not have been visible. The complex geological sequence was examined by geological test pits and their excavation resulted in the identification of a Late Upper Palaeolithic (Devensian Late Glacial) deposit up to 1 m below the modern ground surface. Besides environmental evidence, this yielded a single struck flint.

A single badly disturbed inhumation burial yielded a radiocarbon date in the Late Neolithic. A penannular ditch proved to encircle an urned Bronze Age cremation burial. There was no trace of a burial mound.

The principal archaeological site was a Romano-British enclosure for which no close parallels have been identified, though some aspects may be compared with temples or shrines. There were two main phases. The first was a square ditched enclosure, 21 by 21 m, which may have had a timber palisade inside (Pl. 3). In the

Plate 3 Area 3 general working view looking south-east

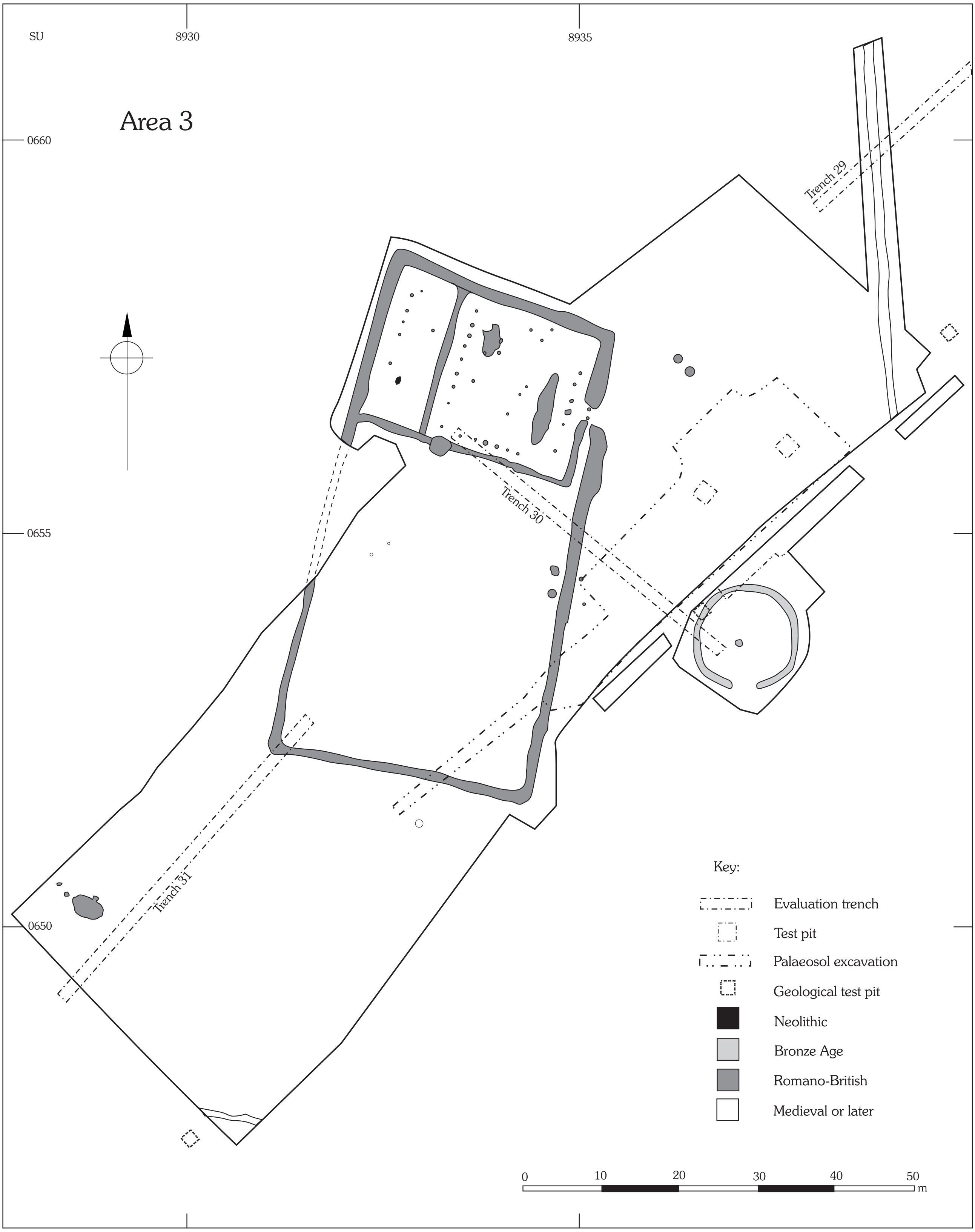


Figure 8 Area 3 phase plan

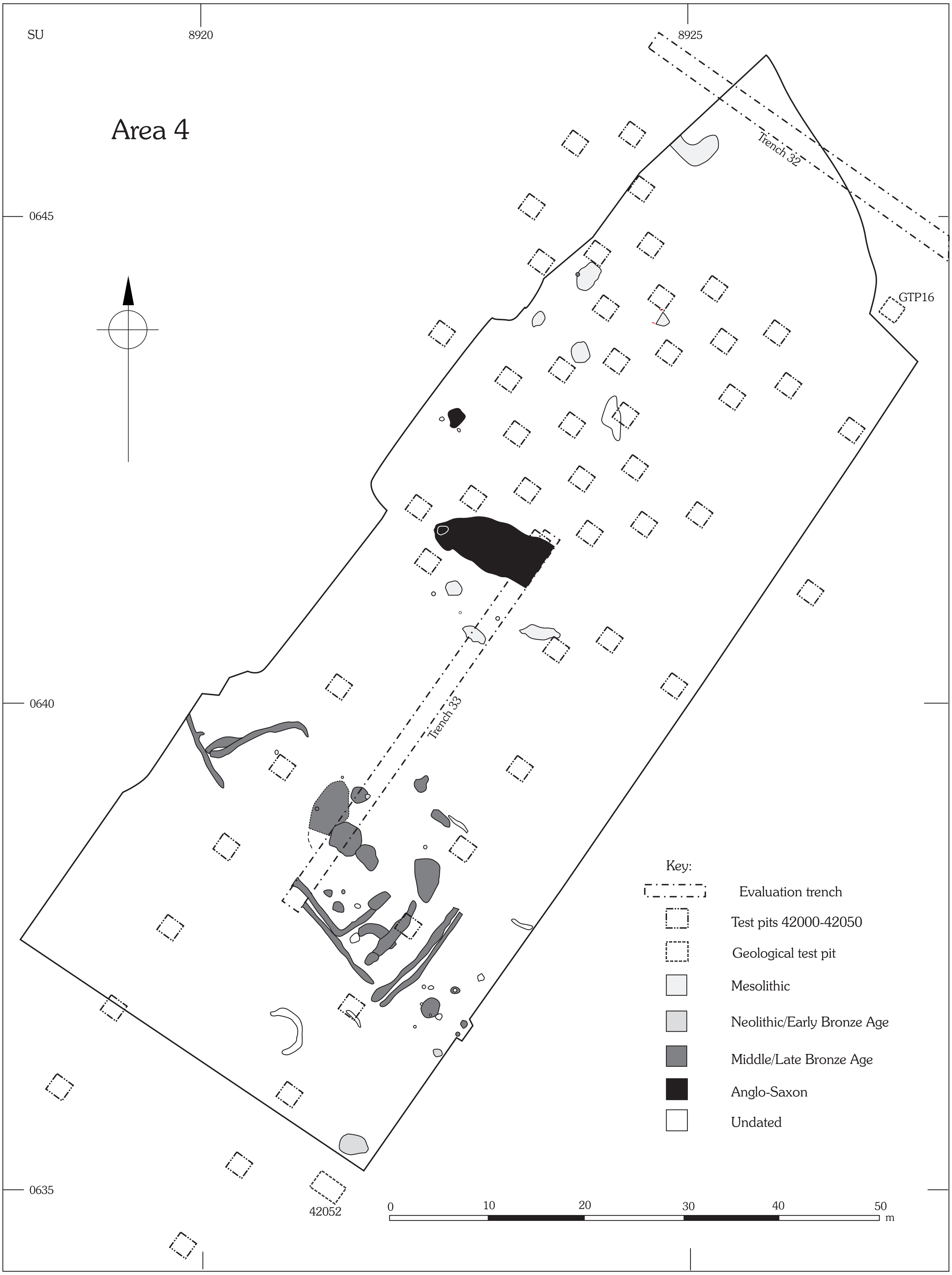


Figure 9 Area 4 phase plan, showing test pits

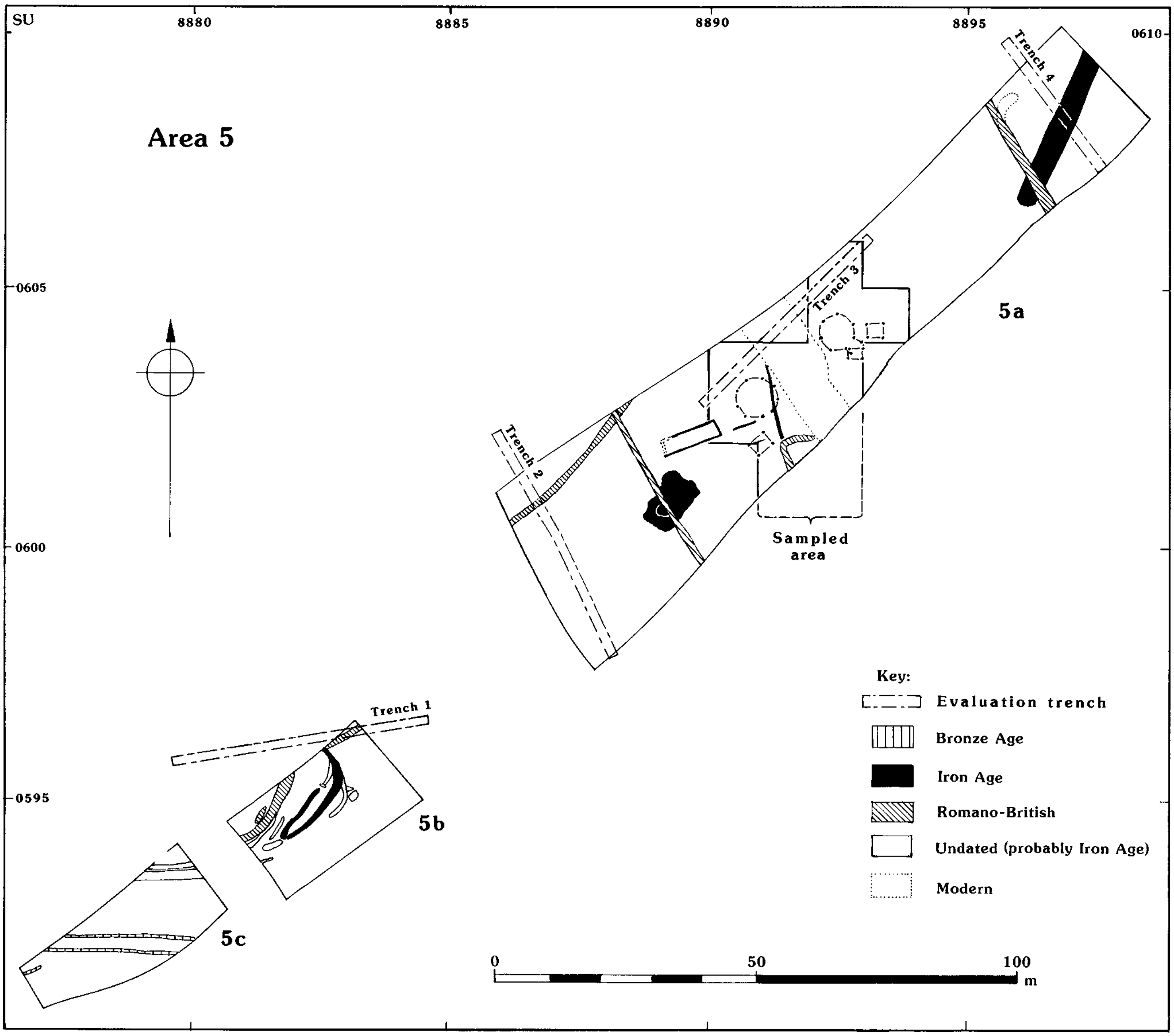


Figure 10 Area 5 phase plan

second phase this enclosure was incorporated within the northern end of a much larger rectangular enclosure *c.* 66 m long and 33 m wide. The ditch yielded a considerable quantity of pottery, oyster shell and animal bone, particularly along the eastern side, or front, of the enclosure.

Two ditches at the eastern and western ends of Area 3 are medieval or later field boundaries.

Area 4: Mesolithic Flint Scatters, and Neolithic to Iron Age, and Anglo-Saxon Settlement

Area 4 (Fig. 9) (centred on SU 8923 0641), was located on brickearth on the slope of a rise, 19 m OD, to the west of the former Waterbeach–Tangmere stream course and some 170 m to the south of the former A27. During the evaluation, fieldwalking identified a large concentration of struck flints, most of the immediately recognisable material being attributable to the Mesolithic period, but also some of Neolithic date. In addition, two evaluation trenches revealed five archaeological features, all containing worked flint, and some yielding Neolithic, Bronze Age and Romano-British pottery.

Initially, as part of the Ploughzone Test Pit Strategy, an array of sixty-four 2 m square test pits was laid out of which 51 were manually excavated. The pits were arranged on a grid to provide a 10% sample (TPs 42000–42033) of the core area of the flint distribution (*c.* 1700 m²), and as a 2% sample (TPs 42034–42050) over the lower density area (*c.* 2800 m²). Environmental samples were taken from all but the uppermost spits of three test pits from over the core area. After the excavation of the test pits, an area of *c.* 4500 m² was machine stripped to the top of the brickearth and cleaned manually.

In addition to the flints from the ploughzone, several subsurface features contained only Mesolithic flints and some of these features were human in origin. The quantity and diversity of artefacts recovered, together with the location of the site adjacent to an intermittent watercourse, suggest that, like the site in Area 1, it was a residential base camp.

Two Neolithic pits, one containing Grooved Ware and the other Peterborough Ware, were found. The context of a nearly complete Beaker is uncertain but it is suggested that quantities of Collared Urn are from domestic contexts. The area was also occupied in the Middle to Late Bronze Age, as evidenced by the large quantities of Deverel-Rimbury pottery found in a series of pits, postholes and indeterminate shallow features within a small enclosure. Small quantities of Iron Age pottery in some of these features are thought to be intrusive.

Two shallow features contained Anglo-Saxon pottery, one possibly associated with postholes and it is possible that other similar, but undated, features are of the same period.

Area 5: Iron Age and Romano-British Settlement

Area 5 (Fig. 10) was situated on brickearth of the Lower Coastal Plain next to Dairy Lane, centred on SU 8895 0605. Brickearth here was a dark brown silty clay, 0.02–0.5 m thick, with inclusions of both angular and rounded flint gravel occurring irregularly in patches. Evaluation trenches (1, 2, 3 and 10) had revealed a series of ditches containing quantities of Romano-British finds and undated postholes. As a result, three areas were excavated aligned south-west to north-east. The principal excavation area, Area 5a (over trenches 2, 3 and 10), was 152 m long and 22–40 m wide, over a total area of 5016 m². Area 5b, over trench 1, measured 38 m by 18 m and covered 684 m², and Area 5c, stripped to examine further features identified in Area 5b, measured 42 by 12 m and covered an area of 504 m². A Bronze Age droveway was found in Area 5c.

In Area 5a some 878 small features ranging in size from less than 0.1 m to over 1 m across, as well as seven linear features and a large pit-like feature were exposed. As it was impossible, within the time constraints of the project, to investigate all these features, the two areas in Area 5a in which stratigraphical relationships were apparent were selected for more detailed examination in order to establish the sequence of activity. These lay either side of the modern hedge and each were *c.* 400 m², though the damage caused by the hedgerow and trackway to the area between these two areas was not initially apparent. The remaining features were planned and recorded on abbreviated context sheets, with any finds visible during cleaning being collected.

Many of the excavated postholes yielded no dating evidence but it is possible to suggest that the unenclosed Middle Iron Age settlement contained a well and several round houses and four-post structures. In addition there was a rectangular building. The focus of the settlement seems to have changed in the 1st century BC when there is a change in the type of features in the excavated area, and the succeeding Romano-British settlement lies to the south.

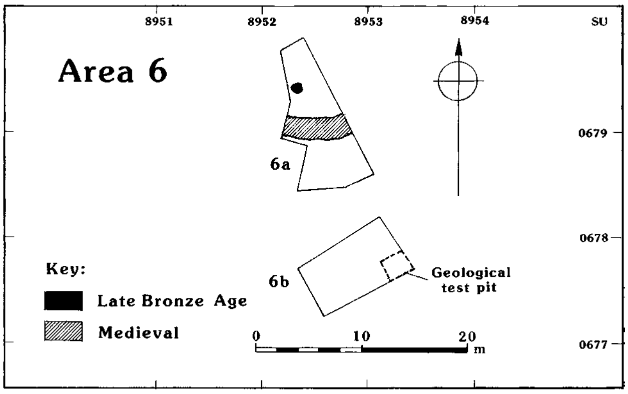


Figure 11 Area 6 phase plan

Area 6: Bronze Age and Medieval Finds

Area 6 (Fig. 11) was excavated to establish if the Late Iron Age religious site in Area 2 had extended to the north of the former A27. The area was located on the northern edge of the Aldingbourne raised beach (storm beach) deposits on the Upper Coastal Plain on the same hillock as Area 2, and centred on SU 89520 06785. It consisted of two separate trenches, Area 6a to the north measuring 14 m by 7 m, and Area 6b to the south measuring 9 m by 5.5 m, together covering *c.* 200 m².

The only archaeological features were a shallow truncated pit containing Bronze Age pottery and a medieval ditch, both in Area 6a.

Area 7: Anglo-Saxon Building

Area 7 (Fig. 12) was located on the edge of the Upper Coastal Plain to the south of the former A27 and centred on SU 8970 0675. It was 84 m long and 8–16 m wide, covering some 4700 m², its western end adjoining the eastern edge of Area 2. It transpired that evaluation trench 24 had identified virtually the only archaeological feature in the area and, after careful examination, the area was not subsequently cleaned manually other than where features were visible.

A shallow rectangular pit initially identified in evaluation trench 24 proved to be an Anglo-Saxon sunken-featured building or *Grübenhaus* and the few other features found are probably related to this.

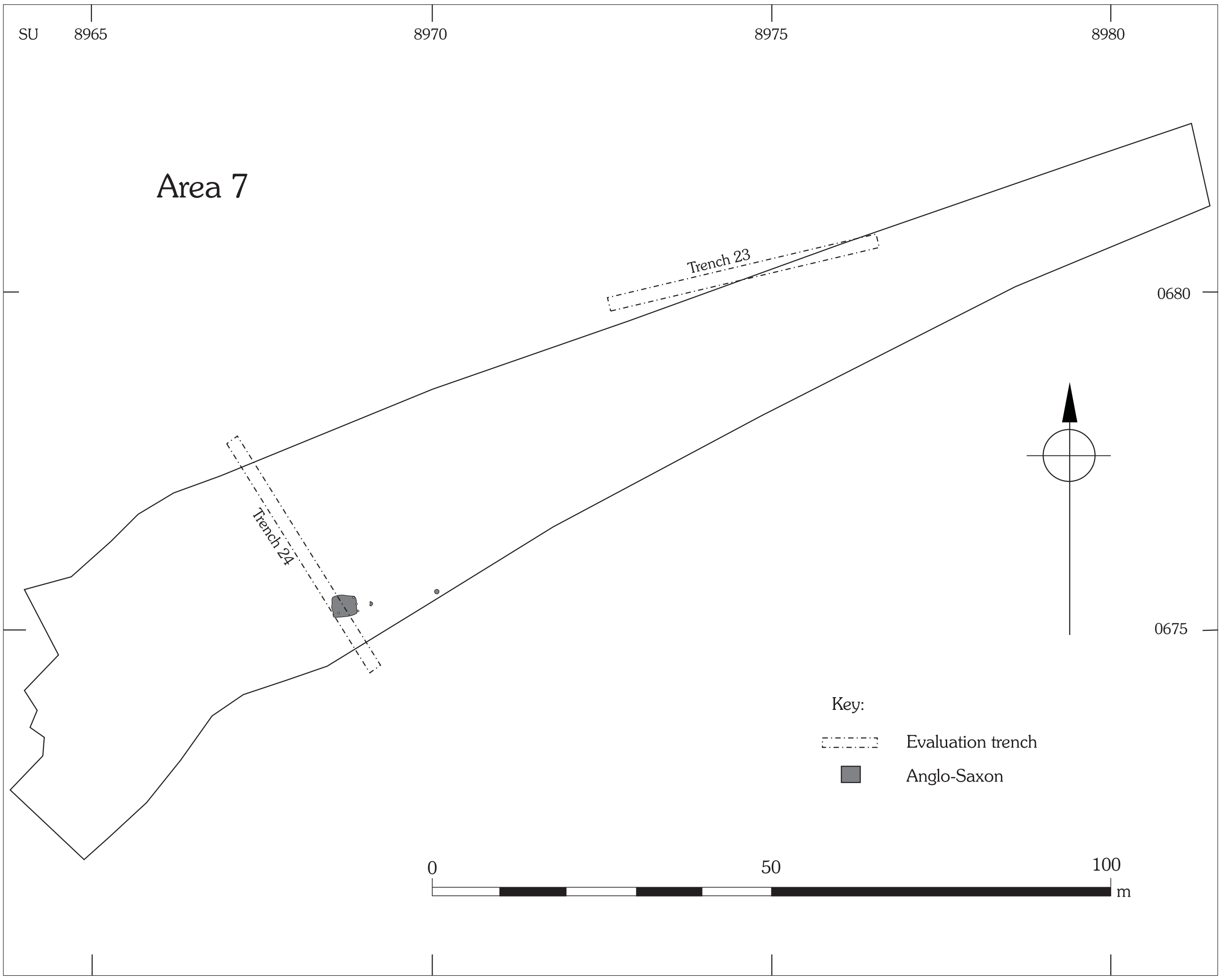


Figure 12 Area 7 phase plan

Area 8: Later Prehistoric and Romano-British Finds

Area 8 (Fig. 13) was centred on SU 89466 06645, lying approximately mid-way between Areas 2 and 3, and measured 25 m by 10 m, covering 250 m². It was sited on the discovery of a prehistoric pit in evaluation trench 28 and, as with Area 7, it had originally been intended to examine this with Area 2, but it was subsequently designated as a separate area because of the size and complexity of the Late Iron Age religious site. Area 8 lay on brickearths overlooking the Tangmere–Waterbeach stream course and was sited below the Aldingbourne raised beach deposits.

Few additional archaeological features were found and only a small quantity of Bronze Age pottery was recovered, suggesting activity in the vicinity.

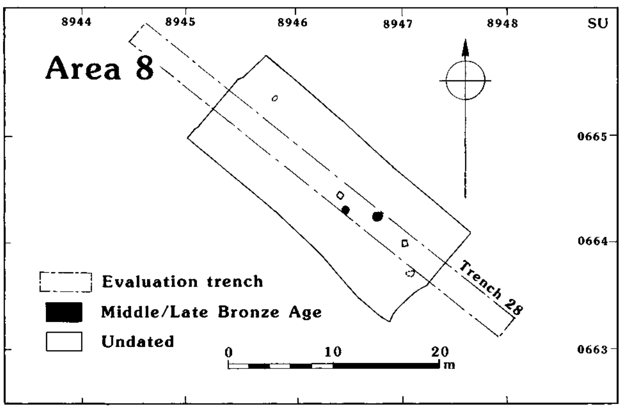


Figure 13 Area 8 phase plan

Area 9: Watching Brief

On completion of the excavations of Areas 1–8, a watching brief was undertaken during the topsoil stripping and preliminary stages of construction. Visibility along much of the route to the south of the former A27 was poor. Difficulties in access, and in finding storage for topsoil, resulted in heavy plant being stored on the route, which, in conjunction with the need to remove the archaeological spoil heaps, contributed to a heavy traffic of plant along the route.

In some places the topsoil was not stripped, and the first cut by box scrapers, particularly to the west of Area 5, removed any potential archaeological deposits. It is possible to be reasonably confident that there were no further features in the vicinity of Area 2 but the apparent absence of evidence in other unexcavated areas is less reliable. In contrast, these conditions did not apply to the construction of the spur road to the north of the A27 and archaeological visibility was fair.

A single linear feature and some unstratified Roman pottery were observed at the southern end of Area 1. In addition, a scatter of worked flint was recorded to the north. This was recorded by 20 m^2 collection units along the corridor, beginning adjacent to Area 1 and ending at the A285 to the north. An additional collection area ran as far as an access track to the north-west. The results of this collection suggest the presence of a second flint concentration *c.* 100m to the north of Area 1.

The general absence of additional archaeological finds from the previously unexcavated areas suggests that no major sites were missed during the field evaluation and subsequent excavation. However, the poor field conditions along most of the route militate against a confident assessment. The concentration of flint to the north of Area 1 may indicate further prehistoric activity to the north-east of the site, similar to that found in Area 1.

The Excavated Drift Geology, by Michael J. Allen

The archaeological excavations in the eight areas exposed in plan over 3 hectares of the surface geology (Figs 3 and 5). Although the formal obligation of the archaeological team was to record features of human origin, it became evident that the local superficial drift geology on the Coastal Plain varied significantly along the 2.8 km corridor under examination. The opportunity was taken, therefore, not only to record and map the surface of the drift geology, but to augment this with a series of 16 machine-excavated 1.5 m square geological test pits and one intermittent test trench, to a depth of *c.* 1.4 m, to reveal the upper elements of these deposits. Where geomorphic features were seen in these deposits, they were recorded in plan either directly onto the archaeological plans (Area 3) or as measured sketches (Area 2). In addition, a deep sondage exposed *c.* 12 m of the geological profile during the construction of the Temple Bar interchange (Area 2), which allowed a cursory examination. These limited profiles provide detailed information on the surface geological facies, which were seen to bear a direct relationship to the local micro-topography and relict Quaternary features of the Coastal Plain.

A summary of the Pleistocene geology of the Coastal Plain has been given above (Chapter 1, 4–8) and the information from the archaeological excavations amplify and augment the local Quaternary record. The mapping of the surface deposits, and recognition and understanding of the palaeo-topography from the excavated areas enabled further comment on deposits of Wolstonian to Devensian Age to be made, while the geological test pit profiles have led to a significant advancement of our knowledge of the local Devensian and early Holocene environment. Thus, some of the deposits and landforms resulting from the geological events outlined above were recorded in, and amplified by, archaeological excavation.

Much analysis has been undertaken on the Goodwood–Slindon raised beach sequence at Boxgrove (Roberts 1986; Roberts *et al.* 1997) but the deposits associated with this cliff-line (*Slindon Formation*) were not encountered on the route of the Bypass and are not, therefore, considered here.

The superficial deposits of the Coastal Plain were originally mapped by the British Geological Survey in the later 19th century (Reid 1903) and reprinted in 1972. A summary map of these superficial deposits (soil parent material) was prepared by Hodgson (1967, fig. 8). The majority of the Lower Coastal Plain (*sensu* Hodgson 1967) is largely mapped as brickearths (silty drifts), while the Upper Coastal Plain to the south of the Upper Chalk escarpment is mapped as clay-with-flints and associated drift (Hodgson 1967, fig. 8) valley gravels (British Geological Survey), both of which are bisected by alluvial valleys. The excavations on the route of the Bypass demonstrated that the deposits are more complex than mapping indicates and they are summarised below and the mapped results shown in Figure 5.

Brickearths

Brickearth *sensu stricto* was recorded throughout Areas 4 and 5 (Fig. 5). The soil profile and brickearth are described below, following the terminology outlined by Hodgson (1976):

Geological Test Pit 15

Brown earth over brickearth (Hamble Series)

0–220 mm	[Ploughsoil] (Ap). Dark grey, massive structure, few small to large flints, sharp smooth boundary.
220–470 mm	[Brickearth] (Eb) Yellowish brown (10YR 5/4) silty clay loam, small granular grading to weak, medium sub-angular blocky structure, few small to medium sub-angular flints; few very fine roots, gradual boundary.
470–640+mm	(B1t) Stiff light yellowish brown (10YR 6/5) silty clay to silty clay loam with common medium to large sub-angular and sub-rounded flints. Vertical root/worm holes to 640 mm. Some reddish coating noted on inter-ped surfaces.

This sequence is comparable to the representative Hamble Series, shallow phase, soil profile described by Hodgson (1967, 71) from Maudlin Farm (SU 890 061) adjacent to Area 5 (Fig. 5).

In both areas the brickearths overlay gravels in silty, or chalky drift deposits. The brickearths were shallow, less than 1 m thick and the underlying gravels or chalky drift were encountered at depths varying between 0.25 m and 1.25 m from the surface. This profile is similar to that described by Bell (1975) from Madgwick Lane, Chichester, where 1 m of brickearth overlay hard packed angular flint gravel at a depth of about 1.3 m with shallow involutions within the upper levels of the gravel surface (*op cit.*, fig. 15). Bell considered these gravels to be decalcified coombe deposits, probably overlying the Selsey–Ipswichian raised beach deposits. He concluded that this profile correlates with the Selsey sequence (West and Sparks 1960), where it is suggested that marine transgression was separated from brickearth deposition by a cold damp phase of solifluction and gullying. This latter phase undoubtedly relates to the early Devensian.

Particle size analysis from the brickearth (Eb horizon) in geological test pit 11 gave results similar to that recorded by Bell. The fine fraction (<2 mm) showed a general bimodal distribution and had 23% clay, 74% silt and 3% sand. This may indicate the mixing and inclusion of loess, and possibly relates to the height of the Devensian (Weicheslian) 28,000–14,000 BP.

Coombe, Valley Gravels and Aldingbourne Raised Beach Deposits

Mixed gravels north of the Norton–Brighton cliff-line were recorded in Areas 1–2 and 6–7 (Fig. 5). In Areas 6 and 7 the topsoil was stripped onto loose coarse gravels. These consisted of angular to subangular flints. Geological test pits 1–10 provide a profile of the gravels from Area 3 to the top of the slope in Areas 2 and 7 (Fig. 5). In Area 2 gravels in a silty loam (soil) matrix were encountered but often involuted with localised dense orange clay (geological test pits 7–8; Fig. 5). In contrast the gravels exposed in Area 7 were loose, unconsolidated and clean. These deposits possibly represent the ridge of marine gravels (Mottershead 1976) mapped by the British Geological Survey (Fig. 4), belonging to the Aldingbourne raised beach.

When deeper soundings were cut for the construction of the Temple Bar interchange, orange and brownish bedded gravels were seen to be about 10 m deep at Temple Bar beneath overlying, at depths of in excess of 12 m, blue ?Eocene (Bracklesham) clays. These bedded gravels are superficially not dissimilar to the ‘Chichester Fan Gravels’, which are tentatively dated to Oxygen Isotope Stage (OIS) 6 late in the Wolstonian (Bates 1998b).

Area 1 lies on the Aldingbourne raised beach deposits (Fig. 5) to the north of the Norton–Brighton cliff-line and may in part relate to storm beach deposits (Shephard-Thorn *et al.* 1982). Excavation of very limited exposures within Area 1 displayed a complex and localised drift lithology. A ridge of loose gravel (possibly Reading Beds or the Aldingbourne raised beach deposits) was encountered, but was masked by postglacial colluvium in one part, and a deep typical argillic brown earth (*sol lessivé*) profile of the Hamble Series (Hodgson 1967). Elsewhere within the very small exposures of Area 1, gravels were encountered under *c.* 1.3 m of postglacial colluvium. Excavation showed not only the highly variable nature of this deposit, but also the considerable Late Glacial and postglacial erosion and denudation of the deposit by natural, and humanly accelerated natural processes.

Coombe gravels were encountered beneath the marls and to the east they merged into the brickearth; a phenomenon recorded elsewhere at Westhampnett (SU 881 060) by Hodgson (1964, 555, pl. 11). Hodgson also records that sections of gravels, especially those near the Norton–Brighton cliff-line, vary considerably in lithology. The variations do not necessarily reflect warm or cold stages of Pleistocene time but minor fluctuation in the last cold periods (Hodgson 1964, 555).

Norton–Brighton Cliff-line and the Lower Coastal Plain Raised Beach

The cliff-line separating the Upper from the Lower Coastal Plain was recognised by White in the Fareham and Havant area (1913, 80). It was crudely mapped by Martin (1938, 210) between Worthing and Havant and more accurately by Hodgson (1964, fig. 1), and recently defined as the Norton–Brighton cliff-line (Bates *et al.* 1998; 2000). This feature has been virtually obliterated (buried) by solifluction material and superficial deposits (Bates 1998b) and its approximate position is now only marked by a slight, but clear, break in slope (a minor bluff about 2 m high) over most of its length (Hodgson 1964, 555; Jones 1981, 172). The location of the cliff-line cannot be determined accurately in the field, especially in areas where it is traversed by minor north–south valleys marking former stream courses (as in Area 3). Excavation and survey has, however, been able to establish, at one point at least, its precise location.

The deposits associated with the cliff-line are complex, as recent work has shown (Shephard-Thorn *et al.* 1982; Lovell and Nancarrow 1983; Bates 1998a; Bates *et al.* 2000). They are complicated by older raised beach deposits on the top of the cliff-line (see above), and extensive later deposits masking the entire cliff profile.

The basal Eocene and Cretaceous geology was not exposed in the archaeological excavations, but was seen in the deep engineering and construction excavations for the Temple Bar interchange. The Bypass route ascends the Norton–Brighton cliff-line immediately to the south of the Aldingbourne raised beach deposits as shown in the schematic section in Figure 5. Our cross-section (Fig. 5) between Areas 3 and 2 shows a gentle rise of about 3 m, represented in the field by a gentle slope. Field observation during construction in the general vicinity of the western part of Area 2 provided confirmation of deeply stratified gravels to about 10 m, with a lens about 1 m thick of clearly rounded and loose pebbles on a blue clay (?Eocene/London Clay) base at *c.* 14–15m OD. The cliff-line can be plotted clearly between Areas 2 and 3 indicating that archaeological activity in Areas 1–2, 6 and 7 were located on the Upper Coastal Plain (Goodwood–Slindon and Aldingbourne raised beaches), while activity in Areas 3, 4 and 5 were on the drift deposits (coombe deposits, gravels and brickearth) over the lower raised beaches. It is significant that coombe deposits were recorded under brickearths and calcareous marls on the Lower Coastal Plain, but valley, marine gravels and deep brown earths (*sol lessivés*) are present on the Upper Coastal Plain to the north of the Norton–Brighton cliff-line.

The 13 km wide Coastal Plain is considered to be a polygenetic planation feature, and has been demonstrated to contain at least three former raised beaches (Bates *et al.* 2000), but unfortunately none of the excavations were deep enough to expose any deposits relating to these.

Late Devensian Sequences: Evidence for the Windermere Interstadial and Loch Lomond Stadial

Limited exposures of chalky drift or coombe deposits were exposed beneath the brickearths in Areas 4 and 5 but elsewhere gravels, probably decalcified coombe deposits, were encountered. These represent episodes of periglacial solifluction and are derived from the Cretaceous chalk outcrops 2.5 km to the north. In many instances both decalcified coombe and chalky drift are overlain by fine-grained, flinty brickearths. Its deposition obviously post-dates the deposition of coombe deposits in the main or late Devensian, probably between about 25,000 and 18,000 years BP. The nature of their deposition is still unknown (*cf.* Hodgson 1967, 12–13) but their loessic content (see particle size data above; Bell 1975; Burrin 1981) indicates the reworking of larger loess deposits (*cf.* Catt 1978), probably by fluvial agencies. Occasional silt-filled periglacial stripes were recorded during excavation in Area 3.

In Area 3, the route of the Bypass crossed a broad shallow valley filled with calcareous marls and gravels, breaching the Norton–Brighton cliff-line. The valley forms part of a larger riverine and lacustrine system mapped by Hodgson (1963; 1967); it comprises alluvium stretching from the base of the South Downs at Goodwood, across the Coastal Plain at Waterbeach and Tangmere, before debouching at Earney.

Excavations of this system in Area 3 recorded calcareous marls resting upon coombe gravels which comprised very coarsely mixed, large angular flints and some flint pebbles with few chalk pieces in a loose silty matrix. To the east, on the edge of the valley, they were overlain by 0.3 m of brickearth (*sensu lato*), which in turn was sealed by a loose flint gravel in a brown silty loam matrix. In the centre of the valley, however, they were overlain by lacustrine and riverine calcareous marls and gravels. At the interface between the coombe deposits and the Late Devensian calcareous marls was a humic ranker palaeosol dated to 11,000 BP belonging to the lateglacial interstadial (Allerød/Windermere) phase.

The calcareous marls and bedded loose chalk brash represent deposition in a gentle shallow lacustrine and marsh environment, with a series of lenses of fine rolled chalk gravel and coarse flint gravels representing episodic, higher energy events and former stream courses.

Periglacial Features

Geomorphological processes active during the Devensian cold stage were largely periglacial and responsible for a number of sediment types and geomorphological features. In particular periglacially sorted ground (cryoturbation, periglacial sorting and patterned ground such as polygons and stripes), solifluction deposits/coombe rock and possible loessic deposits have been recorded at Westhampnett, and such features have been widely recognised in Sussex (Te Punga 1957; Bell 1975; Catt 1979; Williams 1968; 1973; Jones 1981) and particularly on other archaeological excavations from East Sussex (e.g. Lewes, Newhaven and Seaford).

Stripes and polygons

Within the coarse gravels in a silt loam matrix (Aldingbourne raised beach) that were exposed in plan in Area 2 (north of the Norton–Brighton cliff-line), were a series of faint, stone-free lines. Although it was not possible to record these features in detail, we were able to record and sketch faint stone-free lines containing a clean silty clay loam which formed a crude basic polygonal pattern on the apex of the hill, with intermittent stripes running downslope to the south. These typical periglacial cold-stage features, and similar structures and involutions, have been recorded in more detail at Madgwick Lane (Bell 1975) and elsewhere in Sussex (e.g. Lewes: Bell 1976a; Newhaven: Bell 1976b and Seaford: Bell 1978).

Involutions

Involutions were not exposed in plan during the excavations as all archaeological features were cut from the top of the brickearth deposits. However, geological test pits 1, 4, 6 and 8 revealed a number of strong involution features. Larger, gentle involutions would not have been recorded as the test pits were only 1.5 m square but can be seen in Area 3 (Fig. 16).

Palaeogeographic Relationships

The combination of evidence from earlier workers, and the large-scale archaeological excavations undertaken at Westhampnett, has enabled interpretation and refinement of the nature and date of some depositional events on the Lower Coastal Plain. The recognition of the exact location of the Norton–Brighton cliff-line and the cursory record of the overlying stratigraphy, together with the other spatial and lithological relationships, enable a schematic summary of the lithological deposits and topographic forms created during Quaternary times on part of the West Sussex Coastal Plain.

The basement geology was only briefly observed as strong blue massive clays in the construction works at Temple Bar (Area 2). These Eocene (Bracklesham) clays form the bedrock base from the Norton–Brighton cliff-line and over much of the Lower Coastal Plain (Fig. 4). A lens of beach pebbles about 1 m deep was also observed overlying the Eocene marine clays at the base of the cliff-line.

Upper Coastal Plain

On the Goodwood–Slindon raised beach (Area 1), marine gravels (Aldingbourne raised beach) were recorded extremely locally during excavation. Only 450 m² of the gravel surface was exposed and this showed considerable variation and local relief. The gravels dipped southwards (towards to the Norton–Brighton cliff-line), but predominantly westwards, towards the former Waterbeach–Tangmere stream course (Hodgson 1963). The gravels here were sealed by both variable brickearths in which deep (1.1 m) brown earth soil profiles (*sol lessivés*) had formed, and by Holocene colluvium. Extensive Mesolithic (8360–7970 cal. BC, 9120 ± 90 BP, OxA-4168) and later activity was recorded in the archaeological excavations. V-shaped gullying through the brown earth and brickearth profile to the surface of the gravels is of Holocene date and assumed to be the result of severe runoff into the former stream following deforestation and the onset of agriculture (*cf.* Dimbleby 1976; Allen 1988; 1991). Holocene colluvium is also broadly attributed to this activity. The former Devensian Late Glacial stream course, as delineated by the marls mapped by Hodgson (Fig. 4a), seems to have a tributary leading towards Area 1 at this point and it is likely that Holocene erosion (gullying) and deposition (colluvium) followed this topographic incline.

Lower Coastal Plain

Most of the archaeological excavations were located on the Lower Coastal Plain (Areas 3–5, 7–8) and the Norton–Brighton cliff-line itself (Area 2). At the cliff-line, the combination of the cursory records from the construction pits and the excavated surface enable a summary of the major drift lithology to be outlined. The basal Eocene marine clays consisted of a massive blue clay and underlay beach gravels of the Norton–Brighton raised beach. It was not possible to measure the OD height, but by reference to the present surveyed surface, sketches and photographs, this is at about 14 m OD.

The beach deposits are overlain by a massive deposit of chalky drift and gravels (coombe deposits) which are sealed locally by brickearths and then brickearths (*senso lato*) with gravel. A series of strong periglacial pockets were present at the contact between the brickearth and the coombe deposits and the overlying brickearth was up to 3 m deep. Elsewhere, in Areas 4 and 5 for instance, the surface of the brickearth beneath the soil was cut by features of Neolithic to Roman date. However, the brickearths were relatively shallow, only 0.5 m deep and, where sectioned, overlay chalky drift (coombe deposits) and displayed marked brodel pockets akin to the sequence at Temple Bar (Area 2).

The upper portions of this 'master' lithological sequence were seen elsewhere and, in Area 2 in particular, were complicated by the presence of Late Devensian deposits. At the foot of the slope at Temple Bar, the sequence was complicated by the presence of deposits associated with the Late Devensian former stream mapped by Hodgson (1963; 1967). Coombe deposits were the recorded base, but at the contact between calcareous marls of the Late Devensian stream and lagoon was a Windermere (Allerød) terrestrial land surface. Molluscan and soil micromorphological evidence indicate that this is an immature soil ranker in a damp marshy environment. It was inundated by pure marls deposited in a cold stage lateglacial environment. The full master sequence from Temple Bar and the lateglacial sequences from Area 2 are adjacent and enable a schematic sequential profile of these deposits intermittently covering 35 m.

This work demonstrates the potential value of archaeological excavations in providing ancillary data, in both plan and limited vertical sections, for the interpretation and study of superficial drift deposits.

This archaeological excavation has been most important in elucidating three points:

i) locating the Norton–Brighton cliff-line and raised beach at Temple Bar
ii) clarifying the presence of brickearth *sensu stricto* in the Westhampnett area, and
iii) elucidating the detailed stratigraphical and palaeogeographical relationships of the Devensian coombe, lateglacial lagoonal and brickearth deposits.

Radiocarbon Chronology, by Michael J. Allen

In total 16 radiocarbon determinations, ranging over a period of 11,000 years, were obtained from the excavations at Westhampnett, with results from the Late Quaternary time span, before bristlecone pine calibration is possible/acceptable, up to the Middle Bronze Age.

Choice of Calibration Datasets

At the time of writing (1997), the use of a single calibration dataset was not possible in a project offering such a wide range of determinations. However, as the aim of the dating programme was to compare dates within each phase, rather than between major phases, this allows us to select appropriate calibration curves (where necessary) for each set of results (see also Allen 1995c; Allen and Bayliss 1995).

Lateglacial interstadial

Determinations in the lateglacial interstadial period are beyond the spectrum of the German Pine sequence. Determinations presented for this period by quaternary scientists are consistently given as uncalibrated dates BP (see Preece 1994), and in order to facilitate comparison within this timescale (i.e. pre 10,000 BP) all determinations here are presented likewise.

Mesolithic

The first demonstrable evidence for repeated episodes of human activity occurs early in the postglacial, in the Mesolithic period. This activity is several millennia after any evidence of the lateglacial interstadial environment and potential Late Upper Palaeolithic activity. Radiocarbon determinations seek to compare the dates of activity within the Mesolithic, rather than between the Mesolithic and Late Upper Palaeolithic periods or between the Mesolithic and the Neolithic periods. The only available dataset at the time of writing to calibrate these dates, that presented by Kromer and Becker (1993) and Pearson *et al.* (1993), was therefore used, although it was not internationally accepted (*cf.* Mook 1986). Nevertheless, it is more useful to calibrate than use uncalibrated results, since in the Mesolithic period uncalibrated results may differ by as much as 1000 years from the true calendrical dates.

Neolithic and Bronze Age

The Mesolithic activity at Westhampnett occurred some four millennia before the Neolithic activity. The main archaeological interest was, therefore, in comparing time differences between dated Neolithic and Bronze Age activities where there was greater continuity, rather than between the Mesolithic and Neolithic/Bronze Age. The calibration for determinations of the fifth millennia BC onwards,

Table 4 radiocarbon results from the sites of prehistoric date

Material	*Lab. no.*	*Determination*	*cal. BC*
Calibrated using Stuiver et al. *and OxCal var. 3.9*			
'Allerød' phase (Late Upper Palaeolithic) palaeosol			
Charcoal: *Betula* + *Pinus*	OxA-4167	10840±100	11200–10650
Charcoal: cf. *Betula*	OxA-4166	10880±110	11250–10650
Charcoal: *Betula* + *Roscaea*	AA-11769	10870±80	11190–10690
Humic acids	AA-11770	8620±105	8200–7450
Humic acids	GU-5310	9210±90	8690–8260
Calibrated using Kromer and Becker etc.			
Mesolithic			
Charcoal: hazelnuts	OxA-4168	9120±90	8370–7970
Charcoal: hazelnuts	OxA-4170	8880±100	8090–7620
Charcoal: mixed	OxA-4171	8300±90	7500–7040
Calibrated using Stuiver and Pearson etc.			
Neolithic			
Charcoal: mixed	OxA-4169	4260±70	3090–2610
Human bone	AA-40353	4195±40	2900–2620
Earlier Bronze Age			
Charcoal: mixed	GU-5307	3510±50	2020–1700
Charcoal: *Quercus*	GU-5308	3360±50	1870–1520
Charcoal: *Corylus, Prunus*	OxA-4173	3640±75	2200–1770
Middle Bronze Age			
Charcoal: mixed	OxA-4175	3110±80	1600–1130
Charcoal: mixed	OxA-4172	3130±80	1620–1160
Charcoal: mixed	OxA-4174	3140±80	1620–1160

therefore, used the internationally accepted dataset (Mook 1986) presented by Stuiver and Pearson (1986), Pearson and Stuiver (1986), and Pearson *et al.* (1986).

Presentation of Results

All determinations prior to 10,000 BP are presented as years BP without calibration.

Determinations prior to the fifth millennium BC are calibrated using the dataset in Kromer and Becker (1993) and Pearson *et al.* (1993), and those after this using Stuiver and Pearson (1986), Pearson and Stuiver (1986) and Pearson *et al.* (1986). All calibrated dates are presented at the two sigma (95%) confidence level and are rounded out to 10 years following the recommendations by Mook (1986). Calibration was performed using CALIB 2.1 and OxCal v3.15. The determinations are given in Table 4, but are presented and discussed in more detail in the relevant chapters.

As a whole, this group of 16 radiocarbon results indicates the surprising longevity (albeit discontinuous) of archaeological occupation of the same locations on the West Sussex Coastal Plain. Perhaps the most significant is the presence of an Allerød phase buried soil from which both the radiocarbon and palaeo-environmental results accord well with other sites in southern England. This is one of the first dated occurrences of buried soils and palaeo-environmental data from non-chalkland contexts in southern England of this period. This evidence enhances our understanding of both the archaeology and quaternary science.

The dates confirm the long and repeated use of the area over nearly 10 millennia. The Late Neolithic radiocarbon date, which comes from a feature that did not contain Late Neolithic pottery or flint, confirms the presence of activity of this period at Westhampnett and adds to the activity indicated by the Grooved Ware and Peterborough Ware pottery from Area 4, as well as by the few sherds reported in the vicinity by Drewett (1978b; 1980). The Middle to Late Bronze Age dates provide one of the earliest dated occurrences of a Deverel-Rimbury settlement in Sussex, again perhaps significant in that it occurs on the Coastal Plain rather than the chalk downland.

3. Late Upper Palaeolithic (Area 3): Environmental Evidence for the Former Environment and Possible Human Activity

Michael J. Allen

A gleyic-calcaric alluvial brown soil (ploughsoil) was removed in Area 3 and revealed a locally very variable geology comprising calcareous marls, banded fine chalky gravels, brickearth (*sensu lato*) and plateau (Eocene) gravels (Fig. 14). Archaeological features cutting through these deposits (e.g. penannular burial enclosure 30369) revealed both their complexity and the presence of a buried humic soil horizon within the calcareous marls and gravels. Three geological test pits and one section were mechanically excavated along the southern side of the main excavation to clarify these deposits (Fig. 15). Once the excavation of the Romano-British site had been completed, the calcareous gravels and marls were machine stripped to reveal the surface of the buried soil.

Lateglacial Interstadial and Early Postglacial Sequences,

by Andrew B. Powell and Michael J. Allen

The removal of the gleyic-calcaric alluvial brown soil and ploughsoil profile revealed a series of white calcareous marls and fine chalky gravels across the centre of the area, with decalcified coombe deposits to the south-west, and the plateau (Eocene) gravels with brickearth (*sensu lato*) to the north-east (Fig. 15). The calcareous marls were mapped as lacustrine by Hodgson (1963; 1967, fig. 8) but were not dated. These deposits were examined in section in geological test pit 2 on the south-eastern side of the excavation, which revealed the depth and local variability of these deposits as well as exposing a darker humic silty clay horizon, possibly a palaeosol of Late Glacial date. In order to sample and investigate the nature of the calcareous deposits and the buried soil, a series of geological test trenches (30385, 30383 and 30384), incorporating geological test pit 2, was cut along the edge of the excavated area extending south-west and north-east from the test pit (Pl. 4).

These test excavations sectioned a ploughed gleyic-calcaric alluvial brown soil (ploughsoil) which overlay a relict 'alluvial' soil (30001 and 30009) (the modern Bw horizon) that occurred predominantly over the calcareous marls and was deepest at the lowest

Plate 4 Test trench 30383 looking west showing the geology of Area 3 after the excavation of the Romano-British site had been completed. Below the ploughsoil are visible the brown 'alluvial' soil 30001 and the light calcareous marl 30375 of the early postglacial, overlying the dark truncated Late Glacial palaeosol 30376. At the base of the section are the decalcified Devensian coombe deposits 30377, in which, as at the bottom right, were number of periglacial hollows. In the background, test pit 30352 where the palaeosol survived in situ *is being excavated. The wheelbarrow is next to test pit 30363*

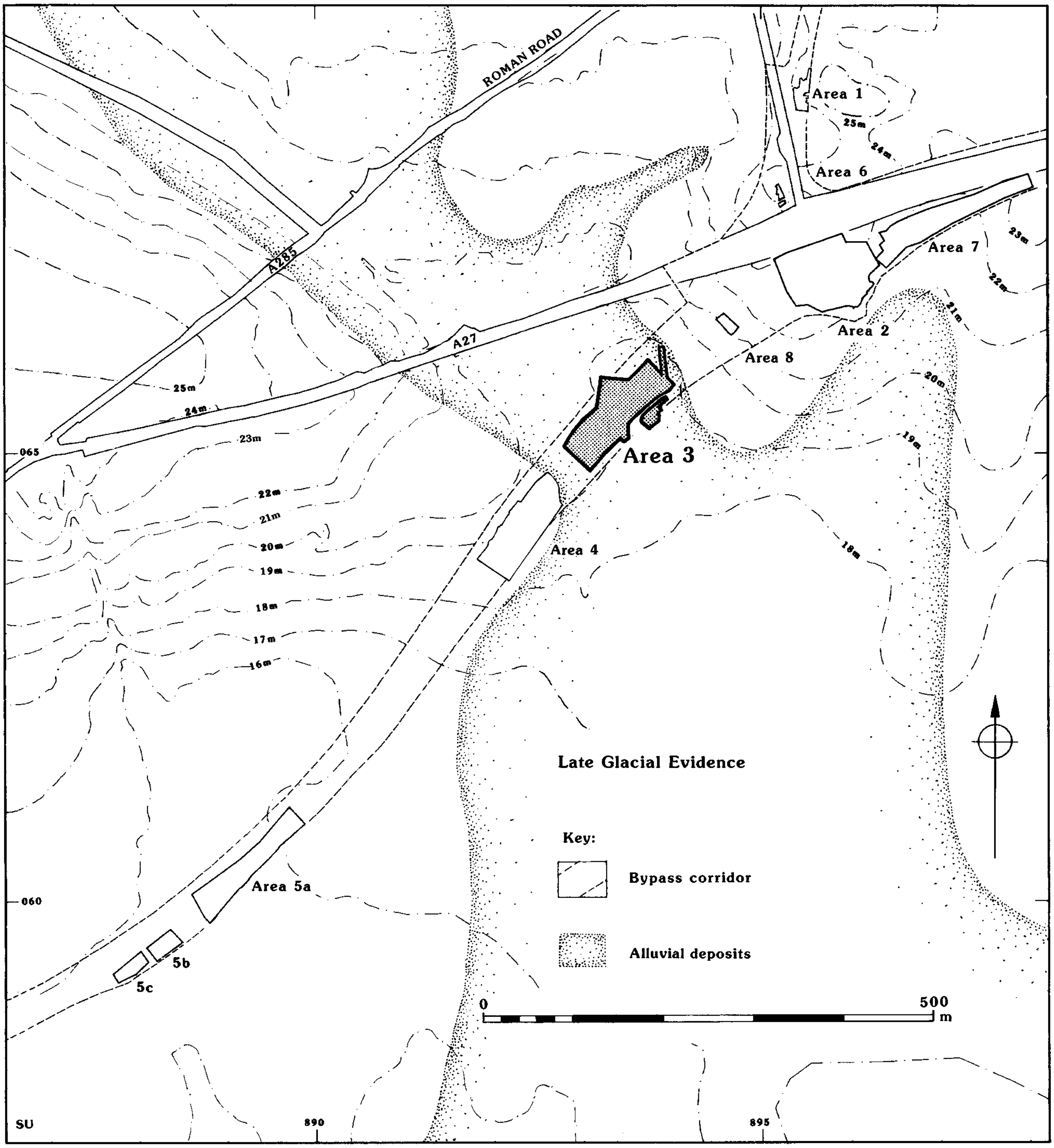


Figure 14 Excavation areas with Late Glacial evidence

topographical point. The deepest sequence of Late Glacial and early postglacial deposits was exposed in test trench 30383 and geological test pit 2 (Fig. 15). The Bronze Age penannular ditch (30192) cut both the 'alluvial' soil (Bw) and the marls. The sequence of calcareous marls and bedded chalk gravels in turn overlay a coarse mixed flint gravel in a grey silty matrix probably representing decalcified coombe deposits (*cf.* Hodgson 1964; 1967; Bell 1975). At the interface between the marls and coombe deposits was a thin band of darker, humic clay (30376) representing the local survival of a palaeosol horizon (Fig. 16). Pedological structure was observed within this horizon where the lateglacial interstadial and early postglacial deposits were at their deepest, indicating that in places the buried soil might have survived *in situ* (Fig. 16). After the recording of the Romano-British site the calcareous marls were removed mechanically within the main excavation over an area of approximately 500 m² to expose the buried soil (Fig. 15).

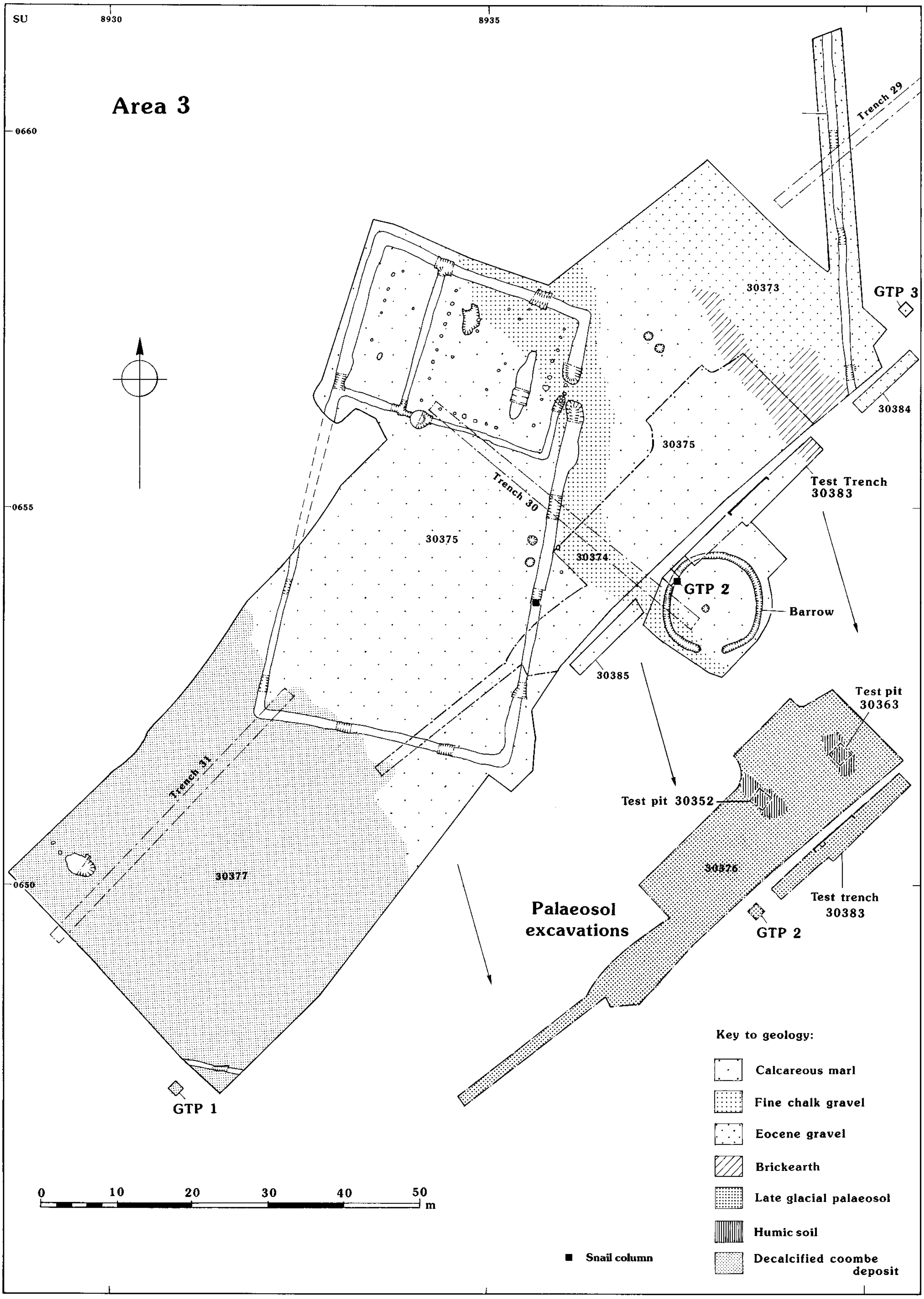


Figure 15 Area 3: location of Late Glacial palaeosol

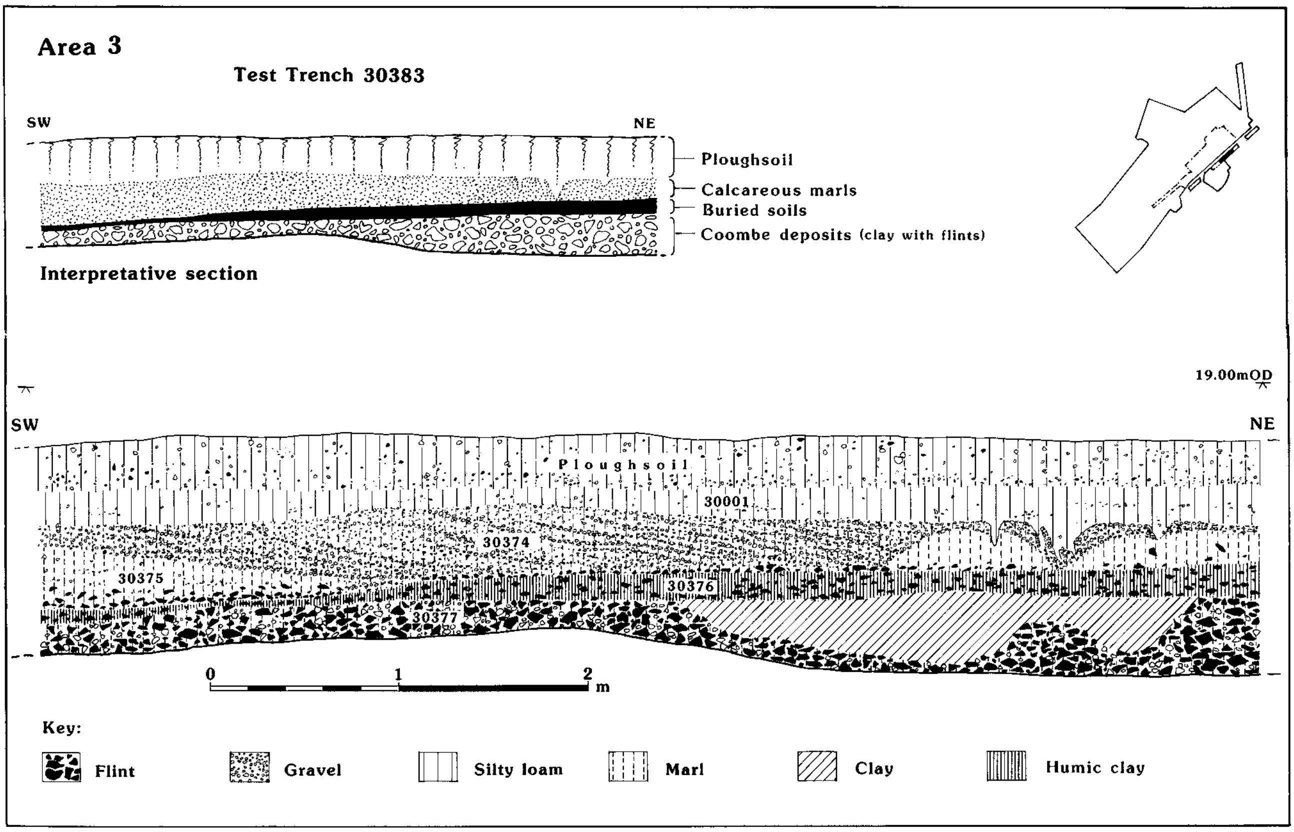


Figure 16 Area 3: section of Late Glacial and early postglacial deposits revealed in geological test trench 30383

Late Glacial Deposits (Figs 15–16)

Decalcified coombe deposits and periglacial features

The basal layer exposed in geological test pit 2 and trench 30383 consisted of very coarsely mixed large angular flints with some flint pebbles and a few chalk pieces in a silty matrix (30377) (Fig. 16). This represents decalcified coombe deposits of Devensian age deposited under periglacial conditions in a broad shallow valley. The surface of the decalcified gravels was as much as 1 m below the modern topsoil (geological test pit 2), but sloped up gradually towards the south-western end of the site where, for 45 m, it lay immediately below the 'alluvial' soil (modern Bw horizon). Towards the north-eastern end of the site, the coombe deposits were overlain by 0.3 m of brickearth, which in turn was sealed by a layer of loose flint gravel in a brown silty clay loam matrix. In a number of places periglacial hollows occurred in the surface of the flint gravels, and were filled with a slightly mottled stone-free silty clay.

Buried soil

In the centre of the shallow valley a distinct horizon of dark brown humic clay (30376) between 0.02 m and 0.2 m thick was visible in the section of trench 30383 (Fig. 16). Although this was a clear and distinct horizon in section, when exposed in plan after the removal of the calcareous marls it was evident that it had been severely truncated and its survival was patchy (Fig. 15). A recognisable buried soil only survived to any depth in two isolated patches approximately 7 m long and 2 m wide. A 2 m square test pit was excavated in each of these patches (30352 and 30363) and whole-earth sampled for artefacts (Figs 15, 17; Pl. 5). Samples were also taken for charred plant remains, charcoal and molluscs.

The sequence was similar in both test pits but better preserved in test pit 30352 (Fig. 17), which revealed an eroded and truncated humic ranker surviving to a depth of 0.16 m. The upper layer (30353), which had a maximum depth of 0.04 m and covered approximately half of the test pit, was a very dark greyish-brown humic clay, with strong medium blocky structure and containing some very fine charcoal. This largely stone-free humic clay, which contained only occasional fragments of chalk and flint, overlay a layer up to 0.08 m thick (30354), in which were large quantities of angular flint pieces and nodules, among which was a single undiagnostic struck flint flake. These layers comprise the bA'g horizon of the ranker soil and overlie the decalcified coombe deposits (flints in a grey silt matrix 30357), equivalent to layer 30377 across the rest of the site.

Calcareous gravels and marls

The buried soil was overlain by lacustrine calcareous marls (30375) and bedded fine chalky gravels (30374).

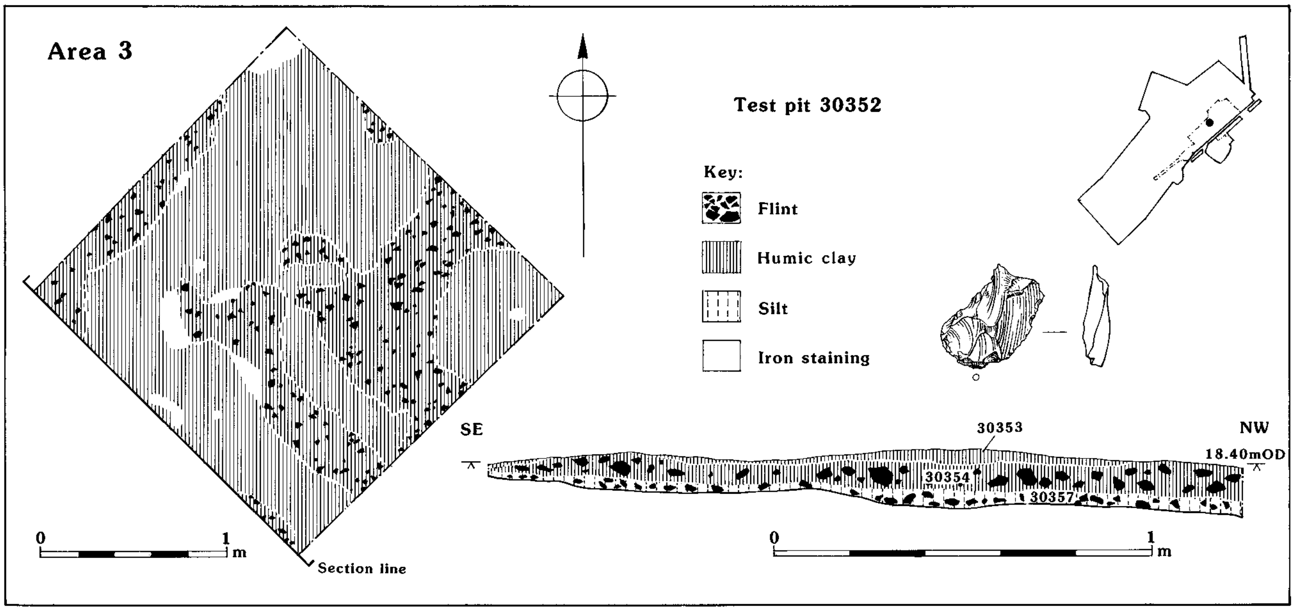


Figure 17 Area 3: plan of lateglacial interstadial (Allerød phase) buried soil excavated in test pit 30352, plan, section and worked flint

The marl covered a 70 m wide band running north-west to south-east across the site and in the centre they were up to 0.5 m thick. They represent material deposited by a body of slow-moving water within a broad very shallow valley, which here may represent an inland lagoon. This valley is part of the larger riverine system mapped by Hodgson (1963; 1967) that formed a riverine alluvium from the downs at Goodwood, across the Coastal Plain at Waterbeach and Tangmere and debouches at Earney. The marls were extensively sampled in geological test pit 2 for molluscs, ostracods, diatoms and pollen, and a column of samples for archaeomagnetic dating was also taken (Pl. 6).

The lacustrine marls were cut by a number of smaller channels that were infilled with fine chalky gravels. The most pronounced of these was 4 m wide at the south-east widening to 14 m in the north-west. It was nearly 1m deep and filled with bedded fine chalk and flint gravel (30374). These channels formed a general braided pattern in the marls but were sealed by the 'alluvial' soil (modern Bw horizon).

Hand excavation and dry sieving (10 mm) of the entire exposed, but truncated, buried lateglacial interstadial soil was undertaken to recover artefacts and larger animal bones but only a single struck flint was recovered.

Struck Flint, by W.A. Boismier

One small (27 mm × 17 mm) tertiary flake weighing 4 g was recovered from within the buried soil (30354) in test pit 30352 (Fig. 17). It was flaked from a chocolate brown gravel flint, unlike the majority of flints in both the underlying periglacial and overlying lacustrine deposits, which were chalk derived.

Chronology

The date of the sequence was ascertained from the sedimentological record, the incorporated palaeo-environmental data (especially snails) and absolute dating of the buried soil (radiocarbon) and calcareous marls (archaeomagnetic dating). In broad terms the sequences of an organic soil sealed by cold stage calcareous deposits has been noted elsewhere in southern England, and is typical of other lateglacial interstadial sequences such as Watcombe Bottom, Ventnor, Isle of Wight (Preece *et al.* 1995); Brook (Kerney *et al.* 1964; 1980) and Holywell Coombe, Kent (Preece 1991; 1992; Preece and Bridgland 1998; 1999); Pitstone, Buckinghamshire (Evans 1966; 1986; Valentine and Dalrymple 1976; Green *et al.* 1984), and Burleston Down, Dorset (Allen 1999).

Radiocarbon Dates from the Buried Soil, by Michael J. Allen and Alex Bayliss

Five radiocarbon results were obtained from the buried soil (Table 5). Three samples of fine charcoal were extracted and identified from bulk soil samples of the humic ranker (bA'hg and bA'g) horizon, from test pits 30352 and 30363. The charcoal was relatively small and comminuted but included pine needles and birch, both typical species of the lateglacial interstadial. Their contemporaneity with the soil is also suggested by burnt soil, shell and bone in soil thin section. Two subsamples of soil were from bulk soil samples, one from each test pit, and were submitted to obtain a determination from the humic acid fraction.

The radiocarbon determinations indicate that the buried soil (30353/30362) belongs to the Allerød phase of the lateglacial interstadial. The three radiocarbon

Plate 5 Recording the Area 3 palaeosol in test pit 30352, looking south

Plate 6 Geological test pit 2 in Area 3 looking north-west showing the excavated sample columns through the calcareous lacustrine marl for the recovery of molluscs, ostracods, diatoms, pollen and for archaeomagnetic dating

Table 5 Area 3, radiocarbon determinations from the Allerød lateglacial interstadial buried soil

Sample	*Context*	*Depth*	*Horizon*	*Material*	*Lab no.*	*Determination*
Test pit 30352						
39053	30353	–	bA'hg	*Betula* + *Pinus*	OxA-4167	10840±100 BP
39053	30353	–	bA'hg	humic acid	AA-11770	8620±105 BP
Test pit 30363						
39060	30361	0–40mm	bA'hg	*Betula+Roscaea*	AA-11769	10870±80 BP
39061	30362	40–90mm	bA'g	cf. *Betula*	OxA-4166	10880±110 BP
39060/1	30361/2	0–90mm	bAh'g/bA'g	humic acid	GU-5310	9210±90 BP

Table 6 radiocarbon dates for Allerød buried soils
(data from Evans 1986; Kerney 1963; Preece 1991; 1994; Preece *et al.* 1995)

Site	*Charcoal*	*Lab no.*	*Determination*
Westhampnett, W. Sussex	*Pinus* + *Betula*	OxA-4167	10,840± 100 BP
Westhampnett, W. Sussex	*Betula* + Rosacea	AA-11679	10,870±80 BP
Westhampnett, W. Sussex	cf. *Betula*	OxA-4166	10,880±110 BP
Upper Halling, Kent	cf. *Betula*	OxA-3236	10,900±120 BP
Pitstone, Bucks	charcoal	OxA-415	10,900±130 BP
Dover Hill, Kent	*Betula*	OxA-3239	11,100±100 BP
Brook borehole III, Kent	charcoal	AA-10706	11,170±70 BP
Dover Hill, Kent	*Betula*	OxA-3238	11,220±110 BP
Upper Halling, Kent	cf. *Betula*	OxA-3237	11,240±110 BP
Holywell Coombe, Kent	charcoal	OxA-2089	11,370±150 BP
Holywell Coombe, Kent	*Carex*/*Scirpus* fruits	OxA-2345	11,530±160 BP
Brook (Pit A), Kent	*Betula*	AA-10708	11,575±75 BP
Holywell Coombe, Kent	charcoal	OxA-2242	11,580±100 BP
Dover Hill, Kent	charcoal	Q-463	11,550±135 BP
Watcombe Bottom, IoW	charcoal	OxA-3235	11,690±120 BP

determinations from the charcoal, from different species and measured by two laboratories – OxA-4166 (10,880±110 BP), OxA-4167 (10,840±100 BP), and AA-11769 (10,870±80 BP) – form a consistent group and are statistically indistinguishable (Ward and Wilson 1978).

However, the two humic acid determinations, AA-11770 (8620±105 BP) and GU-5310 (9210±90 BP) are nearly two millennia younger and are statistically significantly different from the determinations on charcoal at the 95% confidence level (Ward and Wilson 1978) (Fig. 18). This may be explained by the migration downwards of younger humic acids (Dresser 1970), and may also relate to poor sealing in an active biological sedimentary environment. Although Shore (1988) found no significant difference between dates on the humic acid and 'humin' fractions of acid peats, humic acids are soluble in alkaline environments. The pH of the Allerød phase soil is 8.0–8.2. A small degree of penetration by younger material would make a relatively large difference to the results because the ^{14}C concentrations in samples of lateglacial date are very low.

It is worth noting, however, that the two humic acid results, in the eighth millennium BC, fall remarkably close to the spread of dates from the determinations from Mesolithic contexts (below). This may simply be fortuitous. Alternatively, the results may coincide with the onset of warmer temperatures in the early postglacial (pre-Boreal and Boreal climates), and represent the renewed pedogenesis and the washing down from these soils of humic acids into the streams that had migrated through the calcareous marls into the humic palaeosol.

The three results on charcoal are consistent in suggesting that the soil was formed in the first half of the eleventh millennium cal BC (i.e. between *c.* 11,000 and *c.* 10,500 cal BC using the marine extension of Bard *et al.* 1993). These dates fit well with those for Allerød buried soils reviewed by Preece (1994) (Table 6) and with dates of human activity (Housley 1991).

The radiocarbon dates have not been affected by a mineral carbon error (Lowe and Walker 1980) caused by the presence of minute particles of mineral carbon that may cause significant ageing effects, as individual charcoal items were extracted, identified and selected

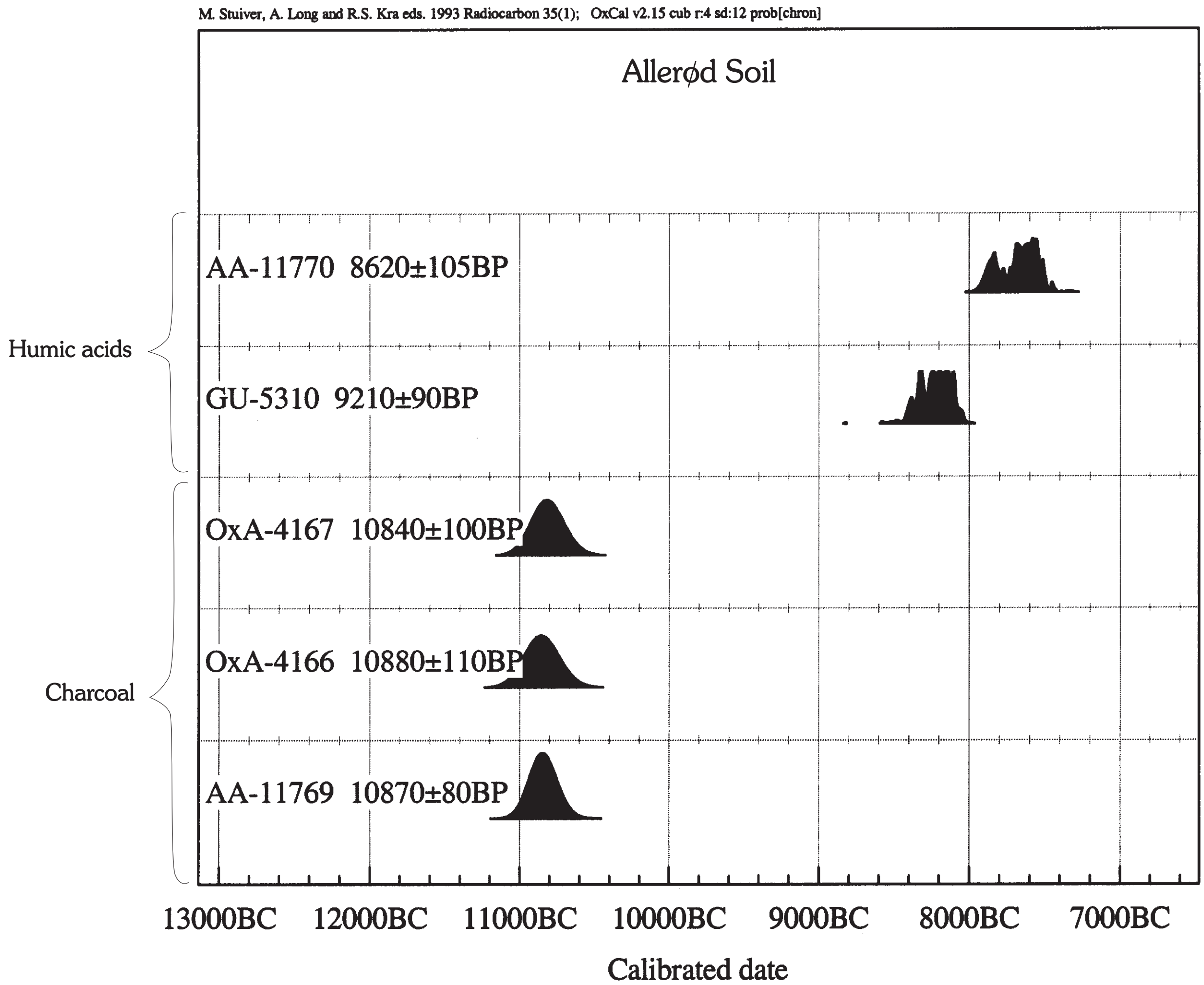


Figure 18 Area 3: probability distribution of radiocarbon dates from the Allerød buried soil

for radiocarbon dating. Lowe has indicated that there are potential problems in dating material from lakes and fluvial deposits which relate to a number of effects of the biogeochemistry of these deposits (1991). These have, however, been avoided by the careful stratigraphic resolution of the samples (the entire 'soil' was heterogeneous and mixed – soil micromorphology) and the selection of specific charcoal items for which independent evidence existed (pollen and other charred remains) in the appropriate deposits.

However, two potential difficulties still remain. There is a radiocarbon 'plateau' effect in the curve at *c.* 10,000 BP (*cf.* Amman and Lotter 1989) that gives very similar radiocarbon results over a long period of time. This is worryingly close to one of the plateaux of near-constant age that Becker and Kromer described for the pre-Boreal pine chronology (Becker and Kromer 1991; Becker 1993), pine being one of the species used for the Westhampnett dates. In addition, temporal variation in atmospheric radiocarbon in the lateglacial (Pilcher 1991), resulting from the rapid climatic change, may result in fluctuations in ^{14}C measurements of 1000 radiocarbon years during the Allerød phase (Stuiver *et al.* 1991). These radiocarbon problems are beyond our control but their implications must be borne in mind, particularly when comparing these determinations from Westhampnett with other Allerød sequences in southern England. The 'plateau' effect would tend to provide similar determinations over a long period of time, whereas changes in atmospheric radiocarbon might widely distribute these dates and provide numerous and large 'wiggles' in the radiocarbon curve which would tend to result in a number of separated 'spikes'.

The charcoal determinations from Westhampnett are consistently slightly younger than those from a number of other Allerød sites. For instance, they are about 700 radiocarbon years younger than those from the Allerød soil at Holywell Coombe, Folkestone, Kent (Preece 1991; 1994). If correct, this would place the Westhampnett sequence late in the Allerød phase of the lateglacial interstadial transition, when temperatures were cooling, and before the onset of severe colder conditions of the Loch Lomond re-advance (Younger Dryas). The dating is consistent with a later immature Allerød phase soil, suggesting that this soil belongs to the latter part of the lateglacial interstadial transition (*cf.* Lowe and Gray 1980).

Archaeomagnetic Dating of the Calcareous Marls, by A.J. Clark†

Details of the principles and methods of archaeomagnetic dating used in this work are contained in Clark *et al.* (1988). The archaeomagnetic programme attempted to date the fluvial-deposited calcareous marls above the Allerød phase soil. A column of six samples (sample series 39117/ref. AJC-112) was taken through the calcareous marl deposits in test trench 30383. The calcareous marls were sampled in an attempt to establish their period and rate of deposition. Samples were taken in levelled uPVC tubes 0.05 m in diameter and length. As the material was relatively hard with occasional nodules and concretions, it was necessary to use the time-consuming technique of establishing a step in the section face, then carving the step into a short pillar, which was encapsulated in the levelled tube with plaster of Paris. It was also necessary to step the column sideways at one point to avoid an obstruction. A series of 12 contiguous samples was taken in this way at 0.04 m vertical intervals. Measuring to the centre of each sample, the column extended from 18.825 m OD (sample 1) to 18.385 m OD (sample 12). Orientation was by magnetic compass.

After initial tests for viability, which showed that the samples retained an appreciable magnetic remanence, they were stored in a zero magnetic field for eight months, a gentle treatment often more appropriate for removing viscous magnetic components from sediments than the use of alternating field. At the end of this period, the samples were measured. On the basis of tests on three pilot samples, which showed the magnetisation to be reasonably stable, measurements were also made after demagnetisation to 5.0 and 7.5 mT; these, however, only increased the scatter of results, and the analysis was based on the measurements after storage.

Samples 1 and 2 were found to be unstable, and probably disturbed because of their closeness to the surface, and were therefore discarded. Sample 8 was also unstable. Samples 9–11 could not be taken because of nodules and hard material in the matrix, and sample 12 was accepted with caution because of its consequent isolation from the main group. The results from the remaining samples, 3–7, from 18.745 m to 18.545 m OD, and 12, at 18.385 m, are shown in Table 7.

Table 7 Area 3, results of archaeomagnetic dating of the calcareous marls

Sample	*Dec.*	*Inc.*	*Intensity (mA/m)*
3	2.73°W	68.37°	31.15
4	5.81°E	67.06°	20.41
5	6.56°W	67.85°	16.04
6	0.77°E	67.60°	12.84
7	3.46°E	67.94°	13.86
12	5.36°E	72.32°	16.30

The most notable aspect of samples 3–7 is the stability of the inclination throughout the time of deposition. Although it is not known how fast the sediment was deposited, the calibration curve shows that the inclination was oscillating so wildly during most of the last 10,000 years that this would have been likely to show even over a short period. The only lengthy stable period in the reference curve also coincides with suitable values of both inclination and declination which spans approximately 3250–2650 cal BC. This is the most likely postglacial period within which at least the stable part of this deposit was laid down, unless deposition occurred in some unknown similar conditions earlier than the commencement of the calibration curve at about 8050 cal BC. In view of the radiocarbon evidence for the underlying soil (about 10,850 cal BC), and the environmental evidence (e.g. snails), an earlier date, before the calibration curve, is more likely.

The intensity values are also worthy of comment. Although they are very approximate and lower than the true values because of the uncertain volume of each sample, they do exhibit a tendency to increase with time, which may reflect increasing run-off or magnetic enhancement of the soil, or both, due the effects of human activity.

The Environment

The sequence of deposits in Area 3 provided an opportunity not only to examine the lateglacial interstadial deposits spatially but also to attempt to determine the conditions under which they were formed. Their calcareous nature provided suitable conditions for the preservation of molluscs and also for degraded pollen in the humic horizon. Most significant, however, was the detail provided by the soil micromorphological examination of the Allerød buried soil.

Soil Micromorphology of the Late Glacial Soil and Marls, by Richard I. Macphail

The humic buried soil (30376) was sampled for soil micromorphological analysis in order to characterise this humic layer, to elucidate whether it was a peat or soil horizon, and to provide information about the local environments in which it formed and was buried. One thin section was taken, the analysis of which has generated as many questions as answers.

Methods and samples

Soils and sediments were examined and described in the field (Hodgson 1976). Field descriptions of the humic buried soil are presented in Table 8 with other soil micromorphological attributes. An undisturbed monolith (sample 39071) (780–860 mm) was taken across the boundary of horizons C' (chalky marl/fine gravels, 30374) and bA'hg (humic buried soil, 30376) for soil micromorphological study.

The sample was air-dried, impregnated with crystic resin under vacuum at the Institute of Archaeology, London (Murphy 1986), and manufactured into a thin section at the Institut National Agronomique, Paris-Grignon (Guilloré 1985). The thin section was described according to Bullock *et al.* (1985) and interpreted using the guidelines of Courty *et al.* (1989). It was viewed under plane polarised light, cross polarised light and oblique incident light, the last of which is useful for identifying burnt materials. Blue light illumination was used to identify autofluorescent materials such as 'fresh' roots, bone and phosphate-rich coprolitic material (Courty *et al.* 1989).

In addition, three complementary bulk samples from contexts 30376 and 30374 (Macphail soil layers 2, 3 and 4) were analysed for pH, loss on ignition (at 550°C), carbonate (at 1100°C), and grain size (Avery and Bascombe 1974) (Table 9), although as noted in the field and the thin section, there had been much mixing of soil horizons. Samples were also passed through the Malvern Particle Size Analyser (laser) using the 63 μm and 300 μm lenses.

Results

The soil profile and soil micromorphological descriptions are summarised in Table 8 with the full soil micromorphological description of sample 39071 held in archive.

The marl (C' horizon): layer 4, context 30374

The base of the marl (Table 8, context 30374) is massive with evidence of microlaminae and micro-rilling. It contains mollusc shell and a very few sand-sized flints. In the upper part of the slide, fine channel infills of humic soil derive from post-depositional burrowing and fine rooting. The last is also recorded by calcite root pseudomorphs. Lower down, other humic and non-calcareous material in the marls are due to mixing and may, for example, contain mammilated excrement of earthworms. The marl soil as a whole (Table 8) can be classed as a gleyic-calcaric alluvial brown soil (Avery 1990).

Boundary of the marl and humic buried soil: layers 3/4, contexts 30376/30374)

The junction of these two layers is irregular with, as stated above, humic soil being brought up into the marl, and the marl being mixed down into the humic buried soil. Tongues of mixed material, some 15–20 mm wide, are too broad to have resulted from earthworm action alone and, in fact, have themselves been burrowed by earthworms. At the base of one mixing tongue, humic and calcareous material form void coatings and intercalatory micropans up to 200 m in thickness.

Humic buried soil (bA'hg horizon): layer 3, base of context 30376

This soil is extremely heterogeneous and complex. It contains a number of soil elements that, because they are fragmented, cannot be regarded as totally *in situ*. The dominant soil is highly humic, charcoal-rich and contains pellety fine organic matter and some raw humus fragments. It has a silty clay loam mineral component (Table 9, 30376, bA'g), and dusty textural features which are atypical for such Ah horizon material. Also present are soil fragments of generally humus-poor silty clay loam material that can have thin dusty clay void coatings. The last major soil component is calcareous (chalky) soil material (Table 9, layer 3) containing silt and fine-sand-size quartz. Finally, there is much calcareous material that has been mixed into the humic horizon, but which is considered to be a post-depositional phenomenon (see below).

A number of other components are present, including charcoal, blackened or rubified burned humic soil and plant fragments. Blackened, and perhaps burned, as well as unburnt mollusc shells occur. Strictly associated with the humic soil are several very fine bone and teeth fragments. Several were spotted using blue light illumination. This technique was also used to find small fragments of amorphous, isotropic but autofluorescent material. One example mixed upwards into the marl contains a fragment of tooth. Some of this material had been stained by amorphous organic matter, whereas other material appears to have been burned. This soil should be regarded as a pale brown humic ranker (Avery 1990) rather than as a peaty deposit at this location.

Interpretation and discussion

Parent material and pedogenesis

The soil micromorphology shows that the bA'hg horizon is a very complex and heterogeneous soil. It can be described as a palimpsest, and a number of mechanisms relating to pedological, sedimentological and anthropogenic activities can be identified within a probably telescoped (truncated) and perhaps locally displaced sequence (Table 8). A major component is highly humic Ah horizon material containing many inclusions, including bone, teeth and blue light autofluorescent phosphatic material. Comparison with the detailed analyses of several possible mink scat remains at Boxgrove, West Sussex (Macphail 1999) suggests that this similar, but fragmented, material at Westhampnett may also be regarded as probably a small carnivore scat. The apparent preservation of small

Table 8 Area 3, summary of soils and soil micromorphology in test trench 30383

Layer	*Soil*	*Micromorphology*	*Interpretation*
	Ap 0–300mm: Modern ploughsoil.		
5/6/7 30001	Bw. 300–470 (600)mm: Dark yellowish-brown (10YR 4/4) massive to poorly developed medium prismatic chalky marl and fine gravel; few roots; few earthworm burrows;.clear, irregular boundary.		Holocene weathering of the marl.
4 30374	C'. 470 (600) – 830mm: White (10YR 8/2) friable, massive and bedded chalky marl and fine gravels; smooth, abrupt boundary.	760–830mm: massive with humic stained microlaminae in places: frequent fine channels and vughs; very few fine mollusc shell and sand-size flint; grey, highly birefringent and crystallitic micritic calcite matrix; occasional to many fine charcoal and organic fragments; common fine to very coarse root and burrow infills of calcareous humic soil; occasional secondary calcite void infills, calcite root pseudomorphs and lose fibrous calcite infills. Lateral and vertical boundary with bA'hg horizon is marked by very coarse mixing of marl and (now) calcitic humic silty clay loam, with one example featuring thick calcareous humic void coatings and micropans at its base; mixed soil is characterised by mammilated (earthworm) excrements and fine root channels. (Humic soil inclusions as below).	Lateglacial fluvial and lagoonal marl formation, with occasional plants. The lowermost part was possibly affected by animal trampling which was followed by earthworm working, the last presumably during periods of low water tables.
3 30376	bA'hg. 830–960 (990)mm: Black (10YR 2/1) to very dark greyish-brown (10YR 3/2) humic clay; moderately well-developed medium blocky structures; extremely stony with large flints; common fine pores; few probable fine charcoal; clear irregular boundary.	830–860mm: Massive with fine channels and vughs: extremely heterogeneous with mixed fragments of major soil horizon types i) common highly humic silty clay loam (Ah horizon), ii) frequent non-humic very dominant silt and very fine sand–size quartz, with mica and little clay (depleted Eb brickearth horizon), iii) few calcareous (chalky) soil containing common silt, and iv) common calcitic humic Ah soil (cf. i); other inclusions are few sand–size quartz, flint and mollusc shell; rare transformed (burned?) shell; rubified (burned) humic soil and rareblue light fluorescent probable scat (very fine fragments of bone, teeth and amorphous coprolite), an example containing a tooth inclusion. Abundant fine to very fine charcoal throughout the humic soil (i and iv). Not present in (ii) and (iii). A pellety organic fabric is present alongside raw humus fragments. Eb (ii) contains examples of dusty clay coatings, which are also present in the Ah horizon fragments; calcitic humic coatings are abundant below micropan feature (see above); some earthworm burrowed areas and other post–depositional root holes may be partially infilled by washed marl or fibrous calcite. Mammilated excremental fabrics and occasional biogenic earthworm/slug calcite present.	Shallow humic ranker formation on brickearth/loess over chalky solifluction deposits occurred during the Allerød (Allen, this volume).The soil records a history of small carnivore activity, burning and possible minor trampling. Later, extensive physical disruption (trampling/frost) fragmented and displaced the several thin horizons present. A local increase in site wetness led to marl formation (see above), the more calcareous conditions encouraging earthworm activity to work the soil during times of low water table.

Table 8 (cont'd)

Layer	*Soil*	*Micromorphology*	*Interpretation*
2 30376	bA'g. 960(990)–1000mm: Yellowish-brown (10YR 5/4) clay; medium to coarse blocky; extremely stony with large flints, some coated with red clay; clear, irregular boundary.		
1/2 30377	bC'g. 1000–1500+ mm: Very coarsely mixed gravel, small stones, large flints, sometimes in chalky matrix.		

carnivore scat in local wet conditions at Westhampnett may not be purely coincidental; at Boxgrove, scat is also associated with riverine and ponded landscapes.

The humic soil (Table 8 fabric i) has both mor and moder-humus components (Babel 1975). When compared with other buried soils, it appears to have a fragmented pellety fabric which is more likely to have been worked by enchytraeids than mites, which are found, for example, on heathland soils (Wallwork 1976; Scaife and Macphail 1983). At the same time it appears to have been more biologically active than an example of mor humus formed under oak woodland at Hengistbury Head, Dorset (Macphail 1988; 1992). In this case the Westhampnett soil may be classed as a mull-like moder (Babel 1975).

As the mineral component of the humic soil at Westhampnett is silt-rich (Table 9, contexts 30376 RIM soil layers 2 and 3), the humic soil appears to have developed out of a mineral soil that also occurs in thin section as fragments (Table 8, fabric ii). The brickearth (fluvially redeposited loess) of the region is silty and is believed to contain a major loess component (Hodgson 1967; Avery 1990, 212–14). Here it is composed of fine to medium silt with a coarse tail (Table 8). It includes much less sand compared with some brickearths, found for example in London (30–40% sand; Macphail 1980), that have become mixed by fluvial activity. The Ah horizon may well have developed on a probably shallow brickearth soil comprised mainly of silt, over more clay-rich drift (Table 8, layer 2).

The brickearth soil is broadly represented by a highly humic Ah1 horizon fabric type (i) and a clay and organic matter-poor silty upper subsoil fabric type (ii). The last could be leached (iron and clay depleted) Eb horizon material. In addition, the few inclusions of chalky Bw-like material may derive from patches of chalky drift that have been worked upwards into the acidic topsoil (see Table 8; fabric types iii and iv). Grain size analysis of the base of context 30376 (RIM soil layer 2) suggests a much more clay-rich drift subsoil is present, as noted in the field (Tables 8–9, context 30376, bA'g – RIM soil layer 2).

The original soils were thus probably moderately acid rankers (cryptopodzolic ranker [Ah, A1, A1B horizons], Duchaufour 1982, 191–2), with a thick mor humus developed over a loessic substrate, the last becoming leached under a possible oak and pine woodland. The presence of a variety of molluscs and the apparent readiness of earthworms to invade this soil site (see below), all suggest that a mosaic of acid, base-rich and wet areas were present. Such a soil mosaic is indicative of short-lived pedogenesis, as long-term soil formation leads to an homogeneous topsoil (Duchaufour 1958; 1982). The kind of shallow acidic soil formation sampled indicates a rather short period of pedogenesis during the later transitional part of the Lateglacial Interstadial, loosely termed the Allerød. Soil formation appears to have occurred after the Late Glacial deposition of loess and brickearth on top of coarse drift deposited during the Devensian. Mollusc species and charcoal dates for the humic ranker indicate dates late in the Allerød Interstadial.

As the charcoal is from woody species presumably growing on this soil, it seems reasonable to suggest that this well-formed ranker required the whole of the interstadial to become so well developed. In comparison, in the Netherlands weakly developed podzols formed in cover sand (Lanting and Mook 1977). In western Europe generally, loess soils developed Bt horizons from mechanical clay translocation during the Bølling, whereas in the Allerød weakly hydromorphic to peaty soils formed because of a presumed association between pine woodland and snow accumulation (van Vliet-Lanoë *et al.* 1992). In the United Kingdom mainly calcareous palaeosols of this date have been studied, and these are on the chalk of the south-east (Preece 1992; 1994). The study of this *in situ* Allerød soil at Westhampnett does provide some opportunities for studying soil maturation, as previously only thin sections of colluvial humic rendzinas from Halling and Holborough in Kent have been investigated by the present author (Dr I. Cornwall thin-section collection, Institute of Archaeology: Macphail and Scaife 1987, fig. 2.4).

Table 9 Area 3, soil chemistry and grain size

Layer	*Context*	*pH*	*% Carbonate*	*% Loss on ignition*	*% Clay*	*% Silt*	*% Sand*	*% Gravel*	*Texture*
4	30374	8.2	37.5	2.6					
3	30376	8.2	14.1	4.4	29	60	12	20	silty clay loam
2	30376	7.9	8.1	6.5	41	57	2	5	silty clay

(Grain size samples were not pretreated by decalcification)

Malvern Particle Size Analyser:
Sample 3 – well sorted and medium silt with a coarse tail
Sample 4 – poorly sorted fine and medium silt with a coarse tail

Fires

The large amount of fine charcoal present, alongside burned soil and probable burned shell and bone, all suggest the original humic ranker was affected by fire. Note can be made of the large numbers of radiocarbon dates, with a range of 10,600–11,230 BP, gathered from the 'Usselo layer' in the Netherlands, which is rich in pine charcoal (Lanting and Mook 1977; R. Jacobi, pers. comm.). These are suggested to date to a phase in the Allerød when pine trees died off because of the increasing cold of the ensuing Younger Dryas. Such dates are clearly in accord with the dating at Westhampnett.

Trampling/snow melt/frost?

Both the humic soil and humus-poor silty clay loam upper subsoil (Eb horizon) also contain textural features such as dusty clay coatings. As these textural features are non-calcareous, it is likely that they are unrelated to soil processes contemporary with the marl (see below). Clay translocation in loess-like soils is common (Duchaufour 1982, 294). The question is: are these dusty coats related to mechanisms associated with fire, trampling, snow melt or frost? Ashes, for example, are suspected to aid fine clay illuviation (Slager and van der Wetering 1977; Courty and Fedoroff 1982). On the other hand, do more substantial mechanisms of disturbance, such as vegetation disturbance and/or trampling, need to be linked to episodes of fire (Courty *et al.* 1989, 129, fig. 7.5b) if these dusty textural features are to be fully accounted for? The mixing and textural features could probably indicate the deep effects of animal trampling, the hooves of herbivores easily producing such features as pans and thick void coatings (Beckman and Smith 1974; Courty *et al.* 1991). At Uxbridge, Middlesex, there is a fine charcoal component and apparent textural feature evidence suggesting Early Mesolithic trampling of the soil (Macphail 1991; Lewis *et al.* 1992). However, in contrast to the single struck flint at Westhampnett, Uxbridge boasts a concentrated scatter of artefacts. On the other hand, there may be a natural association of pine woodland, its underlying mor humus horizon and snow melt, that produced these textural features (Fedoroff *et al.* 1990; van Vliet-Lanoë *et al.* 1992). Still, possible human-induced burning and site disturbance at Westhampnett has to be considered, as it was at Uxbridge. As only one location was tested at Westhampnett, little more can be said, but one thing is certain – this shallow acidic humic ranker was apparently broken up and probably slightly displaced before marl formation. Again such disturbance could have a human, frost or animal trampling origin. There is no particular evidence, for either human activity or specific features of frost (e.g. van Vliet-Lanoë 1985).

Increasing site wetness and marl formation

The molluscs show that much wet ground was local to the site and a small increase in site wetness and lagoonal marl formation may readily have occurred from a small change in base level. The strong evidence of earthworm mixing of humic soil and calcareous marl shows two things. First, marl deposition changed the pH of the sampled site from an acid to an alkaline soil, thus encouraging earthworms into a previously acid environment. Second, site wetness and lagoonal flooding was at first intermittent and allowed terrestrial soil fauna to burrow soils during the earliest stages of marl formation.

Also during this period of early marl formation, coarse mixing of the humic soil and lower marl occurred. Sharp vertical junctions, marked at their base by calcareous micropans, indicate mixing of a wet soil/sediment, possibly by sharp-hoofed animals such as reindeer coming to drink. Earlier disturbance of this thin soil could also have been caused by such animals. It can be noted that typical rooting channels and earthworm fabrics post-date these coarse mixing phenomena. There is no reason to believe that earthworm activity burrowing the base of the marl with the disturbed humic rendzina cannot date to this Late Glacial, as mammilated earthworm fabrics are, for example, recorded in an interstadial level within the so-called full glacial deposits at Boxgrove (Unit 8, chalk pellet gravel; Macphail 1996, fig. 6). Also during this early period of marl formation, some humic soil was also eroded locally and deposited within the marl and, occasionally, as water tables fell, micro-cut and (humic) fill and micro-rilling features were formed.

This may support the view that the marl formed in a lagoon influenced by fluvial activity (Hodgson 1964). Later, probable permanent wetness led to marl formation dominating the upper 0.7 m of the overlying sequence. A continuing process has been the deposition of secondary calcium carbonate at depth.

Conclusions

During the late transitional part of the lateglacial interstadial a humic ranker formed in a pocket of loess. It developed a mor-like moder humus horizon and can be compared to immature soils in south-east England and western Europe that formed at this time. There is also tantalising soil evidence of small carnivores being active. The one thin section provides clear evidence of soils and vegetation being affected by burning, a common phenomenon at this time, but provides only equivocal information concerning human activity, snow melt and frost action during the formation of the humic buried soil. The soil was disturbed prior to the Late Glacial marl formation that affected the whole site (Area 3). A small rise in base level may have led to initial marl formation. Coarse soil mixing, possibly by animal trampling (possibly reindeer) and earthworm activity during periods of low water table, led to mixing of the buried soil and the earliest marl deposits. Lagoonal and occasional fluvial conditions ensued.

Pollen from the Allerød Buried Soil and Late Glacial Calcareous Marls, by Robert G. Scaife

A single spot sample was taken from the buried soil in trench 30383 adjacent to the area sampled for soil micromorphology, and a series of three spot samples was taken through the buried soil adjacent to the area sampled for snails. A soil monolith tin was taken through the calcareous marls at the point in geological test pit 2 where sampling was undertaken for archaeomagnetic dating, snails and ostracods. Spot samples were taken from the monolith in the laboratory for preliminary pollen analysis.

Because of the highly calcareous nature and low organic content of the sediments, relatively large spot samples were taken from the monolith. At the outset, it can be stated that pollen was largely absent or only present in very small numbers (Table 10). This is probably due to the highly calcareous character and possible oxidising environments of the contexts.

The organic buried soil of Late Devensian (Allerød) age contained only a small number of pollen grains and spores. Nevertheless this was the only sample with arboreal pollen, and the occurrence of pine is particularly noteworthy. Pollen was sparse in the compacted calcareous marl, the presence of *Taraxacum* (dandelion) type indicating differential preservation.

Table 10 Area 3, pollen from the Allerød buried soil and Late Glacial calcareous marls

	Allerød soil	*Calcareous marl*
Sample	*39070*	*39075*
Taxa		
Pinus	1	–
Quercus	2	–
Taraxacum type	7	12
Unident/degraded	3	–
Dryopteris type	8	2
Pteridium	5	1
Sphagnum	1	–
Fungal spores	+	–
Organic debris	+	–
Total	**27**	**15**

Conclusions

Pollen was not preserved in sufficient numbers to allow a full interpretation to be made from any of the samples. High alkalinity does not necessarily negate pollen preservation and there are now many data available from base-rich buried soils (e.g. Dimbleby and Evans 1974). Fluctuating groundwater table and/or lateral through flow of calcareous water has oxidised and destroyed the majority of the pollen grains, resulting in severe differential preservation in favour of those taxa with extremely robust exine walls (e.g. *Taraxacum* type and spores of ferns; *Dryopteris* type and *Pteridium*).

Lateglacial Interstadial and Early Postglacial Molluscs, by Michael J. Allen

The humic buried soil and calcareous marls revealed in the sections in geological test pit 2 and test trench 30383 were sampled to produce a detailed sequence of the local environmental history and to determine the chronoclimatic subdivisions to which the litho-stratigraphy and biostratigraphy belong (*cf.* Lowe and Gray 1980).

The sections revealed a series of deposits overlying the decalcified solifluction deposits (coombe deposits). The sampled sequence comprised a dark organic horizon (Allerød phase soil) sealed by up to 0.9 m of lateglacial fine-grained calcareous marls with lenses of fine calcareous gravel in which other localised bedding could be recognised. This facies was cut by a few shallow hollows and sealed by a postglacial 'alluvial soil' (Bw). The alluvial soil was cut by archaeological features of Bronze Age and Roman date which are dealt with elsewhere.

The zone II Allerød phase or lateglacial interstadial transitional soil

Details of the Allerød phase soil are given above (Macphail). A sequence of spot samples was taken through the buried soil in test pits 30352 and 30363 and this was augmented by a sample from the exposed section in test trench 30383 adjacent to the point sampled by Macphail for soil micromorphology (see above).

Although all three sequences were from the buried soil, there are slight but significant variations in the heights of the sampled points, the importance of which will become apparent later. Column 30352 is at 18.44 m OD, while column 30363 is 0.2 m higher at 18.64 m OD. Because of the humic but weakly calcareous nature of this soil, samples of either 2000 g or 10 litres were processed (Table 11) in an attempt to recover sufficient shells. Where large samples (10 litres) were obtained, care was taken not to sample other units or contaminate the samples. These samples were processed for charcoal and plant remains.

Calcareous marls

The Allerød phase buried soil was sealed by silty calcareous marls or muds containing a number of calcareous nodule concretions. This facies was inter-bedded with a series of loose fine calcareous gravels. This whole unit, mapped by Hodgson (1963; 1967), is thought to have been a lagoonal meltwater deposit.

Because of the significant local variation the marls were sampled at three points, two of which were within test pit 30371 (Table 12). The main sequence (column 39086) of eight contiguous samples was obtained through the fine-grained calcareous muds on the north face of geological test pit 2, adjacent to the sample columns for pollen, ostracods and archaeomagnetic dating. A spot sample of a discrete gravel lens was taken and is inserted into the appropriate stratigraphic position in the histogram (Fig. 20). This sequence is completed by a short column of three samples from calcareous gravels that stratigraphically overlie the muds to the west.

A second sequence of a further six contiguous samples (column 39062) was taken from the calcareous marls in the western face of geological test pit 2, where the basal marls were distinctly finer and contained no calcareous nodules.

The two sequences are illustrated as histograms of relative frequencies in Fig. 20. One local landscape zone with three sub-divisions can be recognised. In both sequences, sub-zone 2a can be seen at the base and equates with finer chalky muds without nodular inclusions. The mollusc subzone is most pronounced in sequence 39062 where the finer nodule-free basal marls were more distinct.

A composite sequence of these lenses can be compiled, comprising fine organic calcareous muds over the humic soil in which are successive units of calcareous marls with discrete gravel lenses, fine-bedded calcareous gravels and calcareous mud.

Lateglacial and early postglacial shallow features

A number of broad shallow scoops were cut into the top of the calcareous gravels and marls. These bowl-like features contained no artefacts and may be tree boles. Two of them were sampled (Fig. 20); a single spot sample was taken from 30312, and two contiguous samples from 30204.

The composite stratigraphic sequence is, therefore, as follows:

Alluvial soil (Bw)
Lateglacial and early postglacial 'hollows'
Calcareous mud
Fine calcareous gravels
Calcareous marls with discrete calcareous gravel lenses
Fine inorganic calcareous muds
'Allerød' phase soil
Periglacial involution
Decalcified solifluction deposits

Presentation of results

The assemblages are presented as histograms of absolute abundance in Figure 19 and as relative abundance in Figure 20, where the *Oxyloma*/*Succinea* group includes *O. pfeifferi*, *S. putris* and *S. oblonga*, and the Zonitids are only represented by *Aegopinella pura* and *Vitrea contracta* (and *A. nitidula* in the calcareous marls). The other catholic land species include *Cochlicopa lubrica*, *C. lubricella* and Limacidae. The nomenclature follows Kerney (1976). Although the Shannon species diversity indices were calculated for these assemblages (Table 12), they should be used with caution. Magurran (1988) states that this index not only assumes that the assemblage is sampled from an indefinitely large population, but that it represents a single population. As discussed below, this cannot be assumed for the assemblages from the buried soil, where assemblages from both wet and drier habitats may have been sampled. The results have been described in units, called local landscape zones, based on both the molluscan assemblages and the nature of the deposits in order to correlate major changes through time.

During the analysis of molluscs and plant remains it became apparent that there was limited evidence of intrusive material. This localised biotic mixing (probably by worms) is confirmed by soil micromorphological analysis (above).

Allerød phase soil

All the assemblages had relatively low numbers of shells, many of which were poorly preserved with weak shells. The two soil sequences produced different assemblages and have been ascribed to local landscape

Table 11 Area 3, molluscs from the Allerød buried soil

Testpit	*Periglacial*		*30352*				*30363*			
Local landscape zone			*1i*				*1ii*			*1*
Sample	*39108*	*39069*	*39056*	*39053*	*39121*	*39119*	*39118*	*39061*	*39060*	*39103*
Context		*30357*	*30354*	*30353*	*30368*	*30366*	*30365*	*30362**	*30361*	*30376*
Depth (cm)	*spot*				*@ 10*	*0–1*	*0–3*	*4–9*	*0–4*	*96–99*
Wt (g)/vol (litres)	*2500g*	*2000g*	*10 l*	*2000g*	*10 l*	*2000g*	*2000g*	*10 l*	*2000g*	*2000g*
MOLLUSCA										
Carychium minimum Müller	–	2	6	5	–	–	–	–	–	–
Carychium spp.	–	1	9	7	–	1	–	–	–	–
Succinea cf. *putris* (Linnaeus)	–	1	1	1	–	–	–	–	–	–
Succinea oblonga (Draparnaud)	–	–	–	–	–	–	2	–	–	–
Oxyloma pfeifferi (Rossmässler)	–	5	5	4	–	–	–	–	–	–
Oxyloma cf. *pfeifferi* (Rossmässler)	–	–	8	91	1	2	–	–	–	1
Cochlicopa lubrica (Müller)	–	–	–	–	1	–	1	4	–	–
Cochlicopa lubricella (Porro)	–	–	–	–	–	–	1	–	–	–
Cochlicopa spp.	–	–	3	8	–	–	1	–	1	1
Vertigo antivertigo (Draparnaud)	–	1	4	–	2	3	5	–	–	–
Vertigo pygmaea (Draparnaud)	–	–	–	–	–	–	–	2	1	–
Vertigo moulinsiana (Dupuy)	–	–	[4]+1	[3]	–	–	–	–	–	–
Vertigo genesii (Gredler)	–	3	4	10	–	–	–	–	–	3
Vertigo spp.	–	–	–	9	–	–	–	–	–	–
Pupilla muscorum (Linnaeus)	–	1	5	5	4	3	8	17	4	–
Vallonia costata (Müller)	–	1	–	–	–	–	3	–	–	–
Vallonia pulchella (Müller)	–	5	60	68	5	3	7	34	–	5
Vallonia excentrica Sterki	–	–	–	–	–	–	–	–	4	–
Punctum pygmaeum (Draparnaud)	–	1	11	4	1	–	–	–	–	–
Vitrina pellucida (Müller)	–	2	1	–	–	–	–	–	–	–
Vitrea contracta (Westerlund)	–	–	–	–	–	–	–	–	–	1
Nesovitrea hammonis (Ström)	–	1	6	3	–	–	–	–	–	–
Limacidae	1	2	6	7	5	4	15	15	1	3
Euconulus fulvus (Müller)	–	–	1	–	–	–	1	–	–	–
Cecilioides acicula (Müller)	–	59	82	34	19	54	123	272	31	63
Clausilia bidentata (Ström)	–	–	–	–	–	–	–	[1]	–	–
Helicella itala (Linnaeus)	–	1	3	–	–	4	–	10	3	–
cf. *Trochoidea geyeri* (Sóos)	–	–	6	–	–	–	–	–	–	–
Trichia hispida (Linnaeus)	–	2	7	–	11	3	11	22	3	4
Arianta arbustorum (Linnaeus)	–	–	+	–	–	–	–	–	–	–
Helicellinae	–	–	+	–	1	–	–	–	+	–
Lymnaea truncatula (Müller)	–	3	9	33	–	–	–	–	–	–
Lymnaea cf. *truncatula* (Müller)	–	–	–	–	–	–	–	–	–	3
Anisus leucostoma (Millet)	–	43	407	586	3	–	1	3	–	5
Sphaerium lacustre (Müller)	–	2	–	1	–	–	–	–	–	–
Pisidium cf. *casertanum* (Poli)	–	–	4	–	–	–	–	–	–	–
Pisidium nitidum (Jenyns)	–	1	4	–	–	–	–	–	–	2
Pisidium spp.	–	+	–	–	–	–	–	–	–	–
Taxa	1	18	23	18	9	9	12	9	7	10
Shannon Index	–	1.94	1.41	1.26	1.98	2.10	2.18	1.81	1.79	2.16
Total	1	78	575	845	34	23	56	108	17	28

[ ] = possible intrusive and modern shells with periostrocum
* = not represented in described section

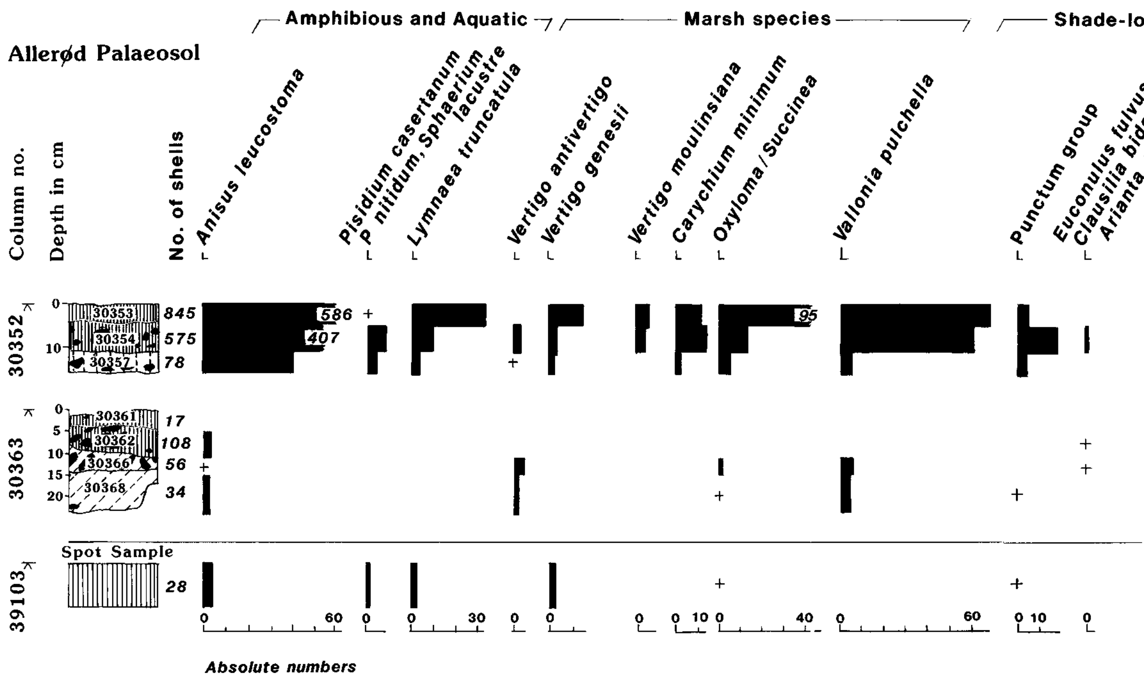


Figure 19 (above and facing) Area 3: mollusc histogram – Allerød phase soil

zones 1i and 1ii; this differentiation indicates spatial rather than temporal variation. The buried soil was formed in decalcified solifluction or coombe deposits (30377) which display periglacial features (30388), and a sample from which produced a single *Limax* plate only (Table 11).

Test pit 30363 (local landscape zone 1ii)

Five spot samples were taken through the soil, which was 0.22 m deep, and four samples are illustrated in Figure 19. The sequence is described from its surface as:

Depth	*Context*	*Description*
0.0–0.04 m	30361	Very dark greyish-brown (10YR 3/2) to black (10YR 2/1) slightly compacted humic clay with moderate medium blocky structure, common fine macropores and few very fine charcoal fragments.
0.04–0.09 m	30362	Very dark greyish-brown (10YR 3/2) to black (10YR 2/1) with common coarse flints.
0.09–0.15 m	30366	Grey (10YR 5/1) to dark greyish brown (10YR 4/2) humic silty clay loam with common flint pebbles and pieces.
0.15–0.22 m	30368	Yellowish-brown (10YR 5/4) silty clay with few chalk and flint pieces.

Shell numbers are low in all samples (Table 11), the only sample with over 100 shells being from a sample of 10 litres. The basal sample (0.15–0.22 m) produced only 34 shells from 10 litres (i.e. *c.* 15 kg). The low shell numbers do not allow detailed interpretation, but do show a slight change in the assemblage composition at 0.09 m. All have been designated as local landscape zone 1ii.

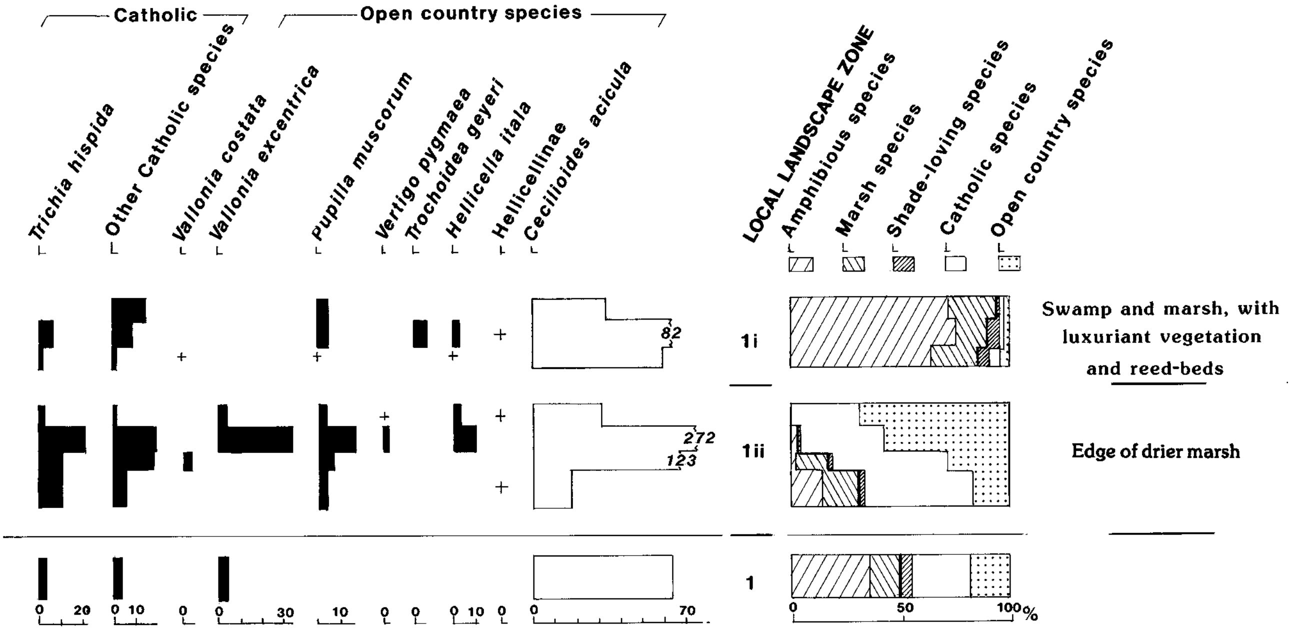
Aquatic, amphibious and marsh species: no *Pisidium* or *Lymnaea* occur in these assemblages. The *Oxyloma/Succinea* group includes *Succinea* cf. *oblonga* which prefers drier habitats than *O. pfeifferi.* Also present is *V. antivertigo*, which will live in moist woodland as well as marsh. *Carychium minimum* is absent, but *Vallonia pulchella* is dominant.

Terrestrial species: a small and restricted assemblage is dominated by open county species including *Pupilla* and *Helicella itala*.

Test pit 30352 (local landscape zone 1i)

Three samples were taken through the soil sequence in test pit 30352, where the soil was only 0.16 m deep and is described as follows:

Depth	*Context*	*Description*
0.0–0.04 m	30353	Very dark greyish-brown (10YR 3/2) to very dark brown (10YR 2/2) humic clay with strong medium blocky structure, common fine macropores, silt with rare chalk and flint fragments, occasional localised mottles of iron staining, rare very small charcoal fragments.
0.04–0.11 m	30354	Very dark greyish brown (10YR 3/2) to black (10YR 2/1) with common–coarse flints.



0.11–0.16 m 30357 Grey (10YR 5/1) to dark grey brown (10YR 4/1), but variable in colour, silty clay loam with common flint pebbles, nodules and angular flints.

Shell numbers increased dramatically through the soil profile with only 34 per/kg at the base, but 423 per/kg at the top. High shell numbers in the centre (0.04–0.11 m) are largely a product of the larger sample here (10 litres). Although the histogram shows an increase in shell numbers (Fig. 19), the species composition and relative proportions change little, and are therefore considered as a single local landscape zone (zone 1i).

Aquatic, amphibious and marsh species: although few true aquatics were recovered, all the assemblages are dominated by the super-abundance (*cf.* Thomas 1985) of *Anisus leucostoma*, which occurs with *Lymnaea truncatula*, both of which are considered amphibious (Robinson 1988a). The true aquatics (planorbids and *Sphaerium*) occur. Apart from these, the most common group are the marsh species (*sensu* Evans 1972, 199–201; Robinson 1988a). Here the group comprises marsh-loving vertiginids (*V. genesii*, *V. antivertigo*; also *V. moulinsiana* were present, but seven of the eight specimens were in a much better state of preservation than the rest of the assemblage and may be intrusive), *Oxyloma/Succinea* and *Vallonia pulchella*. The terrestrial species occur, but represent less than 30% of the assemblages.

The planorbids include *P. casertanum* and *P. nitidum*, both of which are very successful species and widely distributed. *P. obtusale* is more specific, preferring marshes, swamps and ponds, similar to the habitats preferred by *Sphaerium lacustre*, which is often found in species-poor assemblages. The vertiginids are also typical of marsh and sedges. The rare species *V. genesii* (kindly identified by R. Preece) is noteworthy for two reasons. It is a marsh species commonly recorded in calcareous seepages (Kerney and Cameron 1979) in Scandinavia and elsewhere. It is also common in the Late Glacial and persists until the early Post Glacial, and has been recovered in low numbers from other Allerød phase soils, for instance at Brook (Kerney *et al.* 1964) and Holywell Coombe (Kerney *et al.* 1980), both in Kent. It is, however, not common in these soils since they usually reflect a drying environment.

Terrestrial species: this group of species is limited, but includes a mixed assemblage of species of both shade and open environments. Numbers of these groups are, however, low but complement the obligatory swamp species. The presence of the extinct lateglacial fossil *Trochoidea geyeri* is significant. It is virtually extinct from postglacial Britain and today has a basically Central European distribution (Kerney and Cameron 1979, 183). There are a number of Pleistocene records (Sparks 1953; Evans 1972) including lateglacial assemblages on the North Downs (Kerney 1963), Dorset Downs (Allen 1999; Bell and Allen unpublished; Bell *et al.* forthcoming) and Isle of Wight (Preece 1977; Preece *et al.* 1995). Although *Trochoidea* may be contemporary with the assemblage we cannot discount the possibility that it may have been reworked from the underlying decalcified periglacial solifluction deposits (coombe deposits).

Spot sample 39103

A bulk spot sample was taken from the buried soil adjacent to the point described, and sampled for soil micromorphology by Richard Macphail. At this point the soil can be summarised as:

Context	Description
30376	Very dark greyish brown (10YR 3/2) to black (10YR 2/1) humic clay with moderate medium blocky structured humic ranker, common fine macropores, common medium flints and few very fine charcoal fragments with yellowish brown (10YR 5/4) blocky clay with red clay coatings at base, over
30377	Very coarse mixed brecciated flint gravels with some medium chalk pieces in a grey to brown silty matrix – decalcified solifluction deposit.

The assemblage was depauperate (Table 11). It contains elements of both zone 1i and 1ii assemblages described above. The height of this sample at *c.* 18.80 m OD may be significant and is reflected in the mixed nature of the assemblage.

Interpretation

The molluscan assemblages from the three sampled points show spatial but not major temporal variation. Nevertheless, they have been ascribed to local landscape zone 1 where 1i and 1ii are lateral/horizontal environmental variations.

Local landscape zone 1ii

The assemblages from test pit 30363 indicate largely dry open ground (*Trichia hispida* and *Pupilla*) but with some localised damp and marshy areas. The terrestrial assemblage may be one of dry cold (Tundra); the presence of *Clausilia bidentata* suggests a warmer postglacial environment, but in view of the evidence from soil micromorphology for mixing, and examination of the single apex which showed it to be only lightly worn, it can be considered as intrusive. If the shells are stratified within this short buried soil sequence (*cf.* Carter 1990) then this evidence indicates localised drying of the ranker soil and marsh. Nevertheless, the mosaic of land and damp environments is reflected in the relatively high species diversity indices of 1.98 to 2.16.

Local landscape zone 1i

The sequence from test pit 30352, however, seems to represent a mixture of dry ground (*Pupilla, H. itala, Vallonia* spp. and *Vertigo pygmaea*), swampy ground and marsh (*V. antivertigo, V. genesii*). The *Pisidium*, planorbids and *Lymnaea* indicate swampy ground, with a rich obligatory swamp species (vertiginids) fauna. This group of freshwater, swamp and marsh species includes those that can live in virtually terrestrial conditions (*Carychium minimum, Oxyloma/Succinea, Vertigo antivertigo*), and some of the freshwater 'slum' species that can tolerate drying out and thus are classified as amphibious after Robinson (1988a). These include *Lymnaea truncatula, Anisus leucostoma* and *Pisidium casertanum*, which contrast with species such as *Pisidium nitidum* and *Sphaerium lacustre* that need permanent water. The dry ground species suggest a vegetation cover with some mesic components (*Vitrea, Nesovitrea* and *Punctum*) but with also more open ground, perhaps at the edge of locally swampy marshy areas, with luxuriant vegetation, and shallow slow-flowing water, but with a rich local reed-swamp vegetation.

At the top of this sequence (0.00–0.04 m) some of the terrestrial species (*Euconulus fulvus* and *Trichia*) are present and this may indicate drier, warmer, conditions. This localised change is also seen in the drop of the species diversity indices from 1.94 to 1.26.

The assemblages are not especially restricted, but diversity indices are high (Table 11) because of the combination of wet and terrestrial habitats. The proportion of dry open-ground species, although present, is never high and there is a high proportion of freshwater and swamp snails. This makes comparison with the zonation scheme at Holywell Coombe (Kerney 1977; Kerney *et al.* 1980) difficult. The differences between Westhampnett and the Kentish sequences are largely ones of local setting, rather than regional variation. The freshwater and semi-aquatic snails are species typical of small pools and swamps (the 'slum' group defined by Sparks 1961), and these are present at Holywell Coombe, but in lower numbers. This problem of comparability was also encountered by Preece and Robinson in tufas in the Ancholme Valley, Lincolnshire (1984). They concluded that two main lateglacial terrestrial facies could be recognised, one of which was a marsh fauna with *Vertigo genesii*, as at Brook, Pit A (Kerney *et al.* 1964), and which is comparable with Westhampnett. Therefore, although *Abida* was not recovered from these assemblages, probably because of its specifically drier requirements, they can be equated with Kerney's mollusc zone z (Kerney 1977). The presence of the rare vertiginid *Vertigo genesii* and other species closely allies these assemblages to the wetter lateglacial sequences at Brook (Pit A) and Holywell Coombe. In both instances the Allerød buried soils produced comparable assemblages.

Calcareous marls

Considerable variation in shell numbers was observed over a short distance. Shell numbers from column 39062 were consistently above 100 and averaged over 160 per sample. In contrast, less than 2 m away, column 39086, produced an average of fewer than 60 per sample and calcareous gravels produced few shells. The calcareous marls, as described on p. 49, are a single facies and represent one landscape zone, but three local sub-divisions were recognised which are reflected in the stratigraphy.

Local landscape zone 2a

Fine calcareous muds. In column 39062 (0.4–0.6 m) and column 39086 (0.98–1.05 m) the assemblages are dominated by *Anisus leucostoma*. Other species occur in

Column 39062

Depth	*Context*	*Description*
0.0–0.6m	30010	White (10YR 8/2) to pale yellow (2.5YR 7/4) massive silty clay bedded calcareous marl with bands of coarse fine rounded very small and small chalk gravel and rare calcareous concretions.

Column 39086

Depth	*Context*	*Description*
0.32–0.4 m	30009	Yellowish brown (10YR 5/4) to very pale brown (10YR 7/4) silty loam, weak blocky structure, with common fine chalk gravel. Boundary clear but irregular due to biotic (root and worm) activity. Pre-Bronze Age 'alluvial soil'.
0.4–0.91 m	30010	White (10YR 8/2) to pale yellow (2.5YR 7/4) silty clay bedded calcareous marl with bands of bedded coarse rounded very small and small chalk gravel and rare calcareous concretions.
0.91–0.98 m	30011	Light grey (10YR 7/2) silty clay with common flints and many small and medium chalk pieces.

Column 39062

Depth	*Context*	*Description*
0.0–0.6 m	30010	White (10YR 8/2) to pale yellow (2.5YR 7/4) silty clay bedded calcareous marl with bands of coarse rounded very small and small chalk gravel and rare calcareous concretions, becoming greyer towards base where no concretions were obvious.

Column 39104

Depth	*Context*	*Description*
0.4–0.7 m	30374	Pale yellow (2.5YR 8/4) bedded loose chalk gravels of layered very small to medium rounded chalk pieces with some silty marl matrix.

low frequencies (Table 12; Fig. 20) and include *Lymnaea, Trichia hispida*, and *Abida secale*. This assemblage is a typical restricted periglacial tundra assemblage of damp wet valley bottoms of the Loch Lomond re-advance (i.e. pollen zone III), but does include a single specimen of *Pomatias elegans* which did not become established in Britain until 6000 BC (7500 BP) (Kerney *et al.* 1980). It is possible that this species may be intrusive through earthworm hollows but this is unlikely as it is at a depth of over 0.5 m and is not present in the overlying marls. *P. elegans* does, however, occur in the shallow features above the marls and in the Bronze Age penannular enclosure 30369.

Local landscape zone 2b

This occurs in column 39062 (0–0.4 m) and column 39086 (0.5–0.98 m). It consistently comprises calcareous marls with occasional calcareous nodules, and discrete fine calcareous gravel lenses, and is overlain by fine calcareous gravels. Aquatic species (*Pisidium casertanum, P. obtusale* and *Sphaerium lacustre*) are present with *Succinea* and *Oxyloma* (Fig. 20). The gravel deposits, stratigraphically over the marls, contained few shells. The assemblages are dominated by *Trichia hispida* with *Vallonia pulchella.* The other open country species include *Pupilla muscorum* and *Abida secale*, and the shade-loving species include *Nesovitrea, Punctum, Vitrina* and *Euconulus fulvus*.

Interpretation

The calcareous muds, marls and fine gravel deposits indicate lacustrine and fluvial deposition (Hodgson 1963; 1967, 116) and the mollusc assemblages are consistent with this. Initial alluviation consisted of stone-free fine-grained calcareous mud, and the molluscs (local landscape zone 2a) indicate a body of shallow, slow-moving water (*Anisus leucostoma, Lymnaea truncatula* and *Oxyloma/Succinea*), but with areas of localised, or seasonal, drier land (*Vallonia costata, Abida secale* and *Trichia hispida*). This may suggest a mixture of local temporary, or seasonal, changing watercourses. The deposits and molluscs represent a relatively large body of slow-flowing water, probably not very deep, but this may have been largely responsible for the truncation and erosion of the buried soil.

At the sampled points, the fine-grained inclusion-free marl gave way to calcareous marls with occasional calcareous nodules and localised calcareous gravel lenses, representing channels of water (local landscape zone 2b) within the broader lacustrine environment, but containing true aquatics (*Pisidium obtusale* and *Sphaerium lacustre*). The terrestrial component may be allochthonous and washed in, but its consistency and the nature of the preserved shells indicate that they are largely autochthonous. These deposits and assemblages suggest a shallow lagoon with localised marsh, possibly around the edges. It is obvious, however, that this environment was not conducive to shell life, or preservation. Many shells may have floated down stream, but the environment may also indicate that the lagoon was subject to occasional, possibly seasonal, drying.

The calcareous gravels indicate greater discharges of water with higher energy, probably within a wide braided, and possibly seasonally fluctuating, alluvial system. Molluscs and deposits of the fine gravel lenses indicate small channels and the shallow nature of water,

Table 12 Area 3, molluscs from the lateglacial calcareous lacustrine marls and early postglacial features

	Calcareous marls																		Postglacial hollows		
Column	*39062*						*39086*									*39104*		*39086*	*30204*		*30312*
Local landscape zone	*2a*		*2b*				*2a*		*2b*					*2b/3*		*2*		*3*	*2b*		*4*
Sample	*39063*	*39064*	*39065*	*39066*	*39067*	*39068*	*39077*	*39078*	*39079*	*39080*	*39085*	*39081*	*39082*	*39083*	*39105*	*39106*	*39107*	*39084*	*39115*	*39116*	*39052*
Context	*30010*	*30010*	*30010*	*30010*	*30010*	*30010*	*30011*	*30011*	*30010*	*30010*	*30010*	*30010*	*30010*	*30010/9*	*30374*	*30374*	*30374*	*30009*	*30205*	*30146*	*30311*
Depth (cm) from datum	*50–60*	*40–50*	*30–40*	*20–30*	*10–20*	*0–10*	*98–105*	*91–98*	*80–91*	*70–80*	*spot*	*60–70*	*50–60*	*40–50*	*60–70*	*50–60*	*40–50*	*32–40*	*spot*	*spot*	*spot*
Wt (g)	*2000*	*2000*	*2000*	*1600*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*750*
MOLLUSCA																					
Pomatias elegans (Müller)	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4
Carychium minimum Müller–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4	–
Carychium tridentatum (Risso)	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	10	–
Carychium spp.	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5	1
Succinea putris (Linnaeus)	2	–	–	–	–	4	–	1	1	–	–	–	–	–	–	–	–	–	–	3	–
Succinea cf. *oblonga* (Draparnaud)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–
Oxyloma pfeifferi (Rossmässler)	7	2	3	6	10	1	2	4	3	2	–	–	–	–	–	–	–	–	4	–	–
Oxyloma cf. *pfeifferi* (Rossmässler)	1	–	–	–	2	–	–	–	–	–	–	3	3	1	–	–	–	–	–	–	–
Oxyloma/Succinea spp.	–	–	–	–	–	–	–	–	–	–	3	1	–	–	–	–	–	–	–	13	–
Cochlicopa lubrica Müller)	–	1	–	1	2	–	–	–	–	–	1	–	–	2	–	–	–	2	–	1	1
Cochlicopa lubricella (Porro)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Cochlicopa spp.	–	–	1	3	4	2	+	–	–	–	2	3	–	2	–	1	1	4	1	12	5
Vertigo antivertigo (Draparnaud)	–	1	–	–	1		–	1	–	–	–	–	–	–	–	–	–	–	–	–	–
Vertigo pygmaea (Draparnaud)	–	–	–	–	2	2	–	2	1	–	1	–	–	[2]	–	–	–	1	2	1	–
Vertigo moulinsiana (Dupuy)–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Vertigo genesii (Gredler)	1	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–
Vertigo spp.	–	–	1	1	–	–	–	1	–	–	–	–	1	3	–	–	–	–	–	–	2
Abida secale (Draparnaud)	1	–	1	–	13	4	1	3	3	5	5	5	4	7	1	–	1	5	–	–	1
Pupilla muscorum (Linnaeus)	–	1	9	43	37	19	2	7	11	3	9	11	14	20	4	+	3	17	4	2	7
Vallonia costata (Müller)	–	–	–	–	29	–	–	–	–	–	–	–	12	1	–	–	1	2	2+[1]	10	8
Vallonia pulchella (Müller)	5	2	11	7	28	39	5	20	12	10	18	14	17	40	3	2	–	53	–	–	–
Vallonia excentrica Sterki	–	–	–	–	–	–		–	–	–	–	–	–	–		–	–	–	3	14	16
Acanthinula aculeata (Müller)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Ena obscura (Müller)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Punctum pygmaeum (Draparnaud)	–	1	1	3	12	5	1	1	3	3	4	8	7	12	1	–	–	3	1	2	–
Discus rotundatus (Müller)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
Vitrina pellucida (Müller)	–	–	–	–	2	–	–	–	1	–	–	2	1	–	–	–	–	–	–	–	–
Vitrea contracta (Westerlund)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–
Nesovitrea hammonis (Ström)	–	–	1	–	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	6	–
Aegopinella pura (Alder)	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	2	1

Table 12 (*cont'd*)

	Calcareous marls																		*Postglacial hollows*		
Column	*39062*						*39086*								*39104*			*39086*	*30204*		*30312*
Local landscape zone	*2a*		*2b*				*2a*		*2b*					*2b/3*	*2*			*3*	*2b*		*4*
Sample	*39063*	*39064*	*39065*	*39066*	*39067*	*39068*	*39077*	*39078*	*39079*	*39080*	*39085*	*39081*	*39082*	*39083*	*39105*	*39106*	*39107*	*39084*	*39115*	*39116*	*39052*
Context	*30010*	*30010*	*30010*	*30010*	*30010*	*30010*	*30011*	*30011*	*30010*	*30010*	*30010*	*30010*	*30010*	*30010/9*	*30374*	*30374*	*30374*	*30009*	*30205*	*30146*	*30311*
Depth (cm) from datum	*50–60*	*40–50*	*30–40*	*20–30*	*10–20*	*0–10*	*98–105*	*91–98*	*80–91*	*70–80*	*spot*	*60–70*	*50–60*	*40–50*	*60–70*	*50–60*	*40–50*	*32–40*	*spot*	*spot*	*spot*
Wt (g)	*2000*	*2000*	*2000*	*1600*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*2000*	*750*
MOLLUSCA																					
Aegopinella nitidula (Draparnaud)	–	–	–	–	2	–	1	–	–	–	–	1	–	–	–	–	–	–	3	25	1
Limacidae –	–	–	1	3	6	–	2	–	2	–	1	4	11	–	1	–	9	6	14	17	
Euconulus fulvus (Müller)	–	1	–	–	–	–	1	2	–	–	–	–	2	–	–	–	–	–	–	–	–
Cecilioides acicula (Müller)	9	11	–	8	35	59	38	45	11	7	10	42	71	84	–	1	3	102	5	31	43
Clausilia bidentata (Ström) –	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	2	1	
Helicella itala (Linnaeus)	–	–	–	–	[1]	–	–	–	–	1	–	–	–	–	–	–	–	5	–	–	1
Trichia striolata (C. Pfeiffer) –		2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Trichia hispida (Linnaeus)	–	–	64	131	55	43	6	16	16	15	6	12	32	49	1	–	–	20	9	11	24
Arianta arbustorum (Linnaeus)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	+	–	–	–	–	–	–
Cepaea spp.	–	–	–	–	–	–	–	–	–	–	–	–	+	–	–	–	–	–	–	–	–
Cepaea/Arianta spp.	+	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	2	2	1
Lymnaea runcatula (Müller)	5	2	1	–	13	2	2	3	3	2	2	–	1	–	–	1	1	–	–	3	–
Anisus leucostoma (Millet)	105	34	35	33	40	8	31	5	10	9	1	11	2	1	–	3	–	–	11	223	1
Sphaerium lacustre (Müller)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	8	–
Pisidium cf. *casertanum* (Poli)	+	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Pisidium cf. *obtusale* (Lamark)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–
Pisidium spp.	–	1	–	–	+	–	–	–	+	1	–	–	–	–	–	–	–	–	–	–	–
Taxa	8	11	13	10	15	14	11	14	11	11	10	14	14	12	6	5	5	10	14	23	17
Shannon Index	0.75	1.26	1.53	1.34	2.33	2.04	1.53	2.32	2.14	2.17	2.17	2.38	2.18	1.89	1.61	1.67	1.47	1.97	2.39	1.84	2.29
TOTAL	127	48	130	230	259	138	52	68	64	53	52	74	101	149	10	8	7	121	51	379	95

[ ] = possible intrusive and modern shells with periostrocum

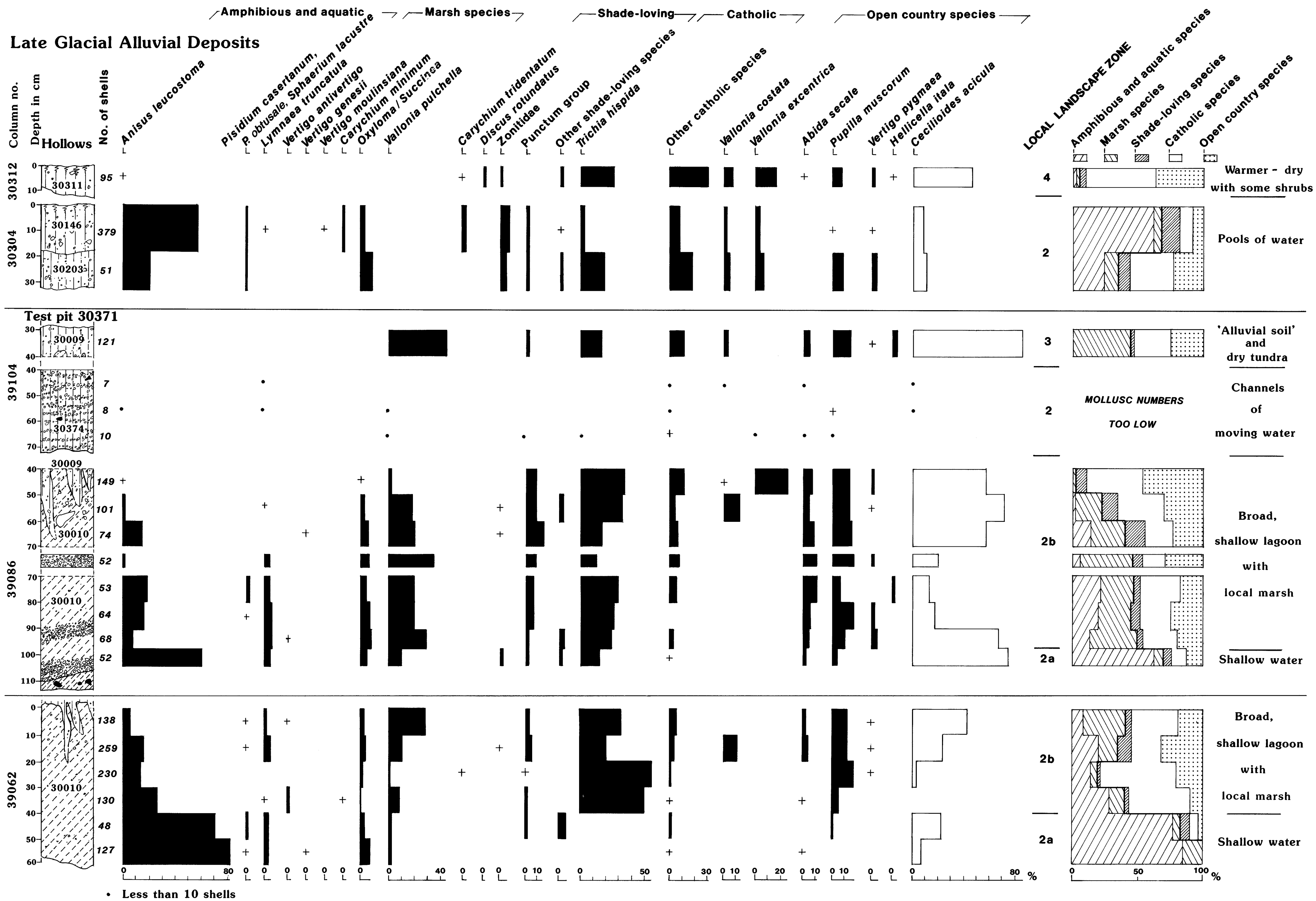


Figure 20 Area 3: mollusc histogram – lateglacial alluvial deposits

probably within marshy ground. Final deposition of the 'alluvial' soil (local landscape zone 3) indicates an alluvial episode in a locally drier situation (*Pupilla muscorum* and *Abida secale*) of a cold stage tundra, of the Younger Dryas Stadial and transitional epochs.

Late glacial and postglacial hollows and 'Alluvial soil'

The assemblages from the two hollows, although similar, have significant differences (Table 12), placing the features into two local landscape zones – zone 2 (discussed above) and zone 3.

Feature 30204 (local landscape zone 2)

This, the deeper of the two features, contained an assemblage dominated by *Anisus leucostoma* and, although from a humic soil deposit, the assemblage is comparable with that from the marls. This, therefore, may have been a hollow, which although later than the calcareous gravels through which it cuts, indicates the continuance of wet shallow lagoonal deposits.

'Alluvial' soil (local landscape zone 3)

Above the calcareous marls and gravels was the Bw horizon of the modern (Ap) gleyic-calcaric alluvial brown soil, which was interpreted in the field as having, in part, an alluvial origin. This layer (30001/30009, Fig. 20) was described as:

Depth	*Context*	*Description*
0.30–0.47 m	30001/9	Light yellowish brown (10YR 6/4) to dark yellowish brown (10YR 4/4) poorly developed prismatic calcareous silt loam with few to small flints and many small and medium chalk pieces, clear irregular boundary.

It was sampled as the top of column 39086 (0.32–0.4 m; Fig. 20). In contrast to the assemblages from the lacustrine marls, this assemblage (and the mixed assemblage from the sample below; top of context 30010) contains no amphibious or aquatic species. The only marsh species is *Vallonia pulchella*. The assemblage was characterised by higher numbers of shells than the marls, and by the occurrence of the xerophile species *Helicella itala* and *Abida secale* representing a more terrestrial component. The nature of this horizon is ambiguous; the material of the Bw horizon may have an alluvial origin, but after each deposition the local area was an open dry one, possibly vegetation-poor.

Feature 30312 (local landscape zone 4)

This feature contained a terrestrial assemblage with no aquatic, marsh or slum species. It had high species diversity (Table 12) and was characterised by *Trichia hispida, Cochlicopa* and *Vallonia* spp. The shade-loving element was restricted to very low numbers of shells of *Clausilia bidentata, Acanthinula aculeata, Discus rotundatus, Aegopinella pura* and *A. nitidula*. The presence of these species, and both *Pomatias elegans* and *Discus rotundatus* in particular, indicate that this assemblage is postglacial (Evans 1972; Kerney 1966). It does, however, indicate that this feature existed in an open postglacial environment and is not a tree hollow. The presence of *P. elegans* indicates the mollusc biozone d, and does not occur before about 6000 BC/7500 BP.

Discussion: the Late Glacial environment

The alluvial deposits were first mapped by Hodgson (1963) who suggested that they represented a former braided spring-fed stream, possibly during periglacial conditions in Devensian Late Glacial times. It is evident that he recorded both calcareous marls and an organic deposit. His descriptions indicate, however, significantly more organic marls than those sectioned here. He describes them as very dark greyish-brown, highly calcareous silt loams (Hodgson 1967, 116), while those sectioned here are distinctly pale (white 10YR 8/2) inorganic calcareous silt marls. Hodgson also stated that the marls contained abundant freshwater shell fragments that were scanned by M.P. Kerney, and from which Hodgson was able to report that the species were all ones that were 'exclusively found in a swamp environment. They probably indicate that a reed-swamp, with a luxuriant vegetation, was growing out of a few inches of still, or only slowly moving, water.' (Hodgson 1963, 14). Apparently this was a species-poor assemblage from which no indication of age could be given. Unfortunately, there are no records of this assemblage nor of the species identified (M.P. Kerney, pers. comm; R. Preece, pers. comm.), but the assemblage seems to compare well with that reported here from the buried soil, rather than that from the marls. It must, however, be remembered that considerable variation was recorded here in assemblages only two metres apart, and the Late Glacial marls cover an area in excess of 2 km^2 (Hodgson 1963; Hodgson 1967, fig. 3; 8). Augering to the south in 1992 revealed the existence of a dark humic soil beneath the calcareous marls at Copse Farm, Oving.

The molluscan analysis has confirmed Kerney's original interpretation, but this sequence, with the radiocarbon and archaeomagnetic determinations, indicate that the assemblages are lateglacial interstadial and early postglacial in date and we can now give a more detailed account.

The analysed sequence rests on solifluction deposits of coarse mixed flint gravel with few chalky and calcareous pieces. This decalcified coombe deposit contained large, almost wholly cortical, white patinated flint nodules and flint gravel. These deposits originate from the steep dip slope of the South Downs at Goodwood and are clearly of Devensian Age. Coombe Deposits are recorded elsewhere on the West Sussex

Coastal Plain (Hodgson 1967; Roberts 1986; Williams 1971). The contact with the buried soil is smooth but a few periglacial features were recorded in section (Fig. 16) and are presumably either Late Devensian (Williams 1968) or Late Glacial zone I or III (Evans 1966). Because of the mollusc biostratigraphy we can be sure that these periglacial stripes are either Late Devensian or Late Glacial zone I as they are sealed by the zone II Allerød phase buried soil.

Allerød phase buried soil

A warmer period, enabling the formation of the humic ranker, ensued and the pedogenically immature soil formed. The mollusc assemblages are comparable with those from Brook, Pit A (Kerney *et al.* 1964). The radiocarbon dates and the molluscs assemblages (zone z) indicate that this was late in the Allerød Interstadial or in the transition between the lateglacial and Younger Dryas (Windermere) interstadials (*cf.* Lowe and Gray 1980). The humic ranker soil was in a swamp marsh with luxuriant vegetation, including possibly reed-beds and Rosaceae, and with woodland including pine and birch growing in the vicinity. Charcoal and needles of *Pinus* as well as *Betula* and Rosaceae, and pollen of *Pinus* and *Quercus* confirm this.

There is evidence of human activity in this species-rich landscape at this time. A humanly struck flint was recovered from the soil and is not considered to be intrusive. We cannot be certain whether the charcoals result from lightning strikes or human fires (*cf.* Behre 1988). Although very few instances of human activity are known directly associated with Allerød buried soils, the fact that charcoal is widespread in these horizons indicates that either lightning strikes were common in this Interstadial, or that some of the charcoal at least resulted from human action. Charcoal has been recovered and dated from a number of Allerød phase soils at Pitstone/Marsworth, Buckinghamshire (Evans 1966; 1986; Rose *et al.* 1985; Green *et al.* 1984), Holywell Coombe (Kerney 1963; Preece 1991; 1992; 1994), Upper Halling at Dover Hill and Brook, all in Kent (Preece 1994). We can speculate that clearance by fire at Westhampnett may have attracted a wider range of animals to the marsh to drink, making it an ideal hunting ground. Anthropogenic clearances are known in Britain over 200,000 years earlier at Hoxne, where charcoal coincides precisely with the Acheulean occupation of the lake margin and may therefore represent deliberate fire clearance (Evans 1975).

The wet, swampy setting can be paralleled with those seen in the dry valley on the chalk at Brook (Kerney *et al.* 1964) and also from the wetter environments in the Ancholme Valley, Lincolnshire (Preece and Robinson 1984). The environment was warm and dry enough to enable pedogenesis, and thus the wetter environments were both localised and possibly seasonal. However, the subsequent deposition of the calcareous marls and gravels indicates both a distinctly greater fluvial environment and higher energy deposits.

Late glacial calcareous marls and gravels

The mapping of the marls by Hodgson (1967) shows that they were part of a much larger fluvial system. The molluscan and sediment evidence indicates a slow-flowing stream system charged with calcium carbonate originating from the chalk downs at Goodwood. The mixed nature of the deposits suggest slow-flowing shallow water over a broad area with episodes of more constrained channels with the deposition of gravels rather than the silty marl.

The nature of the vegetation within and around this body of water cannot be ascertained. The molluscs do not indicate that at the sampling point it was particularly well vegetated, and the very clean, non-humic, nature of the deposits do not suggest the inclusion of organic material. The sampling point was in the centre of the mapped deposits (Fig. 14), and Hodgson suggests that the outer edges of the alluvium show that it was wet and marshy (1963, 14). The lack of organic material and vegetation also confirm the hypothesis that these are cold stage deposits of the Younger Dryas Stadial, i.e. zone III (mollusc biozone z) and thus older than 10,000 BP.

This area was a large flooded lagoon in the lateglacial interstadial, and the mapped details show that the larger and sometimes ephemeral fluvial and lacustrine system to which the deposits belong debouched at Earnley (Hodgson 1967, fig. 3; 8).

The sequence here is therefore ascribed to the Allerød Interstadial (zone II) and Younger Dryas Stadial (zone III). Lowe and Gray admit that the chrono- and climostratigraphic boundaries at the close of the lateglacial interstadial are problematic (1980, 173). The evidence here seems to indicate that the Allerød phase buried soil represents a local discrete episode within this interstadial, though at Westhampnett we cannot be sure if this is a local or regional phenomenon.

Lateglacial and early postglacial

The mollusc assemblage from the 'alluvial soil' (Bw, 30001/30009) that seals the lacustrine marls indicates a dryer, but still cold, environment. This deposit is ambiguous. It seems to have an alluvial component, not represented in the molluscan assemblages, and although typical of a locally dryer episode of the Younger Dryas Loch Lomond Stadial, may be early postglacial in origin.

Sediments and molluscs in the shallow hollows and larger features indicate that these wetter environments existed into the postglacial period, but here do not seem to be accompanied by the deposition of extensive calcareous sediments. These environments may, therefore, have persisted in some form through the pre-Boreal, Boreal and Atlantic periods, but they did not continue into the sub-Atlantic.

Charcoal from the Allerød Soil, by Rowena Gale

Charcoals were recovered from large bulk samples of up to 70 litres by flotation and, because of the significance of the lateglacial buried soil, the charcoals retained on a 1 mm mesh sieve were identified. The charcoal from the soil is referable to either natural events or anthropogenic activities, possibly from the burning of trees for land clearance. These charcoals are particularly relevant in the Allerød buried soil (where pollen and seeds were poorly preserved), since little is known of the woodland cover at this time. Evidence of the exploitation of woodland resources has rarely been recorded from contemporaneous sites in Britain.

Results

The identifications are given in Table 13. Where material was too poorly preserved to verify an identification, names have been prefixed by a question mark.

Small scraps of poorly preserved material were recovered from several contexts. Most samples included birch wood (*Betula*) and 30353 also included pine needles and some narrow herbaceous stems (<1 mm) from unidentified dicotyledons and monocotyledons. Fragments from 30361–2 were less securely identified as ?birch and ?Rosaceae/heather (the latter based on the examination of the transverse surface only). A ?pine needle and some narrow herbaceous stems were present in 30357.

Discussion

Heathland species such as heathers, pine and birch contain highly flammable oils and resins which, once ignited, burn fast. Fires started by lightning strikes or by human hand can quickly reduce woodland to charred remnants. The origin of the charcoal spread on the immature humic ranker soil at Westhampnett is inconclusive, but the find of a single struck flint may imply human involvement, perhaps by burning trees to clear land, or from domestic hearths.

Records of plant material from early postglacial sites in southern Britain are relatively rare and usually pertain to pollen. Charcoal from this period is uncommon; its presence in deposits at Westhampnett dated to *c.* 10,840–10,880 BP is of particular importance here as pollen was poorly preserved. As the site lies close to the English Channel and forms one of the most southerly points of the present-day British land mass, the excavation has provided access for the study of early floristic transmigration across the ancient land bridge of the early postglacial.

As the soil thawed following the northerly retreat of the ice, trees gradually recolonised from the south and east, the routes taken for their passage from continental Europe probably varying according to species (Birks 1989). Until this time (*c.* 11,000 BP), arctic or alpine species, e.g. juniper (*Juniperus*), dwarf birch and willow, were among the few woody plants that could withstand the severe tundra-like conditions that existed on the exposed ground in southern Britain; evidence of such vegetation was identified from levels dated to the early twelfth millennium BP at Holywell Coombe, Kent (Gale in Preece and Bridgland 1998). Climatic amelioration allowed pine and birch woodlands to become established at Westhampnett by the tenth millennium BP.

Charred Plant Remains from the Allerød Soil, by Pat Hinton

There were few charred macrofossils from the Allerød soil (Table 14) and all samples but one included a few modern roots, seeds, and occasional worm cocoons. Only five of the nine samples included seeds that are probably contemporary with the early land surface. Nevertheless, given the significance and supposedly well-sealed nature of the soil, large bulk samples were processed. Charred material was recovered and identified from flots of 250 μm and from residues of 0.5 mm.

Small spherical seeds *c.* 1.9 mm in diameter occurred in three of the five samples. They were

Table 13 Area 3, charcoals from the Allerød buried soil

Context	*sample*	*Betula*	*Ericaceae*	*Rosaceae*	*Pinus*	*Radiocarbon result*
30353	39053	?3	–	–	?1	10840+100 BP (OxA-4167)
30354	39056	2	–	–	1n	
30361	39060	?3	–	–	–	10880+110 BP (OxA-4166)
30362	39061	?3	(1)	(1)	–	10870+80 BP (AA-11769)
30357	39069	–	–	–	?1n	
30355	39118	10	–	–	–	
30366	39119	4	–	–	–	
30367	39120	9	–	–	–	
30368	39121	1	–	–	–	

n=needle
The number of fragments identified in each sample is indicated.

Table 14 Area 3, charred plant remains from the Allerød buried soil

	Allerød soil								
Context no.	*30353*	*30354*	*30361*	*30362*	*30357*	*30365*	*30366*	*30367*	*30368*
Sample no.	*39053*	*39056*	*39060*	*39061*	*39069*	*39118*	*39119*	*39120*	*39121*
Sample volume (litres)	*20*	*70*	*15*	*50*	*30*	*10*	*15*	*20*	*10*
Vicia/Lathyrus sp. cf. tares	3	≥3	–	≥2	–	–	–	–	–
Luzula sp. wood–rush	–	–	–	1	–	–	–	–	–
Molinia caerulea (L.) Moench purple moor-grass	–	–	1	1	–	–	–	–	–
cf. *Agrostis* sp. Bent grass	–	–	–	1	–	–	–	–	–
cf. buds	–	2	2	–	–	–	–	–	
Rootlet fragments	–	–	–	1	–	–	–	–	–
Culm fragments	–	–	–	3	–	–	–	–	–
Unidentified	–	–	–	1	1	–	–	–	–
Starch	–	3	–	–	1	–	–	–	–

damaged and considerably degraded but some had split between the cotyledons and so could be identified as small legume species (vetches or tares). Their size suggests that they were most likely to have been *Vicia hirsuta* or *V. tetrasperma* (hairy or smooth tares). Two charred *Molinia caerulea* (purple moor-grass) seeds, one *Luzula* sp. (wood-rush) and one small grass seed were in better condition. The last two were not identified to species level but the wood-rush was comparable to *L. campestris, L. multiflora* or *L. forsteri* (field, heath or southern wood-rush). The small grass seed (*c.* 1.0 mm × 0.4 mm) was damaged at the base but *Agrostis* (bent grass) species provided the closest match.

Samples from contexts 30354 and 30361 (the latter the only sample without modern intrusions) each contained two uncertainly identified items. These were ovate in form, *c.* 2.8 mm in length and *c.* 1.8 mm at the widest part. All four were damaged, two had a vacuolated appearance and one was now almost hollowed. At the base of two was a small depression, possibly the site of a hilum, but it was felt they were most likely to be buds. Their surface remnants were shiny and at high magnification showed a network of tiny cracks. There were no distinguishing features and no evidence of bud scales. One might very tentatively be compared with *Salix* sp. (willow).

Small pieces of charred amorphous starchy material in two of the samples probably represent burned vegetable material.

Among the obviously modern seeds were not only small ones such as *Chenopodium album* (fat hen) which readily travel down root holes and other fissures, but also one unmistakable charred *Triticum aestivum* (bread wheat) grain in near perfect condition (in context 30354), perhaps a result of recent stubble-burning. The age of the other charred seeds might therefore be questioned, but their condition suggests that they were ancient, although similar charred tares, other grassland species and buds did appear in samples from later periods in other parts of the site. These plants were not represented among the obviously modern intrusions in this sample.

The plants indicated by the charred seeds may relate to the old landscape but closer identification to species level would have provided more information. Heath wood-rush (*Luzula multiflora*) is a plant of heathy acid soils whereas field wood-rush (*L. campestris*) is common in short grassland. The several *Agrostis* species (bent grasses) have different soil preferences, some usually occurring in acid sandy conditions and others in more neutral pasture. Purple moor grass, despite its common name, is not exclusive to heath or moorland but will also grow in damp, less acid conditions. Small tares are plants of grassy places or rough disturbed ground. Willow, a suggested identification of one of the buds, could also fit in a background of damp, established grassland.

Charred macrofossils, which are likely to result from human activity, have very rarely been found in such early sites and so the few fragments from the land surface here are a valuable addition to the evidence from other studies. Unfortunately, the problems of identification and possible intrusion from later periods make interpretation dubious. However, with caution, it seems reasonable to accept that they indicate a picture of a damp grassland environment.

Small Mammal Bones from the Allerød Soil, by Pippa Smith

Small mammal bones were recovered from bulk samples (10–70 litres) processed by standard flotation methods. Animal bone was extracted from the flot (0.5 mm) and from the fractionated residues (to 1 mm). The bones were initially examined under a microscope at ×10 magnification. Identifiable teeth and amphibian long bones were separated out. Further identification was undertaken at ×10 and ×20 magnification where necessary (Table 15). Fragmented

Table 15 Area 3, animal bones from the Allerød buried soil

Context	*Sample*	*Sample size (litres)*	*Species*	*Anatomical element*	*No.*	*Comment*
30353	39053	20	amphibian	long bone	2	
			field vole	upper molar	1	
			vole sp.	tooth fragments	12	
30354	39056c	70	bank vole	lower molar	1	
			common shrew	upper molar	3	
			shark	tooth	2	
30355	39057	10	amphibian	long bone	2	(small)
			bank vole	upper molar	1	
30361	39060	15	bank vole	lower molar	2	
30362	39061	50	amphibian	long bone	2	
			bank vole	lower molar	3	
				upper molar	3	
			common shrew	lower molar	1	
				upper molar	1	
			vole spp.	broken teeth	8	
				tooth fragments	5	
30366	39119	15	bank vole	upper molar	1	
				Total	50	

teeth were identified to family group and complete teeth to species where possible. Amphibian long bones were not identified to species. Only identifiable fragments were recorded and no attempt was made to quantify the unidentifiable fraction. No fish bones were present.

The bones indicate the presence of three species of small mammals: bank vole (*Clethrionomys glareolus*), short-tailed or field vole (*Microtus agrestis*) and common shrew (*Sorex araneus*). The bank vole is common in deciduous wood and scrubland (Lawrence and Brown 1967). The species inhabits open terrain where small areas of cover are available. Common shrews are found in most types of terrain. Their favoured habitat is thick grass, woodland, scrub, hedgerows and banks. The preferred habitat of the short tailed vole or field vole is rough grassland, although it is generally ubiquitous and will inhabit unfavourable environments. The two most common species both favour woodland and scrub. However, all species identified are reasonably adaptable and it is hard to determine information about the environment from such a small number of identifiable specimens.

The shark teeth identified from one sample were fossils and almost certainly Cretaceous, having been redeposited from the South Downs from which the calcareous marls ultimately derive.

Diatoms and Coccolithophorids from the Calcareous Marls, by Nigel Cameron

Examination of calcareous marl sediments in the field (×600 field microscope) suggested that diatoms were absent from the alluvial sediments/calcareous marl. However, laboratory preparation of material was required to confirm this, since diatoms can be present in low concentrations. Three samples were taken from the calcareous marl stratigraphy: from the top, middle, and bottom of the alluvial deposit adjacent to the monolith taken for pollen analysis.

Laboratory analysis confirmed that diatoms were absent from the three samples from the calcareous marls and this was consistent with its high pH. However, small *c.* 5–7 m diameter, oval fossils were preserved, with highest concentrations in the top sample. Further examination at high magnification using a scanning electron microscope revealed several fossil types with distinct radial patterning. Treatment with a strong acid (50% HCl) caused the disappearance of these fossils. It is likely that these are pre-Quaternary fossils, probably the calcareous plates (placoliths) of the marine algal group coccolithophorids. They are most probably ultimately derived from the underlying geology (chalk?) or from elsewhere, such as the South Downs.

Ostracods from the Calcareous Marls, by J.E. Robinson

A series of 15 contiguous samples through the calcareous marls was processed to 125 m for ostracods. The remains (Table 16) were principally from the finer fractions (125 m), which means that all were very small instars. There were no valves at all from the coarser fractions where most of the adults would be expected to occur. The only valve was one derived from the Chalk rock, which is of little relevance.

Juveniles of freshwater ostracods are notoriously difficult to allocate to genera let alone species, making it difficult to establish the *in situ* fauna at Westhampnett.

Table 16 Area 3, ostracod remains from the calcareous marls

	Depth	*Context*	*Sample*	
'Alluvial' soil	400–500 mm	30009	39093	small instars A-V
Candona	500–600 mm	30010	39092	small instars A-VI
	600–700 mm	30010	39091	small instars A-V
Psychrodromus	700–800 mm	30010	39090	small instars A-IV
Psychrodromus	800–910 mm	30010	39089	No ostracod fauna
Calcareous marls	910–980 mm	30010	39088	*Psychrodromus*.A-V.A-IV instars cf. *Candona*.A-V.A-IV instars
Allerød soil		30357	39069	*Candona*/*Psychrodromus*, small juvenile instars, some are two-valved carapaces telling of minimal disturbance of the shells after death

However, in so far as could be determined, juveniles (four or five moults smaller than full grown adults) of *Candona* spp. and also *Psychrodromus* spp. were present. This last genus is the one that is found in calc-tufa and spring deposits. It is an ever-present element in spring deposits, well adapted to the constant low temperatures of spring water and also the species living in ponds and streams, where it is a bottom crawler, often burrowing into bottom muds.

The limited record suggests that the live ostracods were present newly hatched from the egg, but they failed to survive and flourish to adult life. The preservation of the small valves was good, so there was nothing physically wrong with the conditions, unless the water bodies dried out before they could grow into adults. Chalk marl is not a very fruitful environment for living ostracods. Much better prospects come from the mud base or organic layers, as ostracods are cleansers and scavengers by nature.

Discussion: the Lateglacial Environment and Late Upper Palaeolithic Activity, by Michael J. Allen

The Local Lateglacial Environment

The combined environmental evidence provides a relatively detailed picture of the landscape between 11,000 and 10,000 BP, following the deposition of zone I, Late Devensian coombe deposits. The humic soil is firmly dated to the Allerød phase (or lateglacial interstadial) on the basis of the mollusc faunas and radiocarbon dates (OxA-4167, 10,840±100 BP; OxA-4166, 10,880±110 BP; AA-11769, 10,870±80 BP, Table 5), all of which are around 10,850 BP, i.e. *c.* 11,200–10,650 cal. BC. Parallels for the stratigraphic sequence (humic soil overlain by cold-stage mineral sediments) can be seen in a number of locations in southern England, such as Pitstone/Marsworth, Buckinghamshire, Holywell Coombe, Kent, Watcombe Bottom, Isle of Wight, and Burleston Down, Dorset. Although the three dates from charcoal fall into the Allerød phase, they are late in the sequence of dates from southern England, as reviewed by Preece (1994).

From elsewhere in Britain radiocarbon determinations from Watcombe Bottom were 11,690 BP; and Pitstone 10,900 BP; while sites in Kent (Holywell Coombe, Brook Pit A and borehole III, Dover Hill and Upper Halling) span 11,550–10,900 BP. These represent a period of climatic warming between two severe cold stages (Older and Younger Dryas). The Westhampnett dates are, however, nearly a millennium later than those at Watcombe Bottom. They fall near the end of the warmer Allerød phase of the lateglacial interstadial at a time when we might expect the temperatures to be cooling prior to the onset of severe cold in the Loch Lomond re-advance (Younger Dryas). Nevertheless, at Westhampnett itself we can see these warmer temperatures reflected in the pedogenesis of the immature organic humic ranker soil, the micromorphological characteristics of which suggest mixing by enchytraeids which are typical of acid soils, not inconsistent with an open park-tundra vegetation.

The environment locally was marshy and wet with pools of water and shallow streams, adjacent to which was lush open marsh vegetation, including purple moor-grass, bents, and further afield possibly heathers and ling of a typical lateglacial park-tundra and open steppe landscape. More widely, some tree species existed and pine, oak and birch are recorded in the pollen and charcoal spectra, but it is possible that the cooler temperatures were detrimental to the woody species. This has been found at Usselo, Netherlands, where clustered radiocarbon dates have enabled van Geel *et al.* (1989) to argue that pine woodland had died as a result of the ensuing cold conditions and was more susceptible to fire. The vegetation on the Isle of Wight during this phase is reported to be one of relatively lush herbaceous vegetation, with pine, birch and some sparse oak (Gatcombe Withy Beds (GIW-1) and Musley Bog (MUN-1)) (Scaife 1980; 1982; 1987).

The general cool temperate environment indicated here is similar to that depicted by most of the other

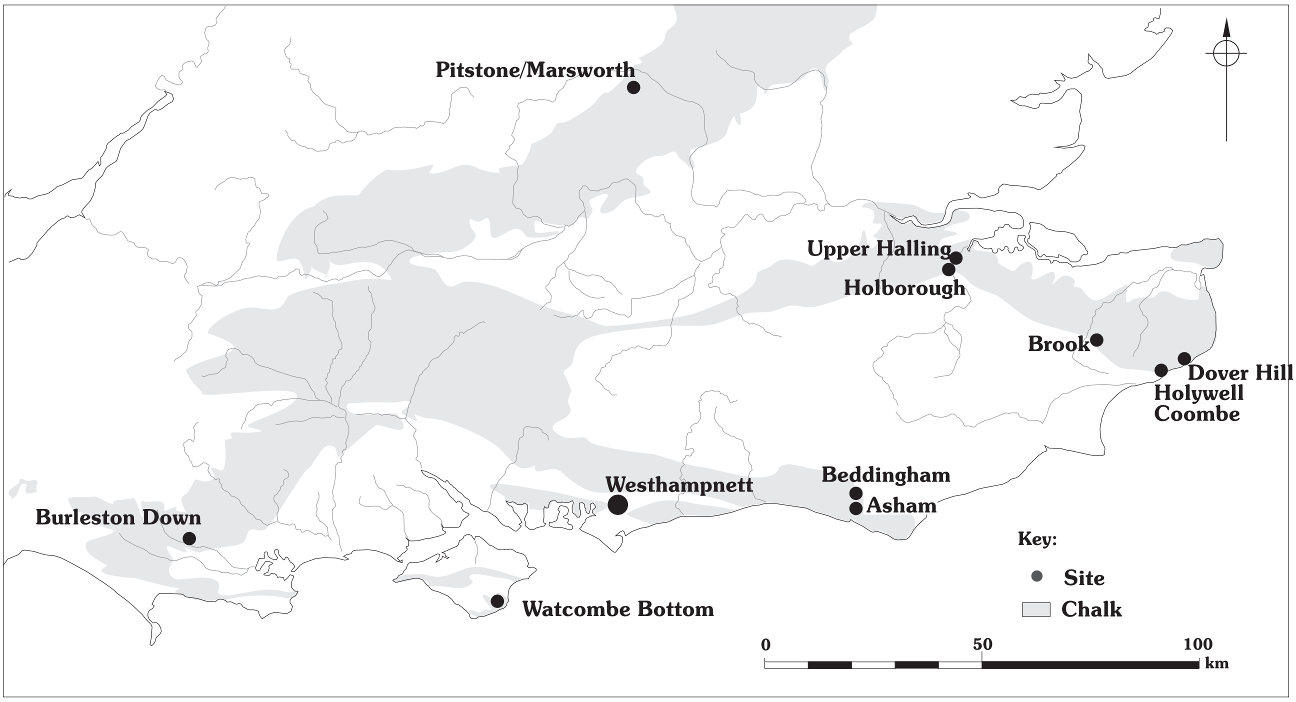


Figure 21 Location of Allerød soils discussed in text

chalkland Allerød soils in southern England (Fig. 21), e.g. Brook, Kent (Kerney *et al.* 1964); Dover Hill, Kent (Kerney 1963); Holywell Coombe, Kent (Kerney *et al.* 1980; Preece 1991; 1992; 1994; Preece and Bridgland 1998; 1999); Upper Halling, Kent (Kerney 1963); Watcombe Bottom, Isle of Wight (Preece *et al.* 1995), Pitstone/Marsworth, Bucks (Evans 1966; 1986; Evans and Valentine 1974; Valentine and Dalrymple 1976; Green *et al.* 1984; Rose *et al.* 1985), and within Sussex itself, Beddingham, East Sussex (Williams 1971), and Asham, East Sussex (Ellis 1985; 1986; Williams 1971). The presence of local marshy conditions is not as ubiquitous, as these were undoubtedly local factors but they can be seen, for instance, at Holywell Coombe (Preece and Bridgland 1998; 1999).

Apart from small rodents we have no direct evidence of mammals or larger herbivores. However, two indirect lines of evidence from the soil micromorphology can be considered. There seems to be clear evidence of physical mixing, probably trampling, indicating the presence of large herbivores (?reindeer) or other mammals in the locally wet muddy marsh, and the possible small carnivore scat also indicates that suitable prey in the form of fish may have been available in the freshwater stream.

As cold temperatures ensued with the onset of the Loch Lomond re-advance (Younger Dryas, zone III), up to 0.9 m of inorganic calcareous marls and gravels were deposited. These represent a broad stream system with possibly seasonal reworking and deposition of coarse calcareous gravels. The few ostracods recovered tend to confirm the cold environment and the lack of organic deposits, and any snails indicating vegetation on the stream margins also suggest cold tundra conditions.

The Allerød Phase Environment and its Relevance to Human Occupation

Humic soils of the Allerød phase have been frequently identified by Quaternary scientists throughout Europe, and this led Kolstrup to state, 'During the late glacial interstadial in north-western Europe, it seems that, generally speaking, a gradual development took place and various plant types immigrated' (Kolstrup 1991, 4). These warming conditions extended the areas of vegetation and animal populations northwards into northern Europe. A rich herbaceous and ericaceous vegetation with scattered clumps of pine, as well as birch and shrubs of hazel and Rosacaea, provided habitats suitable for red deer, Irish elk, horse and possibly reindeer (Grigson 1978). Therefore both climatic amelioration and the ensuing emergence of plant and animal populations facilitated the opportunity for the human re-colonisation of northern Europe (Housley *et al.* 1997).

The rare environmental evidence from Allerød soils, therefore, allows us to understand the development of the Late Glacial environment in southern Britain (*cf.* Jones and Keen 1993; Preece 1992; 1994), but more importantly to examine the potential for human habitation during this period of climatic warming. Although this climatic and environmental evidence elsewhere in the country provides crucial background for studies of human adaptation and environmental change at the end of the Pleistocene (*cf.* Jones and Keen *op cit.*; Barton *et al.* 1991), nowhere has the opportunity been taken to investigate the potential of human activity or even to examine these surfaces in plan, rather than section. This is particularly pertinent to Westhampnett where the buried soil was examined in plan. Despite its limited extent (Fig. 5) the presence of, albeit, a single worked flint sealed in less than 0.2 cubic metres of humic ranker palaeosol, may indicate the presence of humans at about 11,000 BP. This horizon is known to extend, or at least to occur, about 0.5 km to the south.

Evidence of Human Activity

The recovery of a single worked flint flake indicates human activity at some time, but it may be over-optimistic to relate this to the dates obtained (see Housley 1991). Nevertheless, the Westhampnett soil was located next to pools of shallow water in an area of park-tundra heath with isolated stands of open woods; a classic ecotonal location advantageously sited for a range of plants and animals, including nesting birds (*cf.* Grigson 1989). This would provide an ideal, and opportune, location for human visitation and exploitation.

The evidence, slight and disparate as it may be, however, indicates that this is possible. Fine comminuted charcoal was also present, but nearly every Allerød phase examined in southern England has produced charcoal. Nevertheless, at Westhampnett, a number of independent lines of evidence strengthen the case for human presence. That evidence is; the struck flint, the presence of charcoal and burnt soil, bone and shell, the micromorphological evidence for animals at the water's edge, the water resource itself, and the ecotonal location.

The charcoal was present as pieces >2 mm, and abundant fine charcoal was observed in soil thin section together with burnt soil, shell and bone. The lack of concentrations suggests that it is unlikely to represent a hearth, but its presence in thin section suggests that it may be fine and comminuted charcoals from more widespread burning of flammable and resinous woods (Patterson *et al.* 1987), such as ericaceous sub-shrubs, birch and pine, all of which have been identified in the charcoal record from the soil (Table 13). The 'Usselo soil' in the Netherlands produced a large number of radiocarbon dates from pine charcoal which fall between 10,600 and 11,230 BP (Lanting and Mook 1977), late in the Allerød phase. Although it is suggested that the pine trees died because of falling temperatures in the ensuing Younger Dryas (van Geel *et al.* 1989), the dead wood was more susceptible to fire by both human activity and natural causes, such as fire setting and lightning strikes (Behre 1988). The Westhampnett soil also falls late in the Allerød phase immediately prior to the onset of the cold stage. Human communities would certainly have been aware of the value of deliberate fire-setting to promote new plant growth, which in turn would attract herbivores thus making hunting easier (Mellars 1976).

Indirect evidence of animals is provided by the soil micromorphological evidence of physical mixing and animal trampling in the wet soil. The presence of small carnivores is indicated by scats, possibly from mink.

The Late Upper Palaeolithic Human Ecology

Although much weight has always been placed on the role of hunting in pre-farming communities, food procurement strategies would have been equally reliant on non protein-rich energy and nutritional sources (Speth 1991) to maintain the nutritional balance necessary to sustain human populations, and thus the continued revitalisation of the plant ecology would have been important. Indeed maintenance of the ecology of acid heathlands requires intermittent firing (Burnham 1983; Gimingham 1972). This generally overlooked reliance on food plants is, according to Speth (1991, 172), central to the transformation of foraging patterns that seems to have taken place in the temperate latitudes in Late Glacial and early postglacial times. Such strategies are based on the 'broadening food spectrum' described by Binford (1968) and Flannery (1969), and Zvelebil (1994) has shown that later hunter-gathering communities not only had sophisticated procurement strategies, but that the use of a wide range of plant food and deliberate management is apparent in the archaeological record.

Specific ecotonal areas would have been visited more frequently because they provided an opportunity to obtain a wider selection of foods and other resources within a limited distance. In this context, the streams at Westhampnett are important. Streams are likely to lie on both the watering and migration routes of larger mammals, such as elk, as seen at the Late Upper Palaeolithic elk-kill site at Poulton-le-Fylde, Lancashire (Barnes *et al.* 1971; Hallam *et al.* 1973), and by the fragmentary bone debris of wild horse at Three Ways Wharf, Uxbridge (Lewis 1991). Such ecotones are attractive not only because of the diversity of plants and the possibility of attracting thirsty game fowl which could be culled, but also in the potential they provide for the exploitation of gravel flints present in the stream bed and valley. Flint was an essential resource, and Audouze and Enloe argue (1991, 70) that a strategy for its procurement from streams cutting the chalk was embedded within the organisation of reindeer hunting in the Magdalenian of the Paris Basin. This can be seen more locally in the Mesolithic strategies in Langstone Harbour, Hampshire (Gardiner 2000).

At Westhampnett the Allerød phase soil is situated in a broad shallow valley (Hodgson 1963) and is underlain by coarse flint gravels which would have been exposed by the mildest of fluvial action. Thus stream courses, such as at Westhampnett, were probably not only chosen as favoured hunting and foraging grounds along migration and watering routes, but also as places for flint collection. This 'open site' location is analogous with that at Three Ways Wharf, Uxbridge (Lewis 1991; Lewis *et al.* 1992), where considerably greater evidence of human activity has been found of a similar date, possibly relating to camp sites of residential foraging communities. These communities existed by a much larger and more dynamic river than that at Westhampnett (Lewis *et al.* 1992).

Conclusion

Although our data should not be taken as conclusive evidence for human activity, all the evidence seems to point to it and the case seems strong. The environmental data, nevertheless, provides a rare and detailed indication of the lateglacial environment in West Sussex. It should be borne in mind, that although human activity is tentatively suggested here, this is the first known attempt to recover such evidence directly from a chalkland Allerød phase palaeosol.

4. Mesolithic Activity (Areas 1 and 4)

W.A. Boismier, Michael J. Allen and Andrew B. Powell

In the previous chapter we examined the 'alluvial' soil (context 30001/9) in Area 3 (i.e. the subsoil (Bw) of the gleyic-calcaric alluvial brown soil), which can probably be broadly attributed to the early postglacial period, and certainly prior to the Bronze Age activity. It overlay the lateglacial interstadial calcareous marls and gravels, and was interpreted in the field as having, in part, an alluvial origin. It was a light yellowish-brown (10YR 4/4) calcareous silt loam with a poorly developed prismatic structure. The snail assemblage from this layer (see Chapter 3) was undoubtedly postglacial, but, contrary to the field interpretation, suggests an open, vegetation-poor and moist environment. As the sample was taken from the middle of the former stream course, the shells are assumed to represent the last phase of this deposit – that is at a time when the area was dry/drying – thus enabling the colonisation of land snails, as no freshwater species were encountered. It thus provides good evidence for the continued seasonal river or lagoonal aspects of the former Waterbeach–Tangmere stream course throughout the Mesolithic period, during which activity is seen in at least two areas (Area 1 and Area 4).

Concentrations of Mesolithic flints were recorded during pre-excavation fieldwalking and evaluation trenching, on knolls of slightly higher ground (Area 1 at 23.5 m OD and Area 4 at 19 m OD) overlooking this former fluvial environment. These two locations were investigated through a strategy of hand-excavated test pits to define the concentration of flints, which were thought to reside largely in the ploughsoil. Subsequently, larger areas were examined after machine-stripping of the topsoil. In both areas, excavations were confined to the route corridor and the highest points of each small knoll were unavailable for archaeological investigation. The material recovered from the watching brief to the north of Area 1 (in Area 9) cannot be dated closely but may relate to this activity.

The majority of the Mesolithic evidence was from the northern part of the route (Fig 22). In examining the archaeological and palaeo-environmental evidence, therefore, it is important to consider the relative topography of Areas 1, 2, 3 and 4 and so provide some basic information about the nature of the former landscape and local environments. As in the previous chapter, the precise nature of this local and general topography is of great importance both to our understanding of site formation and taphonomic processes (Area 1) and the siting of locations of Mesolithic activity (Areas 1 and 4).

Area 1, by Rod Brook, W.A. Boismier and Michael J. Allen

Local Topography

Area 1 lies near the southern limit of the Upper Coastal Plain that ends at the Norton–Brighton cliff-line and which forms a low bluff into the Lower Coastal Plain *c.* 7 m below (Fig. 5). Aldingbourne raised beach deposits lie on top of the bluff, creating a rise in the land to the south of the excavated area. To the west are the calcareous marls that represent a former (lateglacial interstadial/early postglacial) stream that drained from the South Downs. The stream bisected the cliff *c.* 300 m away and a finger of the marls runs almost to the site of Area 1 (Hodgson 1963). The present surface topography is a smoothed reflection of the former more exaggerated relief created by the basal gravels of the raised beach and the Reading Beds, and the proximity of the tributary of the former stream system (Fig. 5). The excavated area straddled the point where a number of slopes merged and a number of local Quaternary structures could be discerned.

Plate 7 Excavating 2 m test pits and dry-sieving of the ploughsoil in Area 1 looking north-west

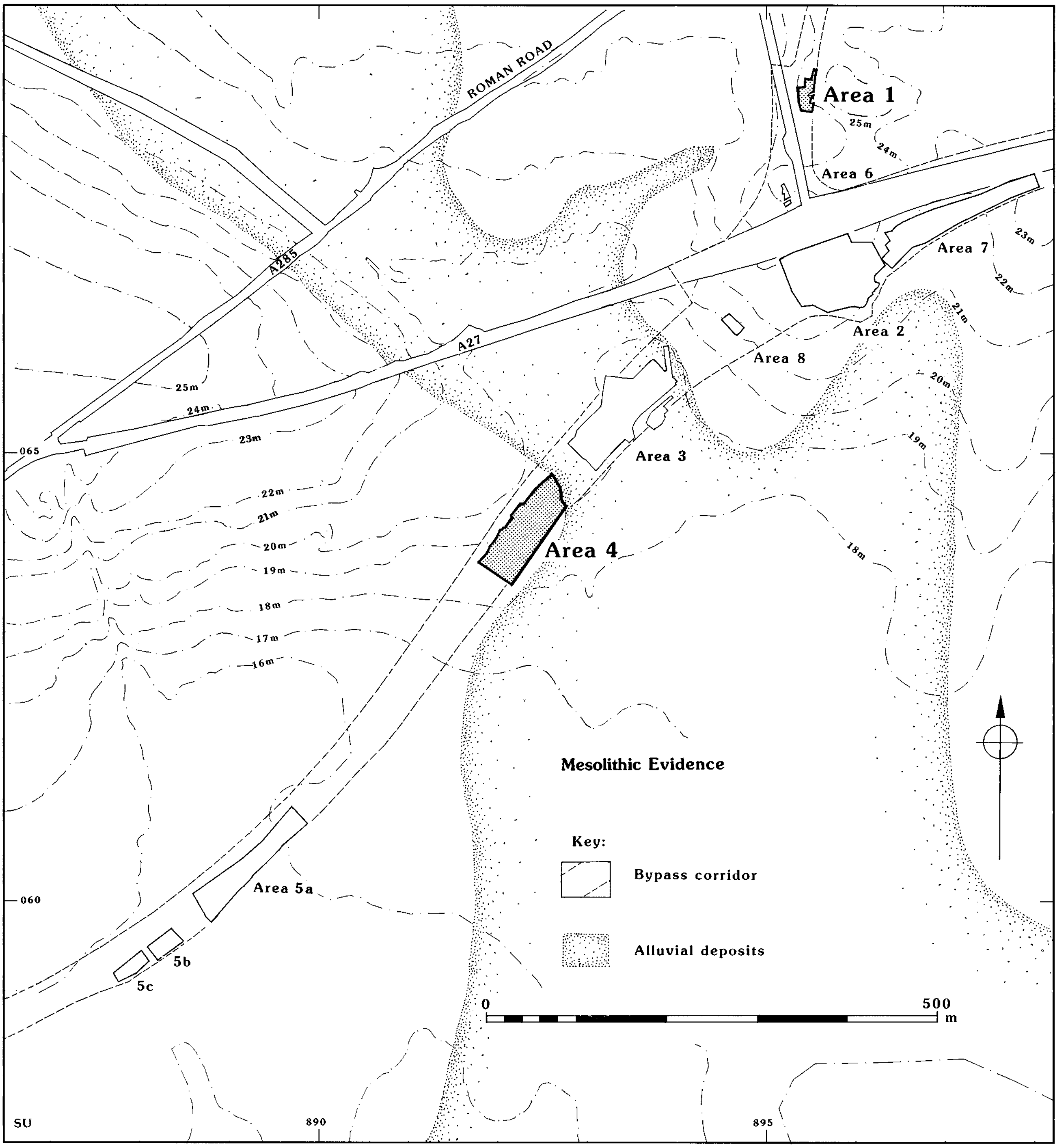


Figure 22 Excavation areas with Mesolithic evidence and location of alluvial deposits

Excavation Methods

Evaluation trench 19 (Fig. 6) had identified a shallow (0.3 m) stoneless, weakly humic, silt loam ploughsoil overlying gravels, with a localised 'subsoil' (1050) comprising up to 0.3 m of a yellowish-brown silty loam. Both layers contained flint blades and cores of Mesolithic date. A series of 20 (2 m square) test pits was therefore excavated (Fig. 6), with finds recorded in 0.1 m spits to identify concentrations of material (Pl. 7). The test pits were aligned on a 5 m grid and represented a 20% sample. The test pits identified some slightly higher concentrations of flints (see Fig. 29, p. 73) and some isolated buried surfaces that were not identified during the field evaluation.

On the basis of these results an area of 450 m^2 (*c.* 40 m by 15 m) was excavated manually to locate any archaeological features or deposits of Mesolithic date. The test pits also revealed that, despite the seemingly flat surface, a highly localised variation in the geology had resulted in the preservation of the argillic brown earth (*sol lessivé*), and the localised accumulation of up to 1.2 m of hillwash. Trenches were excavated by machine to provide sections through these deposits (Pl. 8) and a further test pit (TP 10017) was manually excavated at the south-west corner.

Site Formation, by Michael J. Allen

The 'natural' gravel topography comprised the northern edge of the Aldingbourne raised beach deposits that were identified at the southern end of the excavation. These contrasted with the redder, looser gravels with clays of the Reading Bed deposits that were exposed in the north of the excavation (Fig. 23). In both the west- and east-facing sections (Figs 25–26) the erosion and redeposition of the looser gravels was evident.

Between these two gravel deposits was a relatively broad and deep hollow which was more marked on the western (Fig. 26) than the eastern section (Fig. 25). It became evident that the excavation had sectioned the head of a minor tributary of the Waterbeach–Tangmere stream. The hollow had been infilled by *in situ* and preserved soils, which in the deeper area had been eroded and replaced by colluvium (Fig. 24). Consequently, the stratigraphy of this natural hollow varied significantly in the different sections (Figs 24–25).

In the eastern section (Fig. 24), a truncated argillic brown earth (10170) was preserved on the eastern edge of the hollow. This relict soil had been severely truncated both vertically and horizontally and was only present in that location. The argillic brown earth is a product of postglacial soil development and, as it derives from a loessic brickearth, it is silty and very susceptible to erosion. A rill/gully (a small water channel) (10197), which was roughly elliptical in plan (Fig. 23) cut through the argillic brown earth and was filled with soil of a similar type.

The struck flints form a homogeneous group and, apart from the general spread of flints in the ploughsoil many of them (*c.* 30% of the total assemblage) came from the thin upper fill (10169) of rill/gully 10197 (Figs 25, 29). The quantity and condition of the flints in this layer indicate that if they were in a derived context they were unlikely to have been transported far. The relatively high number of artefacts from Area 1 that are water worn (n = 74), in comparison to the number from Area 4 (n = 3), offers some support to the possibility that they were transported by fluvial action.

A few flints were found within the lower fill (10198) of the rill/gully and had probably been worked into this fill by earthworm action. The few flints that were noted lower in the argillic brown earth horizon (10170) were also probably worked into this horizon by earthworms in what would have been a biologically active 'forest soil' (Macphail below, pp. 67–8).

Charred *Corylus avellana* (hazel) nutshell fragments in layer 10169 gave a radiocarbon date of 8370–7970 cal BC (OxA-4168, 9120±90 BP), which is consistent

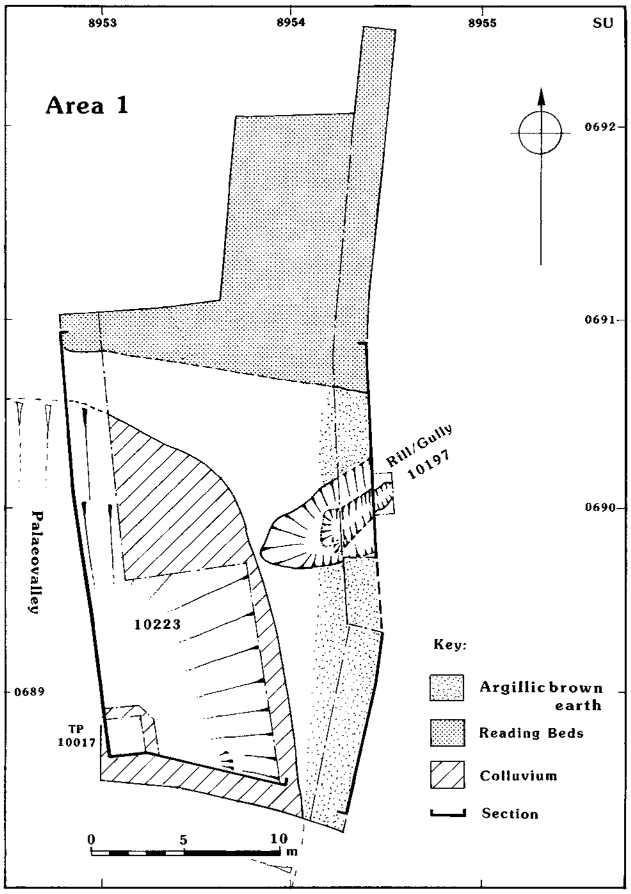


Figure 23 Area 1: topography and geological features

with the flint assemblage (Fig. 27). However, the charcoals from the same context produced a Neolithic date of 3040–2610 cal BC (4260±70 BP, OxA-4169) and this may indicate the broad date range during which the rill/gully finally silted up.

This may also have been the period in which the argillic brown earth was eroded from the higher gravel ridges and the hollow, perhaps in the course of local deforestation, in a period of more widespread denudation of this soil.

By the Iron Age/Romano-British period the argillic brown earth had been stripped from the head of the valley stream course. The reworked and gleyed silty loam soil (10216) at its base, containing both Early and Late Iron Age and Romano-British pottery on its surface, is more likely to have been derived from brown earths rather than the siltier argillic brown earths which have a reddish hue. The local gleying of this reworked soil can be explained as a result of seasonal waterlogging in its low-lying location. This soil was sealed by deposits of up to 0.9 m of unsorted, homogeneous, silty clay colluvium containing eroded sherds of both Late Iron Age and Romano-British pottery as well as charcoal. The nature of the deposits seems to indicate that its deposition was not over a prolonged or protracted timescale. The most likely cause of this was the excavation of hundreds of graves,

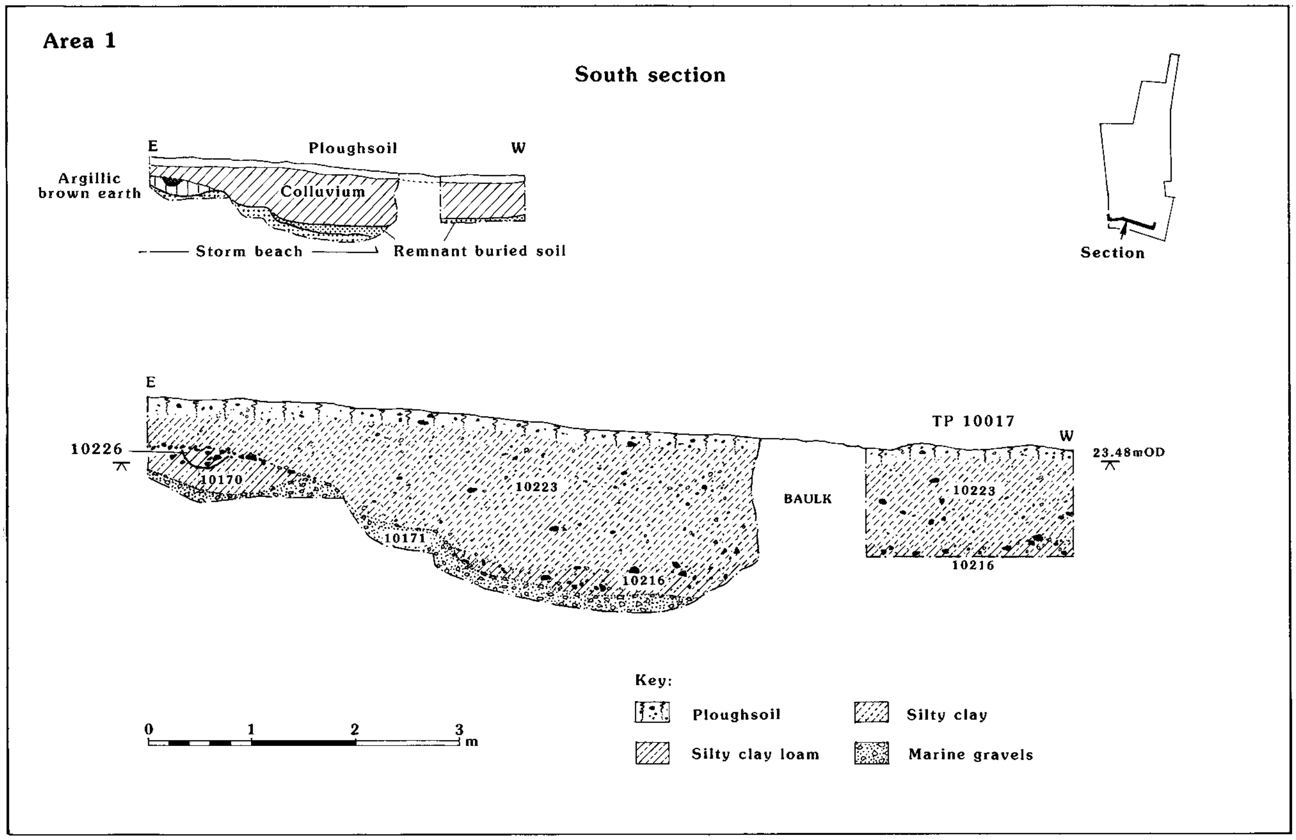


Figure 24 Area 1: southern (north-facing) section. Interpretative drawing at top

Plate 8 Area 1 looking north. The palaeovalley drops from right to left and the depth of the colluvial deposits that filled it is shown by the depth of the manually excavated test pit in the left foreground. A mechanically excavated trench runs from south to north along the west of the excavation area

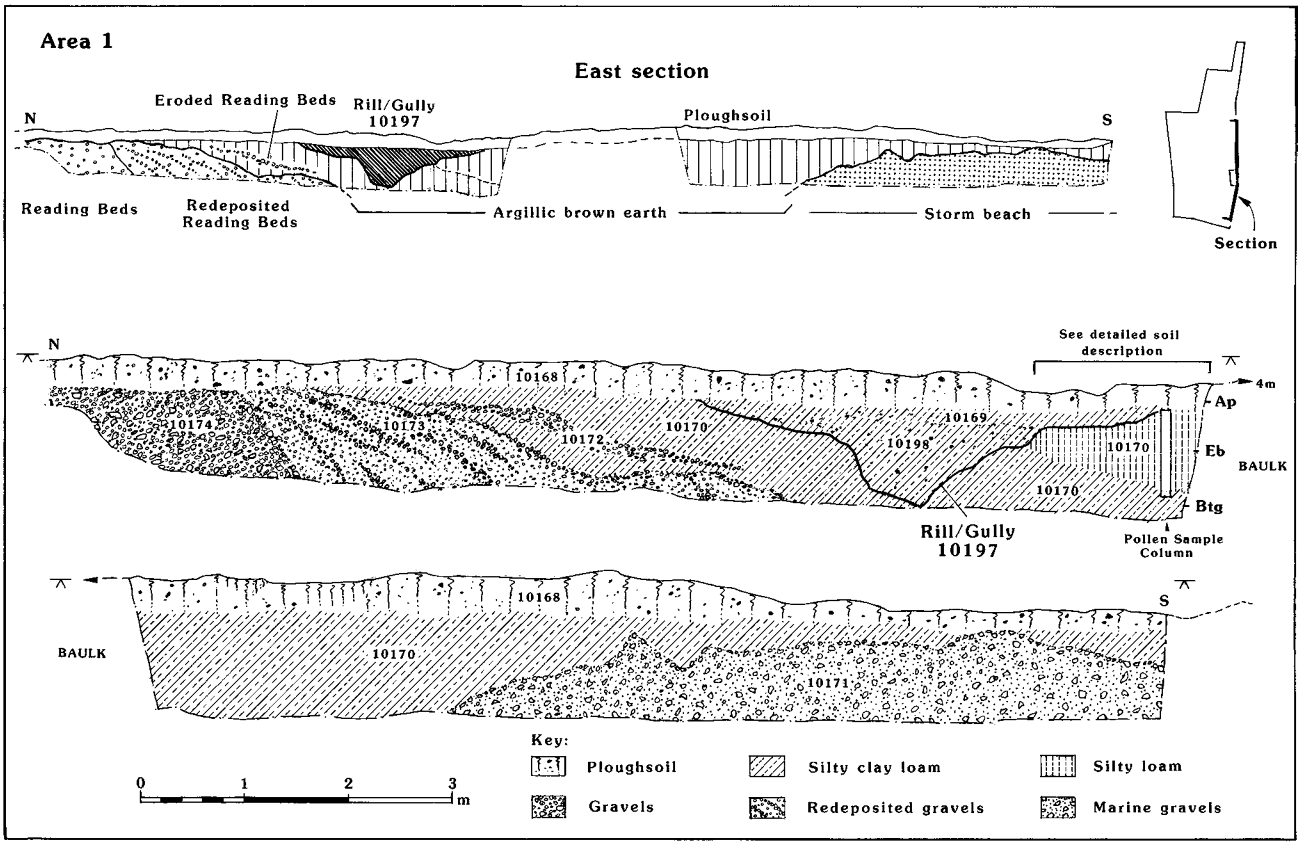


Figure 25 Area 1: east (west-facing) section

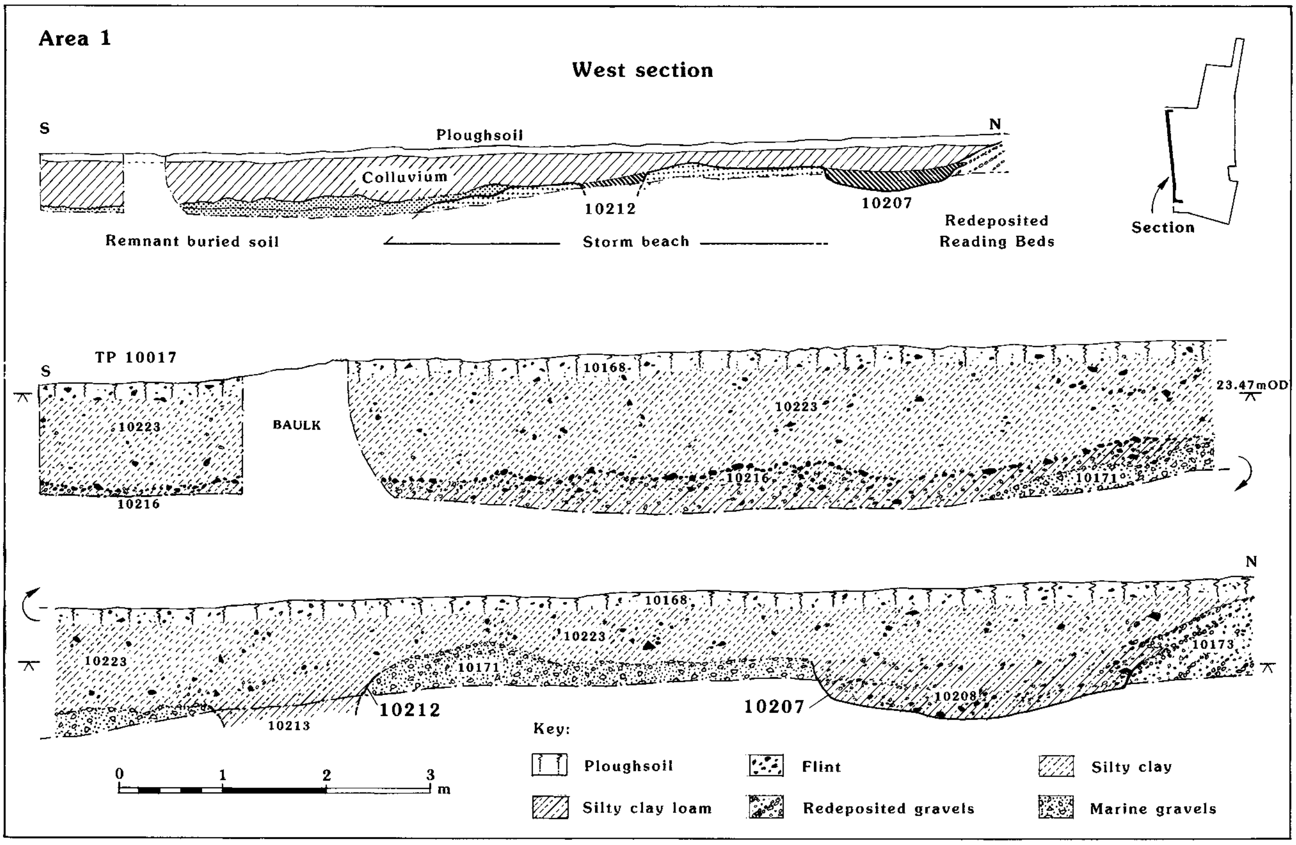


Figure 26 Area 1: west (east-facing) section

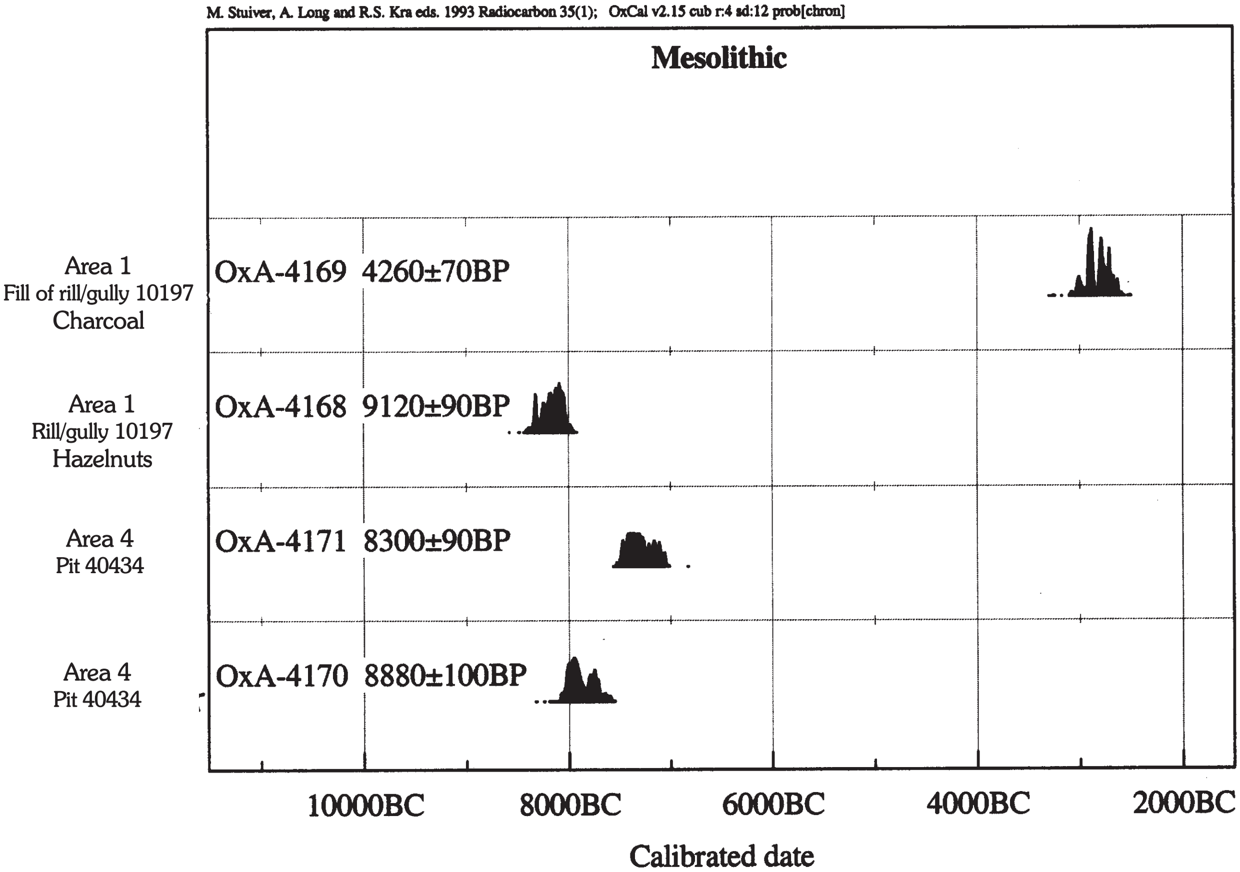


Figure 27 Areas 1 and 4: probability distribution of radiocarbon dates

and the burning of hundreds of tons of wood on the funerary pyres, on the adjacent Late Iron Age religious site, over a period of perhaps just *c.* 40 years. Although some of the wood came from reused timbers, most of it did not, and it is possible that stands of woodland were managed specifically for their use on the pyres (Vol. 2, 79–82).

The Argillic Brown Earth, by Richard Macphail

The brickearth soil profile (Fig. 25) was described to characterise and identify the soils present (see below).

The analysis of archaeological features was complicated here as some of the excavation area seems to have been locally buried by deposits producing a very flat terrain. This was also suggested by the flattening of a land surface that had gravel/head ridges and brickearth infilled hollows. The natural soil horizons of the brickearth profile may have been planed off towards the gravel/head ridges (Fig. 24).

The brickearth parent material occurs from the reworking by periglacial and fluvial activity of loess in the Sussex Plain (Hodgson 1967; soils reported in Avery 1990, 212). Holocene pedogenesis has caused the development of a clay (and some iron) depleted upper soil (Eb horizon), whereas the resulting subsoil (Bt horizon) is clay (some iron) enriched. Clay movement occurs naturally under a forest cover, which would have been locally extant during the Mesolithic occupation.

Soil type: typical argillic brown earth on silty stoneless drift (brickearth) (Hamble Series; Hodgson 1967)

Horizon	*Context*	*Depth (mm)*	*Description*
Ap	10168	0–120(200)	Brown to dark brown (10YR 4/3) stoneless silt loam; poorly humic, moderately weak medium subangular blocky; low porosity; few charcoal fragments; few earthworm channels; wavy, clear boundary.
Eb	10169/98	120(200)–690	Yellowish-brown (10YR 5/6) with an increase in chroma (10YR 5/8) with depth; moderately weak silt loam with rare small stones; coarse prisms; few manganese stains; few earthworm channels; clear, irregular boundary.
Btg	10170	690–1100+	Strong brown (7.5YR 5/6) silty clay loam, with common coarse diffuse mottles; coarse prisms; few small stones; rare coarse earthworm channels; low porosity; common clay coatings; common manganese stains.
Cg	10171	Gravels	

The upper part of the profile is biologically active under forest, and Mesolithic artefacts would have been biologically incorporated into the soil, down to 200–300 mm within a few (e.g. 20) years. The rapid reworking of Early Mesolithic artefacts into the topsoil by biological activity was noted at Uxbridge, Middlesex, from artefact refitting data and from soil micromorphology (Lewis *et al.* 1992). Thus, the presence of Mesolithic artefacts within the upper profile in Area 1 is not unexpected, and is comparable to the situation at Selmeston, East Sussex (Scaife and Macphail 1983; Rudling 1985) where similar soils (studied through soil micromorphology) are present, and where Mesolithic artefacts also occur in the upper profile. Few untruncated Holocene brickearth palaeosols are present in England. From some examples from Roman London (Macphail, personal observation.) and from France (Fedoroff, pers. comm.), it is possible that by later prehistory a rather acid and clay-poor topsoil had formed, and as such would have been rather infertile and susceptible to erosion.

The Flints, by W.A. Boismier

A largely homogeneous Mesolithic assemblage of 4645 lithic artefacts was recovered, which can be considered within two general groups on the basis of deposit characteristics: ploughzone and subsurface artefacts.

Ploughzone-derived artefacts have been subjected to a number of tillage-induced changes in condition and spatial position and have been analysed on the basis of frequency data generated by subdividing the artefacts into a number of type classes. No attribute or 'metric' description of these artefacts was undertaken because of the effects of tillage-induced edge damage and breakage on the identification of technological characteristics.

Subsurface-derived artefacts have been subjected to a different and generally less intensive range of post-depositional changes in condition and spatial position, and have been analysed on the basis of both frequency data and attribute or 'metric' data. Attribute data were obtained for selected subsurface contexts by means of a systematic random sample (Torrence 1978) with sampling fractions of 36% for complete unretouched flakes and 35% for complete unretouched blades (flakes n = 253, blades n = 179) and 80% for complete cores (n = 50). Proportional allocation methods were employed in artefact selection to ensure that a representative proportion of the pieces from each selected context was examined. The remaining type classes recovered from subsurface contexts were not described metrically. Selected artefacts from subsurface contexts, including a shouldered point from the adjacent Area 2, are illustrated in Figure 28.

Condition

Patination ranges from a light waxy film to a grey-blue or greyish-white on individual artefacts and was recorded on a presence/absence basis on individual pieces. In total, 2553 artefacts (55%) exhibit some degree of patination with 1713 (45%) unpatinated. Artefact condition varies by context; 1532 artefacts recovered from ploughzone contexts exhibit traces of tillage-induced edge damage or breakage (Mallouf 1982), and 891 from subsurface deposits show traces of largely excavation-induced damage (e.g. isolated trowel nicks and impact fractures produced by mattocks and shovels). Some 74 pieces of the assemblage from both ploughzone and subsurface contexts are also water worn.

Raw Material

A total of 4565 pieces in the assemblage (98%) are flint and 82 (2%) are of chert. Three local sources for the flint occur within one kilometre of the site: riverine gravel, coombe deposits and Reading Beds. Cortical condition and flint colour indicate that all three raw material sources are present within the assemblage with approximately 91% derived nodular flint from probable coombe deposit sources, 5% from Tertiary sources and 4% from riverine gravel sources.

A number of non-cortical pieces in the assemblage (n = 22) also indicate that a small proportion of the assemblage is of non-local origin though their non-cortical nature does not allow for a determination of their likely source(s). The chert in the assemblage is distinguished by a very dark grey/greyish-brown colour and a grainy texture. Surviving cortex indicates that the chert is probably of local riverine gravel origin (Hodgson 1967).

Assemblage Composition

Table 17 presents the major artefact class groups for the assemblage recovered from the site by general context grouping. Manufacturing and rejuvenation debitage class groups comprise 99% (n = 4582) of the assemblage and show assemblage composition to be dominated by various 'waste' types generated by core preparation and reduction activities in blank production and the manufacture and rejuvenation of retouched tools. Retouched and utilised tool classes make up respectively 1% (n = 61) and 0.05 % (n = 2) of the assemblage.

Cores

In total, 108 complete, fragmentary and burnt cores were recovered from ploughzone and subsurface contexts (Table 18). Flake cores comprise 67% of the total and are predominantly prepared platform types. Three general flake core types are present: single platform (n = 22), multiple platform (n = 37) and joint

Table 17 Area 1, composition of flint and chert assemblage

		Ploughzone			*Subsurface*		
	Complete	*Fragment*	*Burnt*	*Complete*	*Fragment*	*Burnt*	*Total*
Unretouched flake	697	312	46	703	155	59	1972
Unretouched blade	213	562	51	510	485	79	1900
Flake core	24	–	1	39	5	3	72
Blade core	7	1	1	23	2	2	36
Core trimming debris	54		4	72	–	4	134
Core rejuvenation flake	22	2	–	40	–	2	66
Crested blades	–	–	–	2	–	–	2
Microburin	10	–	–	7	–	1	18
Unfinished microlith	1	–	–	1	–	–	2
Burin spall		–	–	1	–	–	1
Axe sharpening flake	4	–	–	4	–	–	8
Microdebitage	95	–	–	276	–	–	371
Retouched tool	10	–	–	37	11	3	61
Utilised	–	–	–	1	1	–	2
Total	*1137*	*877*	*103*	*1716*	*659*	*153*	*4645*

Table 18 Area 1, flint core types

		Ploughzone			*Subsurface*	
	Complete	*Fragment*	*Burnt*	*Complete*	*Fragment*	*Burnt*
Flake core	–	–	–	–	–	–
Single platform	7	–	–	10	2	3
Multiple platform	15	–	–	19	3	–
Joint platform	–	–	–	9	–	–
Unclassifiable	2	–	1	1	–	–
Total	*24*	–	*1*	*39*	*5*	*3*
Blade core	–	–	–	–	–	–
Single platform	4	–	1	16	2	–
Bipolar platform	2	–	–	2	–	1
Other platform**	1	1	–	5	–	1
Total	*7*	*1*	*1*	*23*	*2*	*2*

** Cores with two or more platforms at 46° to 90° angles to each other

or keeled platform (n = 9). The remaining flake cores in the assemblage are represented by four unclassifiable cores with flake scars. Blade cores make up 33% of the total and comprise three distinct types of blade core: single platform (n = 23), bipolar platform (n = 5) and cores with two or more platforms at 45° to 90° angles to each other (n = 8). Approximately 40% (n = 29) of the flake cores and 47% (n = 17) of the blade cores have one or more blade or flake scars and indicate that the majority of the cores were utilised for the production of both flakes and blades throughout the reduction sequence. Six cores also have evidence of secondary use, five as hammerstones and one as a burin/piercer.

The sample of cores drawn from subsurface contexts (n = 50) consist of 13 flake, 18 blade and 19 flake-and-blade cores. The cores in the sample were classified according to platform characteristics into six types and described according to surviving cortex and scar type. In general, cores with less cortex have a greater mean number of scars and are narrower than those with a greater proportion of surviving cortex. Single platform cores have from 25% to 75% cortex and reflect their discard during secondary decortication stages in the reduction process. Joint and multiple platform cores exhibit from no cortex to 50% surviving cortex, with 76.7% of them having 50% or less, and indicate that the use of multiple platforms largely occurred during secondary and tertiary stages of core reduction. Bipolar cores exhibit a similar pattern and appear to reflect the production of blades and/or flake blades during secondary and tertiary reduction sequences.

Flake cores generally have a low mean number of scars, weigh more and are marginally wider than blade cores or cores with both scar types. Blade core statistics lie in an intermediate position between flake and flake-and-blade cores, with the number of scars and length closely approximating those for flake cores and width that for flake-and-blade cores. Blade core weight, however, is less than that for the other two core categories. Flake-and-blade cores have a greater mean number of scars, weigh more than blade cores and are marginally shorter than the other two core categories. Results of a series of *t*-tests for the differences between means (Blalock 1979, 224–32) indicate that these values are not statistically significant at the 95% level. They simply reflect sample variability rather than any differences in core characteristics. Flake cores include examples of: single, bipolar, multiple single and single joint platform types; blade cores, single, bipolar and multiple types; and flake-and-blade core examples from all six platform types. Scar type appears to cross-cut core platform types and indicates that the majority of cores in the assemblage were, in all likelihood, utilised for the production of both flakes and blades, with their morphology largely conditioned by the final sequence of blank removals.

Core shatter/trimming debris

A total of 134 pieces are identifiable as shatter or trimming debris from core shaping and initial reduction. They include both cortical and non-cortical pieces of variable shape and, in general, have large bulbs of percussion and thick, often cortical, platforms, indicating that they were largely detached from the nodule by direct percussion with a hard hammer (e.g. hammerstone).

Crested pieces

Two artefacts are identifiable as crested blades, produced to guide the subsequent removal of decortication flake-blades or blades. Both pieces are complete and exhibit ridges of alternative flake scars on their dorsal surfaces.

Core rejuvenation flakes

Sixty-six artefacts are identifiable as types of core renewal pieces removed in order to rejuvenate stepped, battered or otherwise flawed, striking platforms. Sixty-four of the rejuvenation pieces are complete, one is fragmentary and one burnt. Three types of rejuvenation flake are represented in the assemblage:

1. core tablet (n = 17): the removal of the entire platform of the core;
2. core face/platform: (n = 29) the removal of a portion of the platform and part of the core face; and
3. core edge (n = 20): the removal of a blade-shaped piece with the old platform edge as its central ridge.

Flakes and blades

Unretouched flakes and blades comprise 83% (n = 3872) of the assemblage and consist of 1972 flakes (complete: n = 1400; fragmentary: n = 467; burnt: n = 105), and 1900 blades (complete: n = 723; fragmentary: n = 1047; burnt: n = 130). Complete artefacts were divided into primary (dorsal surface wholly cortical), secondary (dorsal surface partially cortical) and tertiary (dorsal surface non-cortical) class groups to determine their place in the composition of the assemblage. Primary pieces account for 4% of the total (n = 89), secondary 33% (n = 691) and tertiary 63% (n = 1343). Ratios calculated for the three class groups show the frequency of secondary pieces in the assemblage to be 7.8 times greater than primary pieces, with the frequency of tertiary pieces around 1.9 times greater than that for secondary pieces. When compared to primary and secondary pieces combined, non-cortical tertiary pieces (n = 780) are only around 1.72 times greater in their pattern of representation, indicating that around 37% of the unretouched component in the assemblage are the by-products of decortication stages of core reduction.

For complete flakes, four distinctive shapes occur in the assemblage: narrow, proportional, squat and irregular. Narrow flakes or flake-blades make up 48% (n = 668) of the unretouched flakes. They are long, and have parallel sides like a blade, but are wider, with their length less than twice their width. Proportional flakes comprise 31% (n = 431) of the flake sub-assemblage, and are round or rectangular flakes whose dimensions are more or less equal. Squat flakes, whose width is greater than their length, make up a further 21% (n = 292) of the unretouched flakes. Irregularly shaped flakes comprise the remaining 0.6% (n = 9).

The sample of flakes drawn from subsurface contexts (n = 253) consists of 12 primary (5%), 107 secondary (42%), and 134 tertiary (53%) flakes. Primary flakes are characterised by thick, often cortical, platforms and pronounced bulbs of percussion, indicating that they were probably removed by direct percussion. Platform and bulbar characteristics for secondary and tertiary flakes are more variable and reflect their detachment from the core by direct and indirect percussion techniques, but can be described, in general, as having relatively narrow platforms and less pronounced bulbs of percussion.

Partial correlations (Shennan 1988, 169–75) indicate that much of the variation in flake characteristics can be accounted for by the mechanical interdependence of attributes produced during different stages of core reduction. Platform thickness is positively correlated with platform angle and more or less uncorrelated or weakly correlated with the remaining attributes, and reflects the change from direct to soft hammer/indirect percussion during core reduction. Platform angle is positively correlated with length and negatively correlated with width, and indicates that platform angle increases as flakes become more blade-like during secondary and tertiary stages of core reduction. Length and width, unsurprisingly, are highly correlated, with width displaying an inverse correlation to the length/width ratio (e.g. increases in the length/width ratio are accompanied by decreases in width and vice versa).

The sample of blades drawn from subsurface contexts (n = 179) consists of 42 secondary (23%) and 137 tertiary (77%) blades. Platform and bulbar characteristics for secondary and tertiary blades are dominated by narrow platforms and more diffuse and/or smaller bulbs of percussion, indicating that they were largely removed by soft hammer/indirect percussion techniques. Partial correlations indicate that much of the variation in blade characteristics can also be explained by the mechanical interdependence of attributes produced during secondary and tertiary stages of core reduction. Platform thickness is positively correlated with platform angle and also to a lesser extent with width, and indicates that platform thickness is directly related to piece size. Length and width are also positively correlated, with width displaying an inverse correlation to the length/width ratio, like the flakes.

To determine whether the patterning in cortical class group composition for the samples of unretouched flakes and blades reflected differences in core reduction, two *t*-tests for the differences between proportions (Blalock 1979, 232–4) were carried out between secondary and tertiary flake-and-blade class groups. Results of these tests indicate that there are significant differences between the proportions of secondary and tertiary flakes and blades in the assemblage. Secondary flakes occur in greater proportions than secondary blades and show that a substantial proportion of the flakes in the assemblage represent by-products of decortication stages in core reduction. Tertiary blades, on the other hand, occur in greater proportions than tertiary flakes and indicate that the majority of the blades in the assemblage were produced during tertiary stages of core reduction.

Tool manufacturing and rejuvenation debris

A total of 29 pieces are identifiable as debris produced during the manufacture or use of tools. The manufacturing debris comprises 18 microburins (one burnt) and two unsnapped microlith preforms (e.g. small notched blades). No subdivision of microburin attributes was attempted. The rejuvenation debris consists of one burin spall, and eight complete axe-sharpening flakes.

Microdebitage

Some 371 pieces classifiable as microdebitage or 'chips' were recovered by sieving from ploughzone and subsurface contexts. These pieces are all less than 10 mm in size and include various spalls, facets, small flakes and nondescript shatter produced during core reduction and by the manufacture and rejuvenation of tools.

Tools

Retouched and utilised tool forms comprise 1% (n = 63) of the assemblage and consist of 48 complete artefacts, 12 fragments and three burnt pieces (Table 19).

Table 19 Area 1, flint tool assemblage

	Complete	*Fragmentary*	*Burnt*
Microliths			
obliquely blunted points	19	4	2
convex backed points	2	3	–
isosceles triangle	1	–	–
obliquely blunted point and base	1	–	–
atypical	2	1	–
unclassifiable	–	6	1
Scrapers			
end scraper	2	1	–
side scraper	1	–	–
double end scraper	1	–	–
Burins	4	–	–
Notches	2	–	–
Denticulates and microdenticulates	2	–	–
Piercers	2	–	–
Backed pieces	1	–	–
Fabricator	1	–	–
Utilised	1	2	–
Diverse	2	–	–

Microliths

Microliths comprise 67% (n = 42) of the retouched component and consist of 25 complete artefacts, 14 fragments, and three burnt pieces. Microlith type classes represented in the assemblage comprise: obliquely blunted points (19 complete, four fragments, two burnt (Fig. 28, 2, 4, 6); convex backed points (two complete, three fragments) (Fig. 28, 1); isosceles triangle (one complete (Fig. 28, 3)); obliquely blunted point and base (one complete), atypical/unclassifiable (two complete, one fragmentary); plus six unclassifiable and one burnt fragments.

Scrapers

Scrapers make up 8% (n = 5) of the assemblage's retouched component and include four complete pieces and one fragment. Three scraper type classes are represented in the assemblage: end scraper (two complete, one fragment (Fig. 28, 18); side scraper (one complete); double-end scraper (one complete) (Fig. 28, 17). Four scraper edges are convex and one is straight, with three complete pieces exhibiting steep overhanging retouch. One fragment has a pressure snap characteristic of breakage during use. Three scrapers occur on flakes and two on blades.

Burins

There are four complete angle burins (Fig. 28, 14–15). Three are situated on the distal end of the left lateral, and one on the proximal end of the right lateral. All four exhibit utilisation scars with two exhibiting two or more spall removals. Two are on flakes and two are on blades.

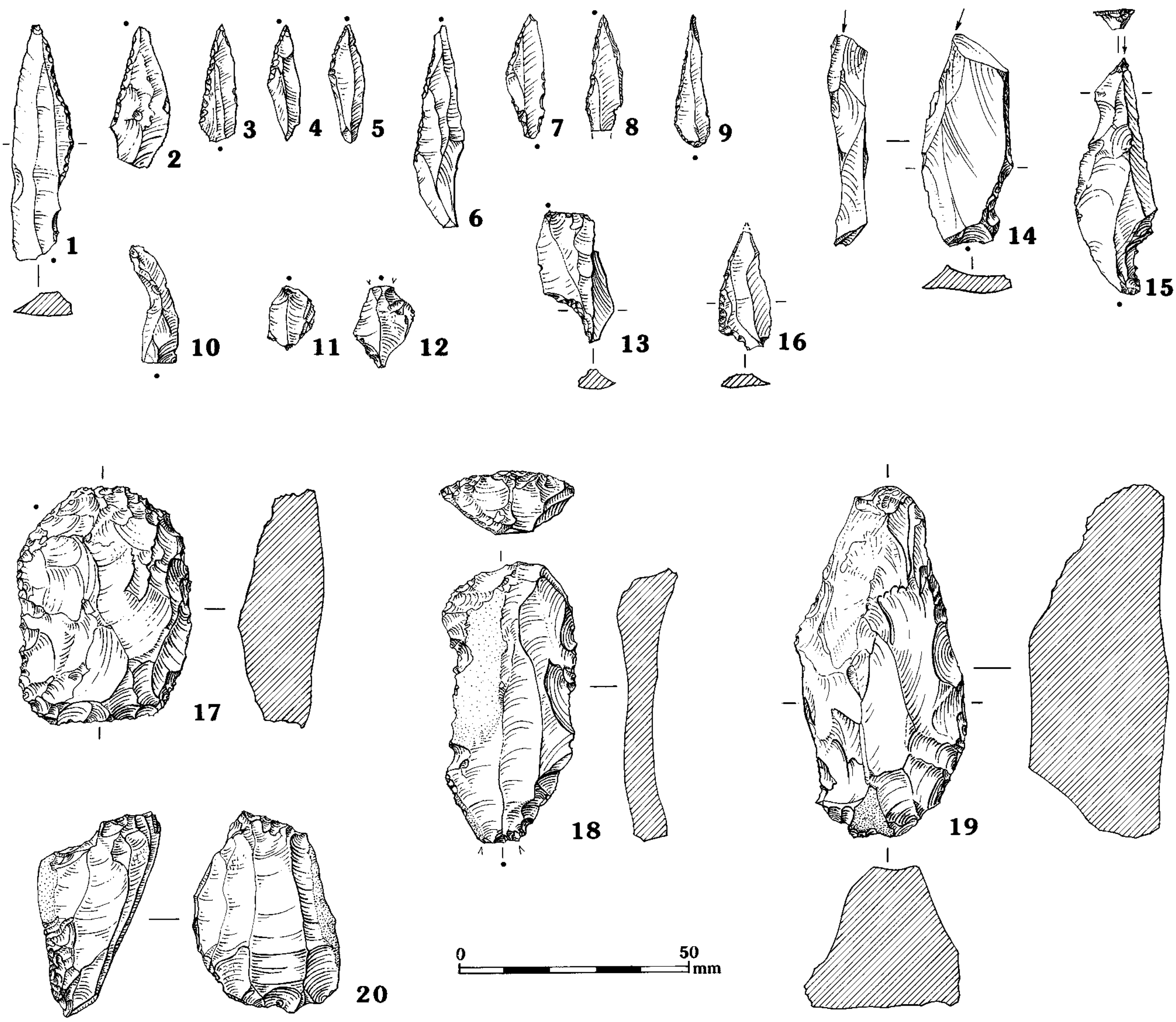


Figure 28 Area 1: Mesolithic flints from subsurface contexts in Areas 1 and 2

Notches
Two retouched artefacts on flakes can be described as notched pieces. Both are complete examples of the single notch type class, and no double notch types were identified.

Denticulates and microdenticulates
There is one denticulate and one microdenticulate. The former has a series of contiguous notches on its right lateral, and the latter has alternating dorsal-ventral utilisation scars along its left lateral edge. Both pieces are complete and on blades.

Piercers
One of the two piercers has retouch/utilisation scars on its distal end (ventral surface), the other on its proximal end (dorsal surface). One occurs on a flake, the other on a blade.

Backed pieces
The single complete backed/marginally retouched blade has retouch along its left lateral from the proximal to distal end (dorsal surface).

Fabricator
One complete fabricator or percussor was recovered from a subsurface context. The piece is oval shaped and bifacially worked with extensive battering at one end, indicating its use as a percussion tool (Fig. 28, 19).

Diverse
Two artefacts are included in this category. One of them is a nondescript distally retouched flake fragment, the other an unclassifiable core tool fragment bifacially retouched along both edges.

Utilised

One complete flake and one blade fragment exhibit patterns of edge damage along their right laterals that are characteristic of use.

Hammerstones

One complete and five fragmentary hammerstones together with seven hammerstone flakes were also recovered from subsurface deposits. The complete and fragmentary hammerstones are unmodified irregularly shaped nodules. All exhibit traces of battering on their surfaces. Cores with evidence of secondary use as hammerstones have been summarised previously.

Discussion

Technologically, the artefacts are Mesolithic in date and represent an assemblage derived from the exploitation of the area by early postglacial hunter-gatherers (Fig. 29). The relative chronological position of the artefact assemblage within the Mesolithic can be determined on typological grounds by the presence of obliquely blunted and convex backed points and the isosceles triangle. These types are characteristic microlithic elements of earlier Mesolithic industries pre-dating 7000 BC (Jacobi 1973; 1978a; Mellars 1974; Pitts and Jacobi 1979), and are in general agreement with the radiocarbon date. A finer grained subdivision places the assemblage amongst 'Deep Carr' assemblages, which are the earliest in Sussex (Reynier 1997).

A useful starting point in attempting to identify site function is the functional classification of Mesolithic lithic assemblages proposed by Mellars (1976, 385–95). In this classification the relative percentages of a set of 'essential' tool and debitage type classes (microliths, scrapers, burins, saws, axes, cores and microburins) were used to define three different types of assemblages related to site function: Type A (microlith-dominated assemblages); Type B (balanced assemblages); and Type C (scraper-dominated assemblages). Type A assemblages were considered diagnostic of temporary residential camps associated with subsistence activities related to hunting. Type B, with their lower percentages of microliths and higher percentages of scrapers and other 'essential' tools, were seen as reflecting both hunting and domestic activities associated with seasonal, often winter, residential locations. Type C assemblages were seen as definitive of specialised limited activity locations where intensive skin processing occurred.

The percentages of essential tools and debitage types recovered from Area 1 (microliths 68.9%; scrapers 8.2%; burins 6.6%; saws 3.3%; axe/axe sharpening flakes 13.1%; microburins 29.5%) are similar to those of Type A, suggesting that the site was some form of seasonal residential or limited activity site. The remaining 'non-essential' tools in the assemblage also have low numbers. These patterns indicate that the assemblage was produced by activities such as core preparation and reduction, tool manufacture, and the use and rejuvenation of tools, related to the working of bone, antler or wood and, much less, to the processing of skins. This agrees with Barton's and Reynier's studies of Early Mesolithic sites in central southern England (Barton 1992, 253–61; Reynier 1994; 1998). Area 1, therefore, was used (together with the nearby site at Area 4) as part of the settlement and landuse strategies of the area's early postglacial hunter-gatherers.

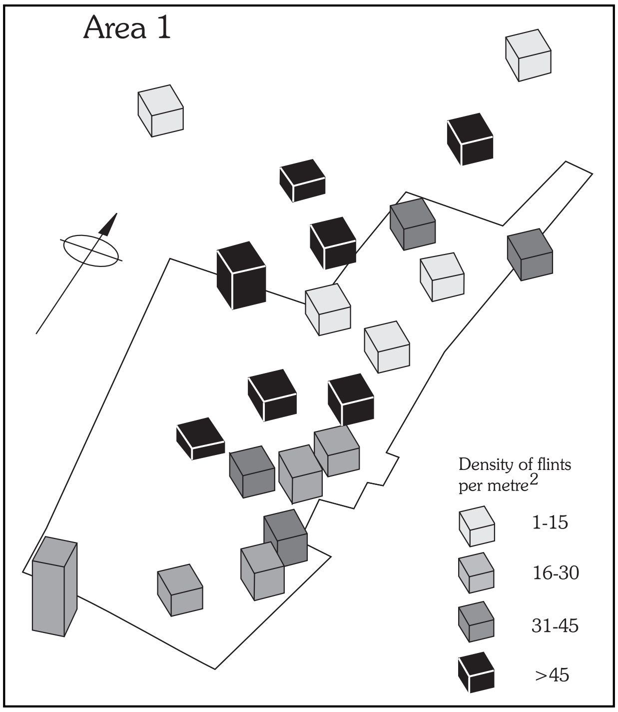


Figure 29 Area 1: distribution of flint recovered from test pits. The vertical scale of the columns has been exaggerated to indicate the relative depth of the test pits. The test pit on the bottom left is c. *1 m deep*

Illustrated flint from Areas 1 and 2 (Fig. 28)

1. Convex backed point. Context 10169
2. Obliquely blunted point. Context 10169
3. Triangle. Context 10169
4. Obliquely blunted point. Context 10169
5. Possible scalene triangle fragment. Context 10169
6. Obliquely blunted point. Context 10175
7. Truncated blade. Context. 10169
8. Narrow scalene triangle. Context 10169
9. Narrow scalene triangle. Context 10169
10. Unfinished microburin. Context 10198
11. Microburin. Context 10169
12. Microburin. Context 10169
13. Microburin. Context 10169
14. Angle burin. Context 10154
15. Angle burin. Context 10154
16. Shouldered point. Context 20153
17. Double end scraper. Context 10144
18. End scraper. Context 10211
19. Fabricator. Context 10208
20. Utilised core. Context 10190

Table 20 Area 1, radiocarbon determinations from argillic brown earth (*sol lessivé*)

Context	*Material*	*Lab. no.*	*Determination*	*cal BC*
10169	Charcoal: hazelnuts	OxA-4168	9120±90	8350–7970
10169	Charcoal: mixed	OxA-4169	4260±70	3040–2610

mixed = *Quercus, Prunus, Corylus* and Pomoideae

Radiocarbon Results (Table 20) by Michael J. Allen

The upper fill (10169) of the rill/gully (10197) contained Mesolithic flints, as well as charcoal and charred hazelnuts that were initially thought to be contemporaneous. Two samples, one of hazelnuts, the other of mixed charcoal (*Quercus, Prunus, Corylus* and Pomoideae), were submitted from the same bulk sample.

The resulting determination from the charred hazelnuts produced a date in the ninth millennium BC (9120±90 BP, OxA-4168), consistent with the flint assemblage. However, that from the mixed charcoal was significantly different, producing an unexpected Neolithic date of 3040–2610 cal BC (4260±70 BP, OxA-4169) (see Fig. 27). This relates to the Late Neolithic activity indicated by the small quantity of pottery found low down in the colluvium that filled the hollow.

Area 4, by Andrew B. Powell and W.A. Boismier

Local Topography, by Michael J. Allen

Area 4 was sited on the western slope of a slight rise overlooking the calcareous marls of the Waterbeach–Tangmere lateglacial and Mesolithic stream course to the east (Pl. 9). The drift geology was brickearth, over 1.5 m deep above gravels in the south-west but only 0.5 m deep over redeposited chalk (?coombe deposits) in the north-west (geological test pit 16). The brickearth closely follows the Hamble Series 'soil type sequence' described by Hodgson (1967, 71) from a soil profile less than 350 m to the west at Maudlin Farm (Fig. 5, test pit 15), and by Macphail (above) in Area 1.

Plate 9 Initial cleaning of Area 4 after part of the topsoil had been removed looking north-east. The sample bags in the middle ground mark the location of the densest concentration of Mesolithic flints (cf. *Fig. 30)*

Excavation Strategy

Fieldwalking during the evaluation had identified a concentration of flints, most of which were Mesolithic. Evaluation trenches 33 and 34 had also revealed archaeological features containing worked flint, and Neolithic, Bronze Age and Romano-British pottery. As it was considered that the evidence for Mesolithic activity might survive largely, if not exclusively, in the ploughzone, a series of 64 test pits 2 m square was laid out over an area approximately 120 m south-west to north-east by 40 m south-east to north-west (Pl. 3).

The 13 test pits in the south-western zone, which covered an area of *c.* 70 m by 40m (*c.* 2800 m²), were laid out at 10 m intervals in two lines 20 m apart to provide a 2% sample of the area of lower artefact density recorded during the fieldwalking. In the north-eastern zone, which covered an area of *c.* 50 m by 35 m (*c.* 1700 m²), a grid was set out consisting of pits at 5 m intervals to provide a *c.* 13% sample of the area with the highest artefact density.

The test pits were excavated in 0.1 m spits, the south-western quadrant of each pit being treated as an artefact sample for wet-sieving through a 2 mm or 5 mm sieve (Pls 7, 10). By the time 51 test pits (Nos 42000–50) had been excavated, i.e. over 80% of the projected test pit programme, more than 10% of the area had been sampled, and had demonstrated relatively good recovery of struck flints. However, as the speed of excavation was being slowed by the policy of dry sieving 75% of the damp, clay-rich ploughsoil, it was decided to halt the excavation of the remaining 13 test pits within the 5 m grid in order to proceed with topsoil stripping.

An area of about 4500 m² was machine stripped, working from the north-east to the south-west. Where the ground fell to the south, there was a greyish-brown clayey silt subsoil (40326) between the ploughsoil and the brickearth over an area *c.* 90 m by 20 m (Fig. 32). It was up to 0.2 m thick and was cut by a number of features containing Middle Bronze Age pottery. Although it contained finds of later prehistoric date it was impossible to excavate it manually within the available time, and it was subjected to further machine stripping. The true character of this layer was not fully ascertained.

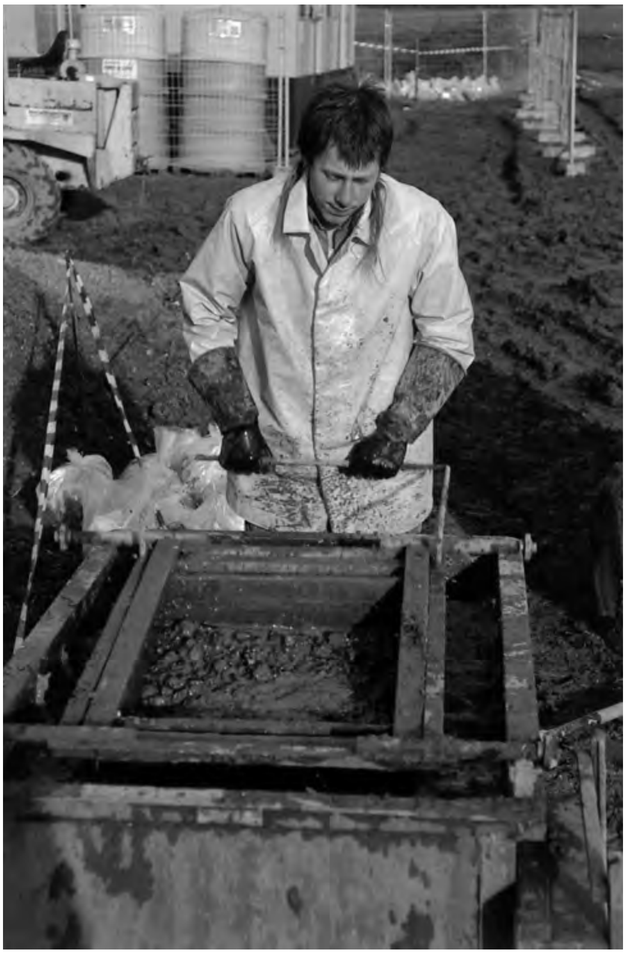


Plate 10 Wet sieving of flints from Areas 1 and 4 looking east. In the background is the main site compound adjacent to Area 5a

The Ploughzone Test Pits, by W A Boismier

The excavation of test pits in the ploughzone produced diagnostic artefacts dating from the Mesolithic to Middle Bronze Age. They included a total of 4627 lithic artefacts, 233 sherds of pottery of Bronze Age to post-medieval date, and moderate quantities of burnt flint, ceramic building material, glass and metal, typical of ploughzone deposits. A further 669 lithic artefacts of this date range were recovered during the cleaning of the interface between the ploughzone and brickearth prior to excavation of subsurface features. In most instances this portion of the deposit formed the basal element of the ploughzone, thus allowing the artefacts to be treated as a part of the ploughzone assemblage.

The flints recovered from the test pits have been treated as a ploughzone assemblage (Fig. 30). However, although the prime objective of excavating the test pits was to examine the evidence for Mesolithic activity, the assemblage, by its nature, comprises materials of different dates.

Condition of Assemblage

An assessment of the size of pottery sherds recovered from the ploughzone indicates that the vast majority were less than 0.03 m in diameter, with a mean weight of 3.4 g, reflecting the high degree of fragmentation produced by tillage implements during seedbed preparation (*cf.* Hinchliffe 1979, 20–6). The relative proportions of hard (95%) and soft fabrics (5%) within the pottery assemblage show that they had different patterns of fragmentation and preservation in the ploughzone, and that the assemblage has undergone substantial changes in both its content and characteristics.

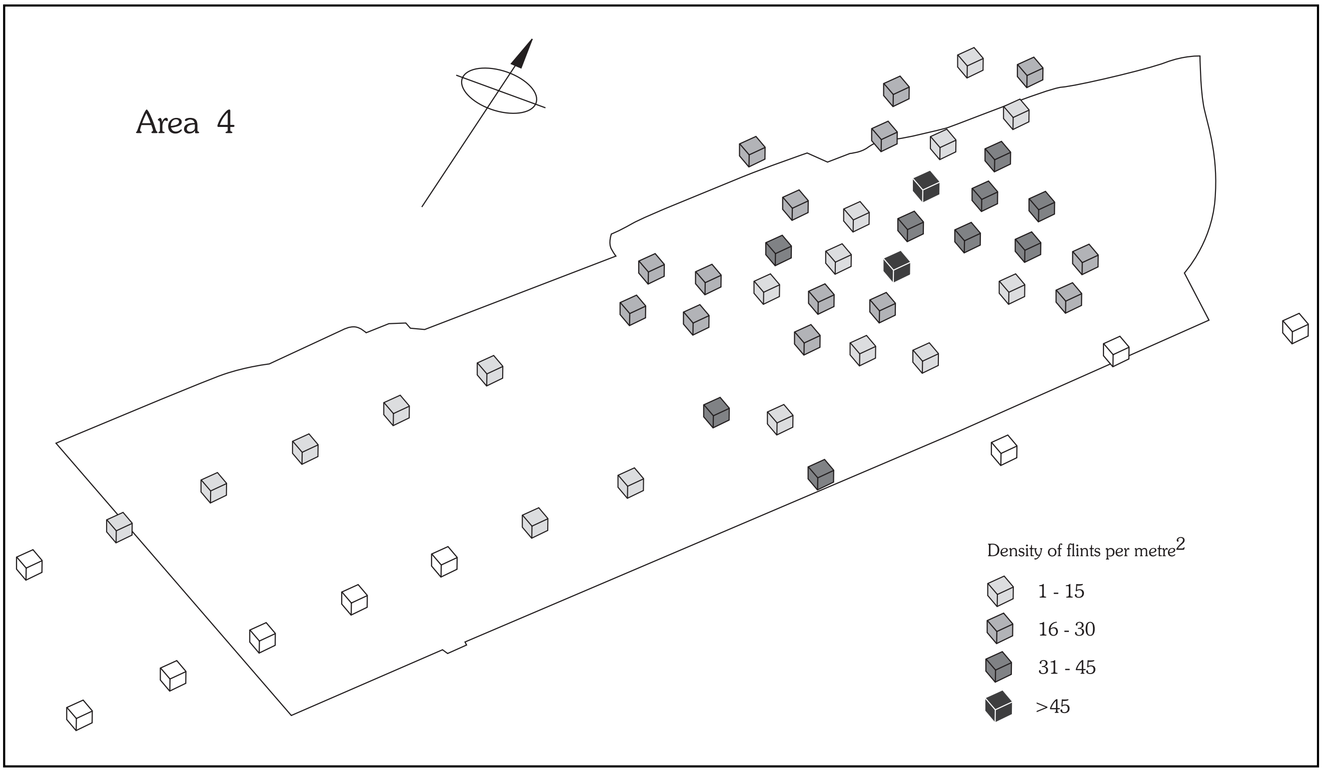


Figure 30 Area 4: distribution of flint recovered from test pits

Because of the tillage-induced changes (in condition and spatial position) affecting the lithic artefacts from the ploughzone (and the ploughzone/brickearth interface), their analysis has been based on frequency data generated by subdividing them into a number of type classes. No attribute or 'metric' description was undertaken because of the effects on edge-damage and breakage on the identification of technological attributes.

Patination on individual lithic artefacts ranges from a light waxy film to a grey or greyish-white. A total of 4113 lithic artefacts (78%) exhibit some degree of patination, with 1183 (22%) unpatinated. Patterns of edge-damage and breakage characteristic of plough-damage (Mallouf 1982) occur on 96% (n = 4412) of the lithic artefacts recovered from ploughzone contexts, and on 78% (n = 523) of those recovered from ploughzone/brickearth interface contexts. Edge damage attributes on individual pieces range from simple irregular 'plough retouch' and pressure snaps to complex edge nicks and lateral wedge snaps, and clearly document that the assemblage has undergone a drastic reduction in condition, with an accompanying increase in the number of broken artefacts. Three artefacts are also recognisably water worn.

Some 61% of the lithic assemblage was recovered from the ploughzone. The ploughzone was 0.25–0.32 m deep (average 0.28 m), indicating that the vast majority of the later and/or shallower contexts had been destroyed by ploughing. Subsurface features below the ploughzone had an average depth of 0.25 m, several representing the bases of what had been much larger features. Ploughing, therefore, had truncated features and drawn the artefacts within them into the ploughzone where they had been damaged by continued tillage. Much of the evidence for occupation phases and site function has survived only in the form of ploughsoil artefact distributions.

Spatial Analysis

A spatial analysis of the artefact distributions recovered from the test pits was undertaken in an attempt to identify different occupation areas across the area. The quantity of prehistoric pottery from the ploughzone was too small to enable a quantitative analysis of its distribution.

For the lithic artefacts, Kendall's tau-b statistic was employed in the analysis to identify patterns of analogous artefact class groups with the clusters of associated artefacts identified by the analysis and plotted utilising contour mapping of joint artefact densities per unit volume. Tau-b values were obtained from the SPSSPC subprogram CROSSTABS statistic option, with contour mapping carried out employing the GRID subprogram of the SURFER graphics package. Full details of the pattern recognition procedure have been presented elsewhere (Hietala and Stevens 1977; Boismier 1991; 1995) to which the reader is referred for a discussion of the statistical tests

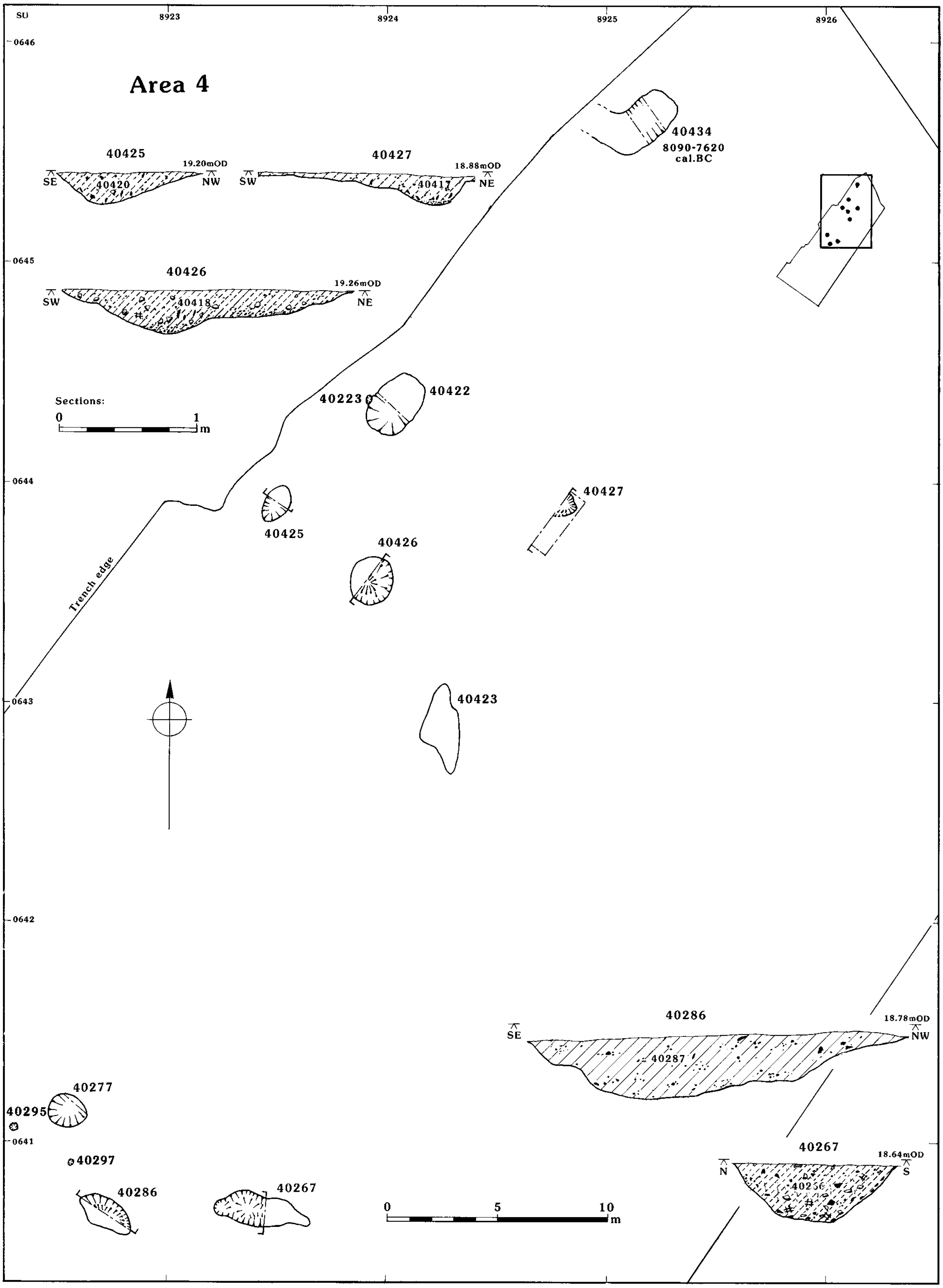


Figure 31 Area 4: plans and sections of features containing Mesolithic flints

and assumptions behind their use. The lithic artefact groups used were:

Flake core
Blade core
Core trimming debris
Core rejuvenation flake
Primary unretouched flakes and blades
Secondary unretouched flakes and blades
Tertiary unretouched flakes and blades
Microlith manufacturing debris
Axe/adze sharpening flake
Microlith/arrowhead
Scraper
Notch/denticulate
Burin/piercers
Other retouch

Tau-b values for the lithic artefact class groups are contained in the archive. The majority of the pairwise associations are statistically significant and reveal a pattern composed of a number of functionally and chronologically unrelated artefacts spatially associated together. Contour maps of their joint density distributions (held in archive) revealed a high degree of spatial correspondence between the artefact groups identified from the matrix. The different groups all exhibited considerable overlap in their distribution patterns with identifiable concentrations tending to co-occur at the same test pit locations across the area. Such patterns reveal the 'site' to be composed of a series of overlapping artefact distributions and document that no discrete occupation areas have survived.

Summary

The pattern of tillage-induced changes in the archaeological record in the area is one of extensive deposit and assemblage modification with only a small and substantially altered proportion of the contextual evidence surviving at the time when the area was excavated. Deposit and assemblage characteristics recorded by the test pits are the products of a series of tillage-induced changes in the form and content of the archaeological record at the site. These changes have produced an essentially 'ploughzone site' composed of a series of artefact distributions occurring within and on the surface of the ploughzone, and a number of heavily truncated subsurface features. This lack of patterning in the test pit data can be seen as the product of the effects of both the multiple occupations at the site and subsequent agricultural tillage (Fig. 30). Changes in the use of the site would have produced a build up of different types of debris across the site and resulted in a merging of occupation area boundaries. Tillage-related processes include the homogenisation of deposit characteristics and changes in spatial patterning produced by artefact displacement. Together these two sets of processes have resulted in an essentially random distribution of artefacts across the area of the site.

The Subsoil Features, by Andrew B. Powell, Neil J. Adam and D. Bonner

Eight features, mainly irregular hollows, were recorded, spread over *c.* 60 m, in the area where the greatest concentration of worked flint was recovered during the test-pitting of the ploughsoil (Fig. 30) (Table 21). One further feature (1144) had been found in evaluation trench 34 to the south-west of the excavation area. The features were irregular, generally oval, shallow hollows about 2–3m long by 1 m wide. Most were *c.* 0.25 m deep with sloping edges (although they would originally have been much deeper), and were filled with darker silty clay (Figs. 31–3). There was a pair of undated possible postholes, 3 m apart, south and west of feature 40277. Feature 40295 was *c.* 0.25 m in diameter and 0.08 m deep, while feature 40297 was *c.* 0.35 m in diameter and 0.1 m deep. Both contained yellowish-brown clayey silt fills (40296 and 40298), the

Table 21 Area 4, subsoil features of Mesolithic date

Feature	*Length (m)*	*Width (m)*	*Depth (m)*	*Finds*
40267	3.7	1.4	0.5	burnt flint and bone
40277	2.0	2.0	0.27	burnt flint
40286	2.95	1.05	0.44	worked flint
40422	3.2	2.0	0.08	burnt flint, charcoal and burnt clay
40425	1.7	1.0	0.23	worked flints on base
40426	2.1	0.9	0.31	burnt flint and charcoal
40427	?	?	0.3	burnt flint
40434 (L-shaped)	3.5	1.8	0.5	burnt flint, charcoal: 7500–7040 cal BC & 8090–7620 cal BC
Evaluation				
1144	?	1.2	0.7	flints

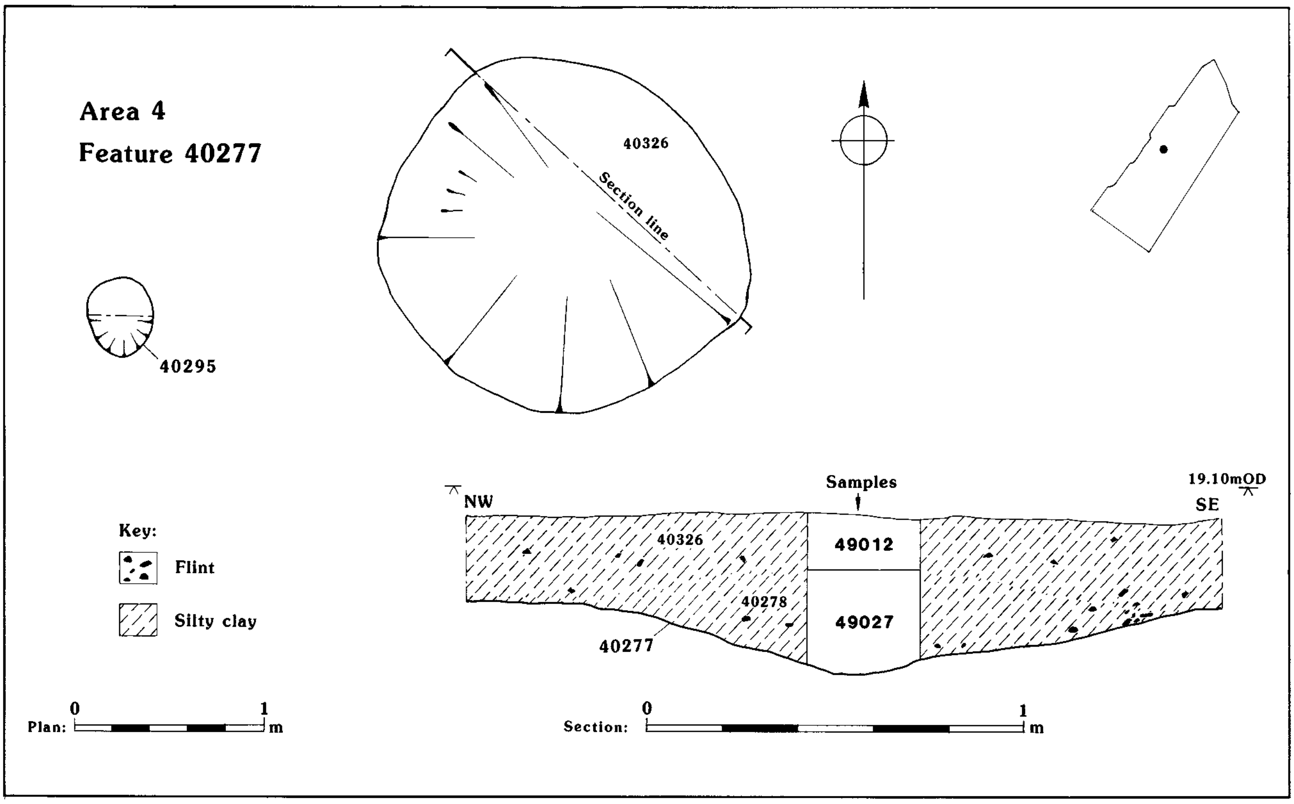


Figure 32 Area 4: plan and section of Mesolithic feature 40277

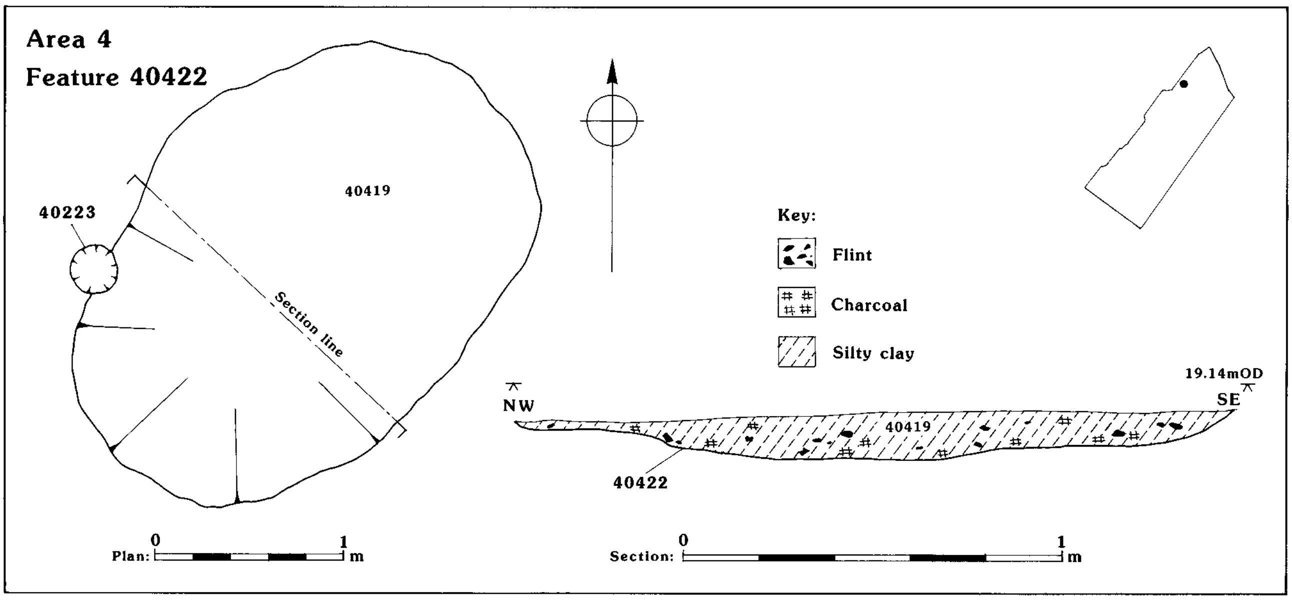


Figure 33 Area 4: plan and section of Mesolithic feature 40422

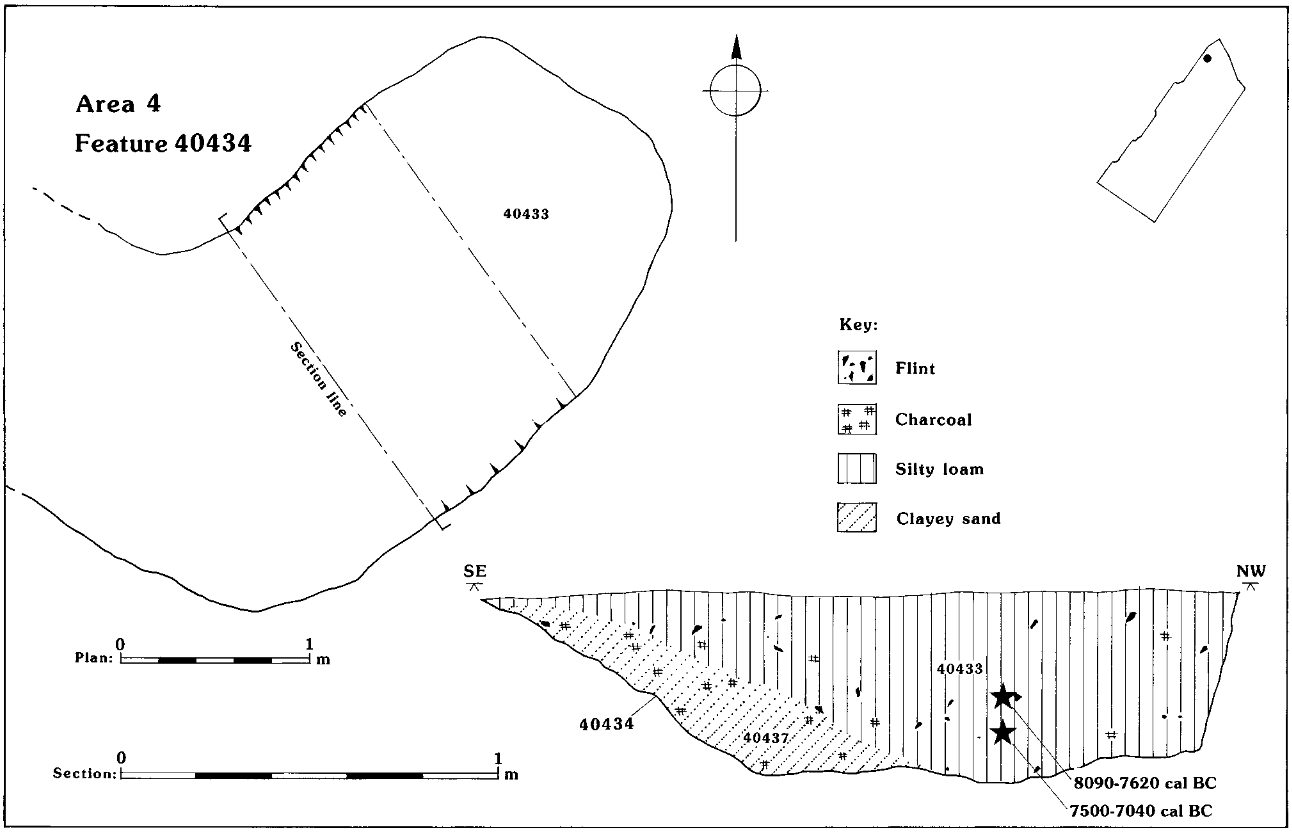


Figure 34 Area 4: plan and section of Mesolithic feature 40434

former yielding a single flint. Another possible posthole (40223), 0.3 m in diameter and 0.2 m deep with charcoal flecks in its fill (40424), cut the western edge of feature 40422. These postholes may be associated with the Mesolithic features, rather than with the later periods of activity in the area.

Feature 40434 (Fig. 34), the most northerly of the group, was an irregular L-shaped cut 1.8 m wide and at least 3.5 m long, extending beyond the edge of the excavation to the north-west, and 0.5 m deep. In the 1 m wide section excavated it had a steep straight side to the north, with a moderately steep straight side to the south, and a flat base. Its primary fill (40437) was a pale yellowish-white clayey sand, 0.22 m thick, while the main fill consisted of a pale greyish-brown silty loam (40433). Both layers contained burnt flint and charcoal flecks. Charcoal from the main fill (40433) was submitted for radiocarbon dating.

It is uncertain whether the larger features were man-made or natural, such as tree throws, within which flints accumulated. They did, however, contain a high percentage of the Mesolithic flint-work from the area, including cores, flakes and blades, microliths and other tools, and quantities of flint-working debitage. Most also produced evidence of burning in the form of burnt flint and charcoal, and, in some cases, burnt clay. The charcoal may have been the product of natural causes or of human activities such as land clearance, conflagration of structures, or residues from hearths. In most prehistoric societies wood for fuel or other, artefactual, uses would have been felled or gathered locally. The charcoal taxa (hazel, ash, oak, Rosaceae, Pomoideae and Prunus) were similar to those from the argillic brown earth in Area 1 but did not contain willow/poplar, and included a high proportion of oak (sapwood and heartwood) and hazel.

Hazel nutshell fragments were present in all the samples, and one pit also contained two incomplete halves of a pyrene (inner fruit stone) of *Crataegus* cf. *monogyna* (hawthorn). Hazel is common in Mesolithic contexts and the nuts are assumed to have been collected as food but the fruits of hawthorn are less common. *Crataegus monogyna*, with hazel, is a plant of light wood margins, and spreads by seed readily into cleared areas; the midland hawthorn is more shade-loving. Hawthorn fruits are edible but considerably less rewarding than hazelnuts, possibly a reason for the fewer records. The charred fruits have been found in Mesolithic contexts at Westward Ho!, Devon (Godwin 1975, 199; Balaam *et al.* 1987).

Radiocarbon Results (Table 22) by Michael J Allen

Two samples were submitted from the main fill (40433) of feature 40434. One sample was of charcoal (*Corylus*, *Fraxinus* and *Quercus*), the other of hazelnut fragments. The mixed charcoal gave a radiocarbon

Table 22 Area 4, radiocarbon determinations from feature 40434

Context	*Material*	*Lab. no.*	*Determination*	*cal BC*
40433	Charcoal: hazelnuts	OxA-4170	8880±100	8090–7620
40433	Charcoal: mixed	OxA-4171	8300±90	7500–7040

mixed = *Corylus, Prunus* and Pomoideae

determination of 7500–7040 cal BC (OxA-4171, 8300±90 BP), and the hazelnuts a determination of 8090–7620 cal BC (OxA-4170, 8300±100 BP). Both dates fall securely in the eighth millennium BC – the earlier Mesolithic – although they are significantly different at a 95% confidence level (Ward and Wilson 1978).

The Flints, by W.A. Boismier

The Ploughzone Assemblage

As already mentioned, the ploughzone lithic material assemblage comprises materials of different dates. Of necessity it has been analysed as a single assemblage, and is so described here, although Neolithic and Bronze Age finds are considered further in Chapter 5.

Some 5339 of the artefacts in the ploughzone assemblage (99.96%) are flint and two (0.04%) are chert. Cortical condition indicates that most of the assemblage was obtained from sources within the immediate vicinity of the site, with 88% derived nodular flint from probable coombe deposit sources and 12% from riverine gravel sources. No artefacts from Tertiary sources were identified. Seven non-cortical pieces also indicate that a small proportion was not obtained locally but their non-cortical character does not allow for a determination of their likely sources.

The two pieces of chert in the assemblage are characterised by a very dark grey/greyish-brown colour and grainy texture. Surviving cortex on one artefact indicates that the chert is of probable local riverine gravel origin (Hodgson 1967).

The major categories of artefacts recovered from ploughzone and ploughzone/brickearth interface contexts are summarised in Table 23. Ninety-nine per cent of the assemblage (n = 5230) is composed of manufacturing and rejuvenation debitage, and show the assemblage to be dominated by 'waste' class groups generated by core preparation and reduction activities and the manufacture and rejuvenation of retouched tools during the Mesolithic, Neolithic and Bronze Age. Retouched and utilised tools make up the remaining 1.2% and 0.06% of the assemblage respectively and include diagnostic types of the Mesolithic, Neolithic and Early Bronze Age.

Cores

In total, 245 complete, fragmentary and burnt cores were recovered from ploughzone and ploughzone/ brickearth interface contexts and are summarised in Table 24. Flake cores make up 36% (n = 90) and are predominantly prepared platform types. Three general types of flake core are present – single, multiple platform, joint or keeled platform (n = 3). Blade cores comprise 64%. Three general types of blade core dominate: single, bipolar and cores with two or more

Table 23 Area 4, flint assemblage from the ploughzone and ploughzone/brickearth contexts

	Ploughzone			*Brickearth surface*		
	Complete	*Fragment*	*Burnt*	*Complete*	*Fragment*	*Burnt*
Unretouched flake	1567	1088	54	263	84	14
Unretouched blade	314	1211	43	71	123	5
Flake core	60	5	2	17	2	2
Blade core	66	2	2	75	9	1
Core trimming debris	80		1	22	–	–
Core rejuvenation flake	20	2	1	11	2	–
Microburin	22	–	–	–	–	–
Burin spall	2	–	–	–	–	–
Axe sharpening flake	4	–	–	–	–	–
Polished axe flake	2	–	–	–	–	–
Microdebitage	26	–	–	1	–	–
Other retouched tool	27	18	1	12	4	–
Utilised	1	1	–	1	–	–
Total	2191	2327	104	473	224	22

Table 24 Area 4, core types recovered from ploughzone and ploughzone/brickearth interface contexts

	Ploughzone			*Ploughzone/Brickearth interface*		
	Complete	*Fragment*	*Burnt*	*Complete*	*Fragment*	*Burnt*
Flake core						
Single platform	20	4	1	2	1	2
Multiple platform	28	–	–	12	–	–
Joint platform				3		–
Unclassifiable	12	1	1		1	–
Total	*60*	*5*	*2*	*17*	*2*	*2*
Blade core						
Single platform	32	2	–	15	7	–
Bipolar platform	20	–	–	8	–	–
Other platform **	12	–	–	2	1	–
Unclassifiable	2	–	2	–	1	–
Total	*66*	*2*	*2*	*75*	*9*	–
Core shatter debris	–	81	–	–	22	–

** Cores with two or more platforms at 45° to 90° angles to each other

Table 25 Area 4, retouched and utilised tools recovered from ploughzone and ploughzone/brickearth contexts

	Ploughzone			*Ploughzone/Brickearth interface*		
	Complete	*Fragment*	*Burnt*	*Complete*	*Fragment*	*Burnt*
Microliths	6	9	–	4	–	–
Arrowhead	1	–	–	1	–	–
Scrapers	12	4	1	5	1	–
Burins	3	1	–	–	–	–
Denticulates	–	1	–	–	–	–
Microdenticulates	–	–	–	1	–	–
Piercers	2	1	–	1	–	–
Backed/marginally retouched	2	1	1	–	–	–
Flake axe/adze	–	1	–	–	1	–
Other retouched	1	–	–	–	2	–
Utilised	1	1	–	1	–	–
Total	28	19	1	13	4	–

platforms at 45° to 90° to each other. Twenty-seven per cent of the flake cores and 3% of the blade cores have two or more blade or flake scars and indicate that a number of the cores were utilised for the production of both flakes and blades throughout the reduction sequence. Eight cores have evidence for secondary use: five as hammerstones, two as burins/piercers and one as a scraper. Three hammerstones (two complete, one fragment) were also utilised as blade cores.

Core shatter/trimming debris

One hundred and three pieces are identifiable as shatter or trimming debris produced by nodule shaping and initial core reduction (Table 24). They include both cortical and non-cortical pieces of variable shape and are distinguished by large bulbs of percussion and thick, often cortical platforms, reflecting their detachment by direct percussion techniques with a hammerstone.

Core rejuvenation flakes

Thirty-six core rejuvenation flakes were recovered. Sixty-four per cent were from ploughzone contexts and 36% from the ploughzone/brickearth interface. Thirty-one are complete, four fragmentary and one is burnt. Three types are present: core tablet (n = 13), core face/platform (n = 6), and core edge (n = 7).

Unretouched flakes and blades

Unretouched flakes and blades comprise 91% of the assemblage and consist of 3070 flakes and 1767 blades (Table 23). The relatively large number of fragmentary flakes and blades again reflect tillage-induced changes in the condition of the lithic assemblage.

The unretouched assemblage consists of 4% primary (n = 94), 35% secondary (n = 779) and 61% tertiary (n = 1342) pieces. Complete flakes can be divided into four distinctive shapes: narrow, proportional, squat and irregular as defined above in relation to the assemblage from Area 1 (p. 70). The character of the multiple occupations at the site and the general co-occurrence of different shaped flakes in most ploughzone and ploughzone/brickearth interface contexts do not allow for a determination of any chronological differences on the basis of flake shape characteristics.

Tool manufacturing and rejuvenation debris

Thirty pieces of this debris were recovered from ploughzone contexts. This consists of 22 microburins, two burin spalls, four complete transverse axe sharpening flakes and two polished axe flakes (Fig. 47, 6).

Microdebitage

Twenty-six pieces of microdebitage were recovered in sieving (Table 23). All are less than 10 mm and have the same attributes as those from Area 1.

Tools

Retouched and utilised tools make up just over 1% of the assemblage recovered from disturbed contexts and consist of 41 complete artefacts, 23 fragments, and one burnt piece (Table 25).

Microliths

Nineteen microliths were recovered and consist of 11 complete pieces and eight fragments. The type classes represented are obliquely blunted points (eight complete and five fragments), obliquely blunted point and base (one complete), triangle (one complete), and atypical/unclassifiable (one complete and three fragments)

Arrowheads

Two Neolithic arrowheads were recovered (Fig. 47, 7)

Scrapers

Scrapers comprise 35% of the retouched component and consist of 17 complete examples, five fragments and one burnt piece. Sixteen scrapers occur on flakes, six on blades, and one on an unmodified thermal flake. Scraper type classes represented in the assemblage comprise end scrapers (11 complete, five fragments, one burnt) (Fig. 47, 2), side scrapers (five complete) (Fig. 47. 3), double-end scraper (one complete: Fig. 47, 1), and thumbnail scraper (one complete). The 'thumbnail' scraper is of probable Early Bronze Age date and the blade end scrapers likely to be of Mesolithic date. The remaining scraper types are essentially undatable.

Flake axe/adzes

Two flake axe/adze fragments were recovered from disturbed contexts. Both fragments represent the butt ends of an axe or adze with retouch occurring on all surfaces. One is from the ploughzone and the other from the ploughzone/brickearth interface (Fig. 47, 9). A complete pick (not included in the tables) was also collected from the ploughzone surface outside the road corridor.

Other tools

A small number of other tools occurred as summarised in Table 25. These included angle burins, denticulate and microdenticulates and piercers. These are made on both flakes and blades and are chronologically undiagnostic. In addition, two complete artefacts and one fragment exhibit patterns of use and three hammerstone fragments and 13 hammerstone flakes were also recovered.

Discussion

Typologically the assemblage recovered represents a mixture of Mesolithic, Neolithic and Bronze Age industries. Technologically diagnostic artefacts in the assemblage include microliths, transverse axe sharpening flakes, microburins, leaf and transverse arrowheads, polished axe flakes and a number of other tool types broadly diagnostic of the various occupations occurring at the site. Debitage class groups in the assemblage represent a mixture of industries. Microlithic types present in the assemblage are characteristic elements of Earlier Mesolithic industries pre-dating 7000 BC, seen in Area 1. Both Earlier and Later Neolithic types are present, which concurs with the pottery from the area. Identifiably Bronze Age artefacts are restricted to those for the Early Bronze Age with later types missing from the assemblage.

The Lithic Assemblage from Features of Mesolithic Date

The excavation produced an assemblage of 1538 Mesolithic stone artefacts from the Mesolithic features which has been analysed on the basis of both frequency and attribute or 'metric' data. Attribute data were generated by means of a systematic random sample (Torrence 1978) with sampling fractions of 44% complete unretouched flakes and 48% for complete unretouched blades (flakes n = 203, blades n = 154), and 72% for complete cores (n = 28). The remaining type classes were not described metrically. Selected artefacts recovered from Mesolithic contexts are illustrated in Fig. 35.

Patination ranges from a light waxy film to a grey or greyish-white on individual artefacts. The excavated assemblage exhibits some degree of patination (1251 artefacts, 81%) or no patination (287, 18%) in the same proportion as that from the ploughzone. One hundred and fifty-three pieces have excavation-induced damage in the form of isolated nicks and impact fractures.

A total of 1530 artefacts (99.5%) are of flint and 8 (0.5%) of chert. Cortical condition and flint colour indicate that the majority of the assemblage has been

Table 26 Area 4, flint assemblage from features of Mesolithic date

	Complete	*Fragment*	*Burnt*
Unretouched flake	459	150	34
Unretouched blade	322	268	34
Flake core	12	3	–
Blade core	19	4	1
Core trimming debris	45	–	3
Core rejuvenation flake	13	1	–
Crested piece	1	–	–
Microburin	13	–	–
Burin spall	1	–	–
Microdebitage	119	–	–
Retouched tool	30	5	–
Utilised	2	1	–
Total	1035	432	72

obtained from locally available sources; approximately 92% derived nodular flint probably from Coombe Deposit sources and 7% from riverine gravel sources. No artefacts manufactured from Tertiary flint sources were identified. Eight non-cortical pieces in the assemblage indicate that a very small proportion is of non-local origin but their source cannot be established.

The chert pieces are distinguished by a dark grey/greyish-brown colour and a grainy texture. Surviving cortex on three artefacts indicate that the chert is again of probable local riverine gravel origin.

The major artefact class groups recovered from the features are presented in Table 26. The assemblage is dominated by manufacturing and rejuvenation debitage (97.5%, n = 1501) indicating waste generated by core preparation and reduction activities in blank production, and the rejuvenation of retouched tools. Retouched and utilised tools comprise 2.5% (n = 38) of the assemblage and include diagnostic pieces characteristic of the Mesolithic.

Cores

Thirty-nine complete, fragmentary and burnt cores were recovered. Flake cores make up 38% (n = 15) of the total and are prepared platform types (Table 27). Two general types of flake core are present in the assemblage: single platform (n = 3) and multiple platform (n = 9). The remaining unclassifiable flake cores consist of three complete and broken cores with flake scars. Blade cores comprise 62% (n = 24) of the total (Table 28). Three general types of blade core dominate the assemblage; single platform (n = 13), bipolar platform (n = 6), and cores with two or more platforms at 45° to 90° to each other (n = 5). No evidence was found for any secondary use on the cores recovered.

The 28 complete cores comprise 8 flake, 14 blade and 6 six flake-and-blade cores. They were classified according to platform characteristics and described according to the amount of cortex remaining and scar type.

Flake cores include examples of single, multiple single, and multiple joint and combined platform types; blade cores, examples of single, bipolar and multiple single platform types; and flake-and-blade cores, examples from three platform types. Cores with less cortex have a greater mean number of scars and are narrower than those with a greater proportion of surviving cortex. Surviving cortex on all core types ranges from none to 50% and reflects their discard during secondary and tertiary reduction sequences. Scar type largely cross-cuts platform type and indicates that the majority of cores were utilised for the production of both flakes and blades, with their morphology mainly conditioned by the final sequence of blank removals prior to their discard.

Core shatter/trimming debris

There are 48 pieces of shatter or trimming debris which were produced by nodule shaping and initial core reduction. They include both cortical and non-cortical pieces of variable shape and are characterised by large bulbs of percussion and thick, often cortical platforms, indicating that they were largely struck off by direct percussion with a hammerstone.

Crested piece

A crested blade, produced to guide the removal of decortification flake-blades, was recovered from feature 40425. The piece is complete and exhibits a ridge of alternative flake scars on its dorsal surface.

Core rejuvenation flakes

Fourteen artefacts are core renewal pieces removed in order to rejuvenate stepped or otherwise flawed striking platforms. Thirteen are complete and one is broken. Three types of rejuvenation flake are present: core tablet (n = 5), core face/platform (n = 4), and core edge (4 complete, 1 fragment). All three types have been defined earlier in relation to the assemblage recovered from Area 1.

Unretouched flakes and blades

Unretouched flakes and blades comprise 82% (n = 1267) of the assemblage and consist of 643 flakes (complete n = 459; fragmentary n = 150; burnt n = 34) and 624 blades (complete n = 322; fragmentary n = 268; burnt n = 34).

To determine the relative contribution of unretouched pieces produced at different stages during the process of core reduction to assemblage composition, complete artefacts were divided into primary, secondary and tertiary cortical class groups. Primary pieces comprise just over 1%, secondary 26%, and tertiary 72%. Ratios show the frequency of secondary pieces to be around nineteen times greater (19:1) than primary pieces, with the frequency of tertiary pieces 2.7 times greater (e.g. 2.68:1) than that for secondary pieces. Non-cortical tertiary

Table 27 Area 4, flake core types from features of Mesolithic date

Feature	*Single platform*	*Multiple platform*	*Multiple platform fragment*	*Unclassifiable*	*Unclassifiable fragment*
40267	1	2	–	–	–
40286	1	1	–	–	–
40425	–	–	–	–	1
40426	1	2	–	–	1
40427	–	1	1	–	–
40434	–	2		1	–
Total	3	8	1	1	2

Table 28 Area 4, blade core types from features of Mesolithic date

Feature	*Single platform*	*Single platform fragment*	*Burnt single platform*	*Bipolar platform*	*Bipolar platform fragment*	*Other** platform*	*Other** platform fragment*
40267	–	–	–	–	–	–	–
40286	–	–	–	1	–	–	–
40425	4	–	1	1	–	2	–
40426	2	1		–	–	–	–
40427	2	–	–	1	–	1	–
40434	2	1	–	2	1	1	1
Total	10	2	1	5	1	4	1

** Cores with two or more platforms at 45° to 90° angles to each other

pieces are only around 2.6 times greater (e.g. 2.55:1) in their pattern of representation than primary and secondary pieces combined and indicate that approximately 28% of the unretouched component recovered from the site are the by-products of core decortication stages.

The sample of unretouched flakes and blades drawn from the features was designed to reflect the relative proportions of complete artefacts recovered from them. Sample statistics together with their standard errors for the variables of platform thickness, platform angle, length, width, and the length/width ratio are held in archive. With regard to flakes, in general platforms are thicker and exhibit less acute striking angles and indicate that they were detached from cores during all stages of the reduction process, employing both hard and soft hammer techniques. Blade statistics show that they were detached mainly during secondary and tertiary core reduction stages, largely by soft hammer/indirect percussion techniques.

Tool manufacturing and rejuvenation debris

Fourteen pieces are tool manufacturing or rejuvenation debris. The manufacturing debris consists of 13 microburins (Fig. 35, 9–11). Other than the micro-debitage discussed below, no other types of tool manufacturing debris were identified for the assemblage. Identifiable tool rejuvenation debris consists of one burin spall recovered from feature 40427.

Microdebitage

Some 119 pieces of microdebitage were recovered by sieving. These pieces are all less than 10 mm in size and include various spall, facets, small flakes and nondescript shatter produced during core reduction and by the manufacture and rejuvenation of tools.

Tools

Retouched and utilised tools comprise 2.5% of the assemblage recovered and consist of 33 complete artefacts and five fragments (Table 26).

Microliths

Sixteen microliths were recovered from three features (40267, 40425, and 40427) and consist of 15 complete and one fragment (Fig. 35, 1–8). All are obliquely blunted points with one having basal retouch. A convex backed point and a shouldered/tanged point were also recovered from two features certainly or probably of Middle Bronze Age date (40321, 40342).

Scrapers

Scrapers comprise 14% of the retouched component and consist of five complete end-scrapers with convex edges, four of which are on flakes and the fifth on a blade.

Burins
One complete angle burin and one fragment of a dihedral burin were recovered from feature 40427. The angle burin has spall removals situated on the proximal end of its right lateral. The dihedral burin has been manufactured on the distal end. Both are on blades. An additional angle burin recovered from feature 40244/40254 is also likely to be of Mesolithic date. This piece is a flake with spall removals situated at the distal end of its right lateral.

Notches
One notched piece was recovered from feature 40427. The artefact is a complete flake with a single notch situated on its distal end.

Microdenticulates
Complete microdenticulates were recovered from features 40267 and 40427. Both are blades and have very fine serrations and/or alternating dorsal-ventral utilisation scars along their right laterals with one exhibiting traces of polish.

Backed and marginally retouched pieces
There are six complete and three fragments of backed and marginally retouched pieces. Of the two backed pieces one is complete and one is broken; both are blades with retouch along their left laterals. The marginally retouched pieces consist of four complete examples (two blades and two flakes) and two fragments (one blade and one nondescript). Three exhibit retouch on their right laterals, two on their left laterals and one has bilateral retouch. The location of retouch for the nondescript fragment is not determinable.

Utilised
Two complete artefacts and one fragment from feature 40427 have patterns of edge damage attributable to use. Distal utilisation scars occur on two artefacts (flakes) and lateral utilisation scars on one (proximal blade fragment).

Discussion
The relative chronological position of the assemblage can be determined on typological grounds by the presence of obliquely blunted and convex backed points. As with Area 1 these types are characteristic microlithic elements of earlier Mesolithic industries of the 'Deepcar' group and are in general agreement with the radiocarbon dates (Barton 1992; Reynier 1994; 1997; 1998).

The multiple occupations at the area pose a number of problems relating to the identification and interpretation of site function for the Mesolithic occupation phases represented in the assemblage. Results of the spatial analysis of the artefacts recovered from the ploughzone by test pitting revealed the site to be composed of a series of overlapping artefact distributions with no identifiable discrete occupation or activity areas within the area excavated. Associated artefact groups all exhibited substantial overlap in their distribution patterns, with their concentrations tending to co-occur at the same test pit locations. Such patterns are indicative of the masking effects of multiple occupations on spatial patterning and clearly indicate that the assemblage represents a palimpsest composed of artefacts from a number of different occupation episodes. Identification of site function for the Mesolithic occupations thus becomes more difficult, since not only is the spatial component of the occupation largely indistinguishable but also a number of artefact types occurring in ploughzone contexts are not represented in the assemblage recovered from the excavated features. Available data are unable to resolve clearly how assemblage composition may relate to occupation phases and different site functions.

Although the feature assemblage is fairly ambiguous in relation to site function, a number of provisional inferences can be made on the basis of general patterns of artefact types represented within the assemblage recovered from the dated features.

As with Area 1, a useful starting point is the functional classification of Mesolithic lithic assemblages proposed by Mellars (1976, 385–95). The percentages of essential tools recovered by the excavation are within the range of those identified as belonging to his Type B Balanced Assemblage class group. They would appear to suggest that the site functioned primarily as some form of seasonal residential location. The remaining 'non-essential' tools in the assemblage exhibit a similar pattern of frequency representation. Such patterns of artefact class group representation indicate that the assemblage was produced by a series of activities related to core preparation and reduction, tool manufacture, and the use and rejuvenation of a variety of tools used in the working of bone, antler or wood, and the processing of skins.

Artefact class group representation for subsurface features dated to the Mesolithic indicate that the activities related to core preparation and reduction, tool manufacture, and the use and rejuvenation of a variety of tools used in the working of bone, antler or wood, and the processing of skins. The quantity and diversity of artefacts recovered, together with the location of the site adjacent to an intermittent watercourse and across from Area 1, suggest that it probably also functioned as some form of seasonal residential location. This may have been related to subsistence strategies concentrating on the exploitation of lacustrine and other food resources found within the catchment area of the site, conforming to a well-established pattern for riverside or low-lying locations (Barton 1992; Healy *et al.* 1992).

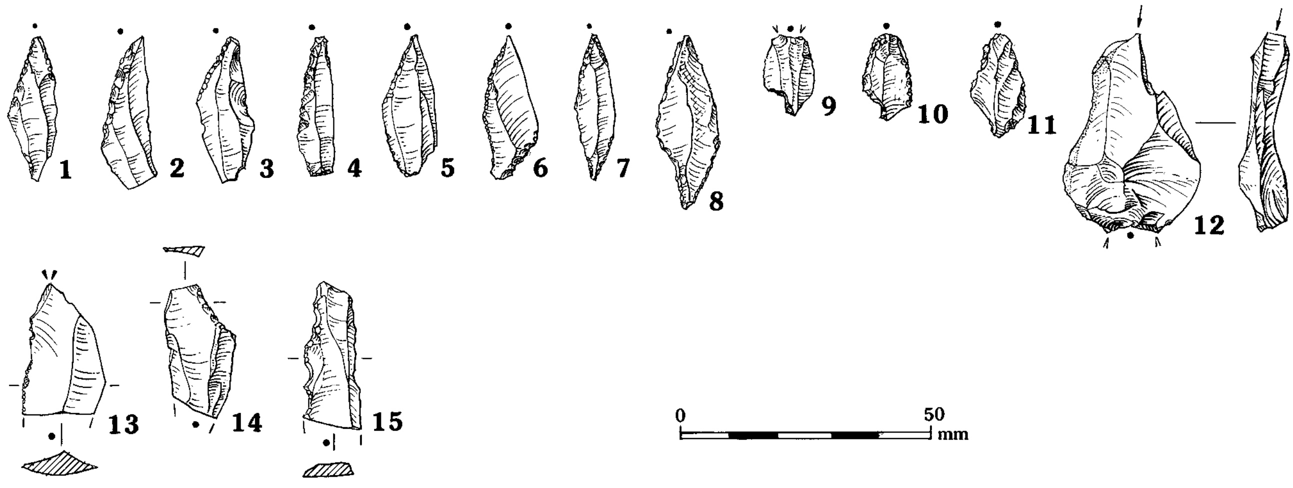


Figure 35 Area 4: Mesolithic flints from subsurface contexts in Area 4

Illustrated flint from Area 4 (Fig. 35)

1 Obliquely blunted point. Context 40266
2 Obliquely blunted point. Context 40288
3 Obliquely blunted point. Context 40427
4 Obliquely blunted point. Context 40427
5 Obliquely blunted point. Context 41362
6 Obliquely blunted point. Context 41343
7 Obliquely blunted point. Context 40427
8 Obliquely blunted point. Context 40322
9 Microburin. Context 40087
10 Microburin. Context 40200
11 Microburin. Context 40200
12 Angle burin. Context 40248
13 Dihedral burin. Context 40417
14 Oblique truncation. Context 41222
15 Retouched blade. Context 40032, ON 48536

Areas 2, 6 and 8, by W. Boismier

A microlith (Fig. 28, 16) and a microdenticulate were found unstratified in Area 2, along with a larger number of artefacts of Neolithic date (Tables 40–42) (Chapter 5). It is not possible to determine how many of the chronologically undiagnostic pieces are Mesolithic. However, in view of the extensive whole earth sampling of the cemeteries in Area 2, the rarity of identifiable Mesolithic elements suggest that this area was not used for tool preparation in this period and that the origin of the derived material found in Area 1 lies elsewhere. Areas 6 and 8 also produced small, residual, assemblages totalling 32 artefacts. Typologically the material from Areas 2, 6 and 8, represents a mixture of Mesolithic and Neolithic industries, from which it may at least be inferred that much of the western end of the Norton–Brighton cliff-line next to the Waterbeach–Tangmere stream was exploited in these periods.

Discussion, by Michael J. Allen, W.A. Boismier and A.P. Fitzpatrick

The Mesolithic evidence from Areas 1 and 4 can be placed firmly in the eighth millennium BC although it should be noted that the radiocarbon determinations are spread over a millennium (8350–7040 cal BC) (Fig. 27).

In general terms the environment of the earlier Mesolithic was characterised by a continental type of climate with short summers and cold winters. Much of the landscape was covered by open forest dominated by pine, birch and hazel (Evans 1975, 70–90; Simmons *et al.* 1981), although the charcoal and charred plant evidence indicates slightly more open conditions locally. With ameliorating conditions at this time (eighth millennium BC), the ground became drier and pine was replaced by deciduous woodlands of oak, ash and hazel. Rackham (1990) suggests that at this time broadleaf species grew in pure stands or compartments within woodland, in contrast to the mixed woodland of later periods. It was not a monotonous mixed oak forest but contained a complex and diverse mosaic of woody species interspersed with some grassland and localised unwooded glades (Rackham 1988), especially in locally unstable landscapes such as river banks and coasts, which were subject to fairly frequent environmental changes. The abundance of hazel nutshells from Areas 1 and 4 suggests that the woodland included glades or cleared areas, as hazel tolerates shade (as understorey) but fails to flower under a dense woodland canopy. Hawthorn and wild service may have grown in the woodland. Woodland margins, glades or intermediate areas between wood and lagoon were probably populated with small trees or shrubs such as blackthorn, hawthorn and hazel.

The presence of ash (*Fraxinus*) in pit 40434 (7500–7040 cal BC, OxA-4171, 8300±90 BP) is of interest since there are few records pre-dating the Neolithic (Godwin 1975; Huntley and Birks 1983), and ash was probably a relatively late element of the wildwood to establish (Rackham 1990). Ash woods certainly existed in the Atlantic period (*c*. 6000–4000 BC), but these may have been small isolated pockets. They appear to have become more widespread in secondary woodland following the clearance of early agricultural development.

The mollusc assemblage from the 'alluvial' soil that seals the lacustrine marls in the former stream course in Area 3 indicates a dryer, but still cold, environment. However, this deposit is ambiguous. It seems to have an alluvial component, not represented by the molluscan assemblages, and although typical of a locally dryer episode of the Younger Dryas Stadial, may actually be early Postglacial in origin and thus equate broadly with the early Boreal/Early Mesolithic assemblages. Certainly, other shallow features cut into the Late Glacial calcareous marls indicate that wetter conditions persisted through the pre-Boreal, Boreal and Atlantic periods, but did not continue into the sub-Atlantic. It is possible to infer, with caution, locally wetter environments, seasonally containing standing and flowing water, with the coast being probably as much as 15 km further seaward than today. The excavated areas, therefore, lie at the interface of the territories of the Chalk to the north and the Weald beyond, and the coastal margins and sea to the south.

Areas 1 and 4 at Westhampnett, while being sited on slightly higher ground (between 19–24 m) adjacent to what was probably an intermittent stream course, are, in terms of their relative height, very close to the water's edge (Fig. 14).

Area 1

The flint tools from Area 1 represent activities relating to hunting, cutting, and food preparation. The numbers of cores, flakes and other debris, and hammerstones indicate the manufacture and repair of tools in the immediate vicinity. The composite tools represented by the microliths may have been used for a variety of tasks. Scrapers with steep-sided edges could have been used for wood preparation (shaving and preparing wooden utensils, implements, tools and hunting equipment), whereas those with shallow edges are more likely to have been used in the preparation of skins; both types were present. Burins are also likely to be associated with wood shaving and possibly in the preparation and manufacture of arrow shafts. Denticulates and microdenticulates probably represent other tool making and maintenance activities.

Area 4

The negative features in Area 4 are small and amorphous and their purpose remains ambiguous.

Plate 11. Mesolithic feature 40286 in Area 4 looking south-west. Scales 0.5 and 2 m

They have undoubtedly been truncated by cultivation and with the likelihood that prehistoric soils were thicker, most of them may originally have been quite substantial, perhaps up to 0.5m deeper. It is possible that some were natural hollows (possibly root boles of small trees or shrubs) which filled with artefacts. If the undated postholes adjacent to two of the features were contemporary with them, this could indicate that they represent some form of structure. This modest data should be set against the comparable hollow from Hazel Road, North Bersted (Pitts 1980, 155–7, fig. 5) and pits from, for example, Selmeston further to the east (Rudling 1985).

With due regard to the small sample size, within the Area 4 features there was variation in the number and diversity of artefacts, possibly reflecting differences in the intensity of activity across the site. The five most northern features (40422, 40425, 40426, 40427 and 40434) contained both tools and a wide variety of debitage class groups associated with blank production and the manufacture and rejuvenation of tools. In contrast, the three features to the south (40267, 40277 and 40286, Pl. 11) exhibited much lower frequencies of lithic artefacts, dominated by unretouched flakes and blades, and cores, with only two tools occurring in the artefact inventory. This suggests that Mesolithic activity was concentrated in the northern part of the site. As Area 4 lies just below slightly higher ground to the north, it may be that it was part of a larger area used for Mesolithic settlement.

In Areas 1 and 4 over 90% of the utilised flints were nodular flint derived from the local Coombe Deposits of Late Glacial flint gravel. Although some of the flint was derived from other Tertiary and riverine resources, these were also exposed locally within 400 m in the shallow valley. Flint preparation and tool manufacture occurred on site. A similar exploitation regime is indicated for the Mesolithic assemblages to the west in Langstone Harbour, Hampshire (Gardiner 2000).

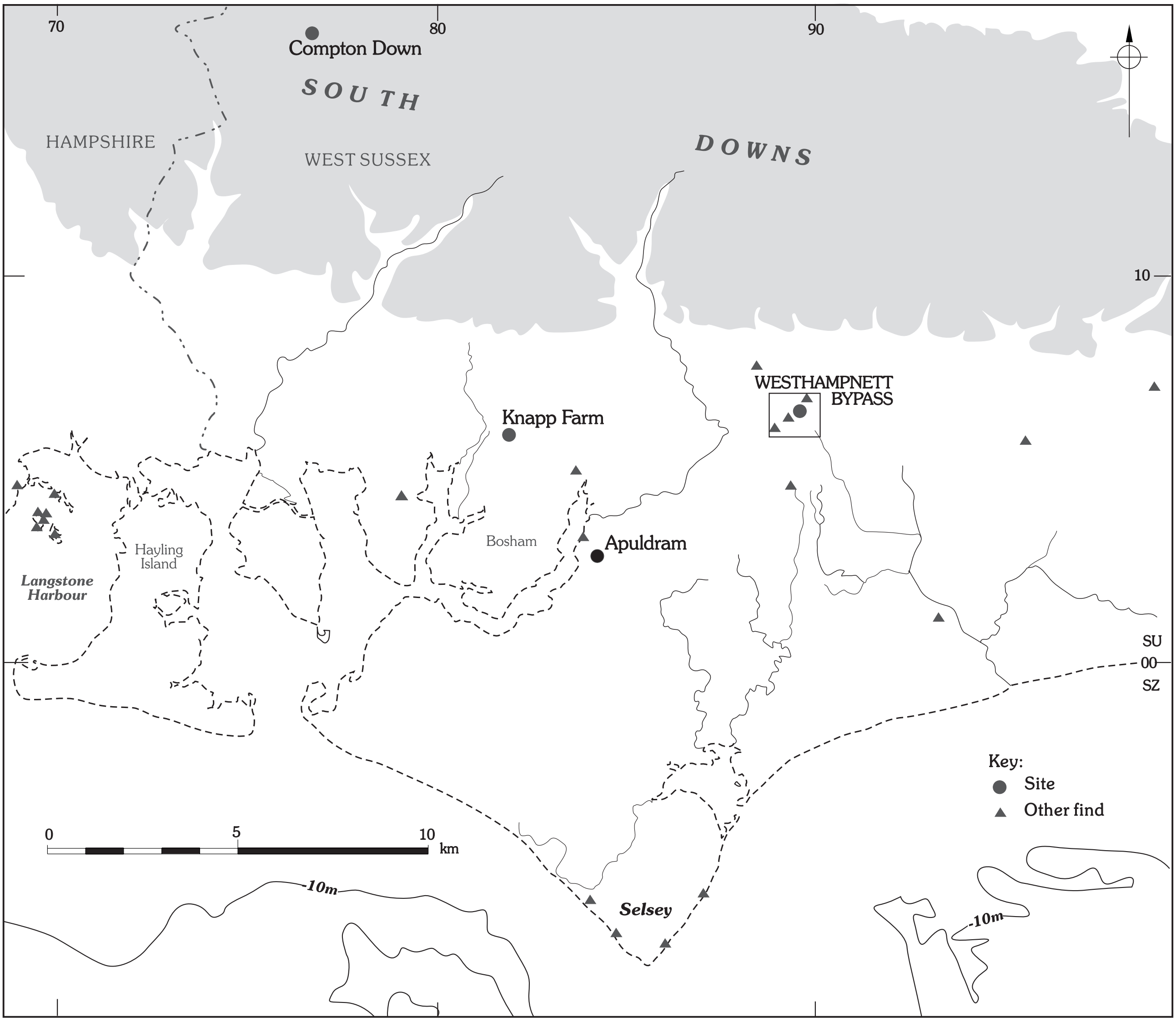


Figure 36 Selected Mesolithic sites in the area

Mesolithic Sites on the Coastal Plain

There is relatively little evidence for Mesolithic activity on the Coastal Plain, although Pitts' gazetteer of Mesolithic finds (1980) indicates the presence of a number of localised flint scatters in the vicinity. The Mesolithic of Sussex is best known from sites on the Lower Greensand ridge (Jacobi 1978a), and significant recent discoveries in West Sussex have generally been on the higher ground (e.g. Garton 1981; Holgate *et al.* 1986). In this context, the Westhampnett sites are valuable additions to what is still a small number of Mesolithic sites and findspots known on the West Sussex Coastal Plain (Fig. 36), although large and dense scatters are known on the Coastal Plain at Langstone Harbour (Allen and Gardiner 2000). Findspots of Mesolithic material locally include Strettington Farm, Boxgrove; 'Oving'; Hazel Road, North Bersted, and Barnham Nurseries, Eastergate (Pitts 1980), Hammerpot (Gardiner and Hamilton 1997, 87), Chichester-Cattlemarket (Browse 1989), Cockshot Dell, Boxgrove and, very close by, at East Hampnett Road, Tangmere (Turner 1997, 19–20). Some of these represent single finds, usually axes, but most of these findspots overlook or are close to watercourses. What may be a comparable cluster of activity is emerging further to the east on the Coastal Plain around the springs at Angmering (Graves and Hammond 1993).

Activity along the modern shores of the Chichester Harbour area is also attested by several finds (Cartwright 1984; Jones 1996) including Apuldram (Pitts 1980), Fishbourne (Cartwright 1984; Goodburn 1996; Jones 1996) and Knapp Farm, Bosham (Gardiner and Hamilton 1997, 87). Large quantities of flints are present within the eroding surfaces of Langstone Harbour, Hampshire indicating extensive and intensive activity further south in the Coastal Plain (Gardiner 2000; Allen and Gardiner 2000, 203–205)

Assemblage characteristics for these findspots are highly variable in their quality and do not allow for meaningful quantitative characterisations or comparisons. Patterns of presence/absence occurring in the artefact class groups from some of them, however, appear to suggest that a number of them may have functioned as limited activity locations or short-stay camps related to subsistence and other resource procurement activities.

In contrast, the location of the Westhampnett activity areas, adjacent to an intermittent watercourse, suggests that they probably functioned as some form of seasonal residential location related to subsistence strategies centring on the exploitation of lacustrine and other resources found within their catchment areas. As well as raw materials, those resources would probably have included deer and other larger mammals that came to feed and drink, and fowl coming also to nest, as well as plants, and the fruits of the more open woodland. It is likely that other similar sites exist around the edges of the freshwater alluvium mapped by Hodgson (1963; 1967). Whether the remaining findspots of Mesolithic material in the area represent Early Mesolithic limited activity sites, or were in fact some other type of settlement in the wider subsistence-settlement system, cannot be ascertained with the data presently available.

Subsistence

Despite a number of known Mesolithic sites in Sussex, there is a paucity of complementary environmental evidence, and the data from the Coastal Plain are particularly poor in this respect. We know that, generally, subsistence resources in forest environments, such as those of the Early Mesolithic, are patchy and well dispersed throughout a region, with animals either solitary or aggregated in small groups within a series of limited home ranges. To exploit such resources efficiently, hunter-gatherers generally disperse into a number of small subsistence task groups over a large area.

Patterns of settlement and landuse for the earlier Mesolithic remain poorly known, although the composition of the assemblages from sites situated alongside lakes and rivers differ from those in higher locations. The more diverse tool kits from the lower lying sites suggest that they were residential base camps; the more restricted tool kits from sites on higher ground suggest that these were hunting camps (Clark 1954; 1972; Wymer 1962; Froom 1972; 1976; Mellars and Reinhardt 1978; Healy *et al.* 1992; Barton 1992; Reynier 1994; 1998). Hunting camps, and other types of limited activity sites for this period, remain restricted to a few examples. The roles of the different sites in the subsistence-settlement system are not completely understood (Jacobi 1973; 1978b; Mellars 1976; Garton 1981; Rowley-Conwy 1987), although Barton (1992) suggests that in central southern England the two types could have been used within the annual round of a hunter-gatherer group, and that the Iping Common site (Keef *et al.* 1965), which is on the high ground of West Sussex, was a hunting camp. The assemblages from Westhampnett are consistent with them being residential base camps, as seen in a number of recent studies on Early Mesolithic sites (Mellars and Reinhardt 1978; Barton 1992; Reynier 1994; 1998).

The presence of chert and some non-local flints, as well as the sharpening flakes for tools like axes (though the objects themselves are not represented), should be seen in the context of such mobility. The coastal zone, the denser mixed oak and hazel deciduous woodland that probably stood elsewhere on the Coastal Plain, and the pine and hazel dominated woodland of the Downs (see Allen 1995a; 1995b; 1995c; 1997) would all have been readily accessible.

5. Neolithic and Bronze Age Activity (Areas 2, 3 and 4)

Michael J. Allen and A.P. Fitzpatrick

Most of the Neolithic and Bronze Age evidence from the road corridor was found on adjacent Areas 3 and 4, although evidence for Neolithic activity was also found in Area 1; components of the lithic scatters in Areas 2, 6 and 8 may also be of this date (Fig. 37). Area 4, which produced Neolithic and Bronze Age features, lies on brickearth overlooking the former Waterbeach–Tangmere stream course to the east. Here, as set out in the previous chapter, cultivation had caused extensive damage to archaeological features and deposits.

The Bronze Age penannular ditch and cremation burial in Area 3 were sited within the line of the stream course, while the ring ditch in Area 2 was sited on the highest local point on the Aldingbourne raised beach deposits on top of the Norton–Brighton cliff-line. Traces of activity in the Bronze Age are noticeably more numerous than in the Neolithic, with evidence, mostly of Middle and Late Bronze Age date, being found in all the areas apart from Area 7.

Area 4, by Michael J. Allen, Neil J. Adam, A.P. Fitzpatrick and Andrew B. Powell

Early Neolithic

Fifty-seven sherds from a single Early Neolithic 'necked bowl' (Fig. 38) were recovered from layer 40326 (Fig. 39) (Table 29). This was an extensive layer of clayey silt in the southern part of the excavation where the ground fell slightly, probably representing disturbed or weathered brickearth (B/C or Bw), especially at the plough pan junction, or a former relict and largely removed soil. The layer also contained Late Neolithic, Bronze Age and Iron Age pottery but was cut by a number of features that contained Deverel-Rimbury pottery (e.g. 40275, 40282, 40291, 40400). The number of sherds from one vessel might suggest that it derived from a negative feature such as a shallow pit or posthole in the immediate vicinity but no such feature was recognised or survived. The precise origins of the layer are uncertain, but it may have represented a portion of a former soil or occupation horizon over the brickearth.

Late Neolithic

Activity in the Late Neolithic is represented by pottery and struck flint. The pottery assemblage is mainly of Grooved Ware, but there are also very small quantities of other Late Neolithic pottery, including Peterborough Ware (Table 29). Because of the small quantities of pottery, it is difficult to ascribe features, especially the gullies, to this period with any confidence .

Contexts with Grooved Ware

Two features, *c.* 45 m apart, 1155 (in evaluation trench 33) and 40215, produced substantial quantities of Grooved Ware. Feature 1155 was a small shallow hollow or pit (Fig. 40), *c.* 0.6 m in diameter and 0.12 m deep. Its fill, a dark yellowish-brown silty clay loam, contained 24 sherds of Grooved Ware as well as burnt flint and non-diagnostic worked flint, which, as is frequently the case with such material, appears to have been deposited deliberately.

Feature 40215 (Fig. 41), near the eastern edge of the excavation, was a sub-circular pit *c.* 0.95 m in diameter, steep sided to the north-west but shallower to the north-east. It contained 67 sherds of Grooved Ware representing two, if not three, separate vessels. Eight sherds came from the pit's dark yellowish-brown silty clay primary fill (40228), with the rest from its siltier main fill (40216), although most lay at the interface of these two layers. This suggests that, after the shallow primary fill had washed in, the Grooved Ware had been placed in it, and the pit was then backfilled deliberately. A number of struck flint flakes were recovered but there were no significant pieces or tools, in contrast to those recovered from pits with Grooved Ware elsewhere in southern England. Charcoal and a large amount of burnt flint (352 pieces weighing 7824 g) were also present.

Two further sherds of possible Grooved Ware were recovered from shallow feature 40291, which also produced ten larger sherds of Middle Bronze Age pottery.

Contexts with Peterborough Ware and other Late Neolithic wares

Other than the Grooved Ware, 11 further sherds of Late Neolithic pottery were found. These were generally small sherds found individually in the fills of a number of shallow features, none of which can be assigned confidently to this period. Rather, the sherds are all likely to be residual.

Evaluation trench 33 had produced two body sherds of plain Late Neolithic pottery from a layer (1143) subsequently identified during the excavation as layer 40326, and four sherds of Late Neolithic pottery from a sub-circular feature (1138), about 0.6 m in diameter and less than 0.25m deep. During the main excavation this feature was defined as two inter-cutting

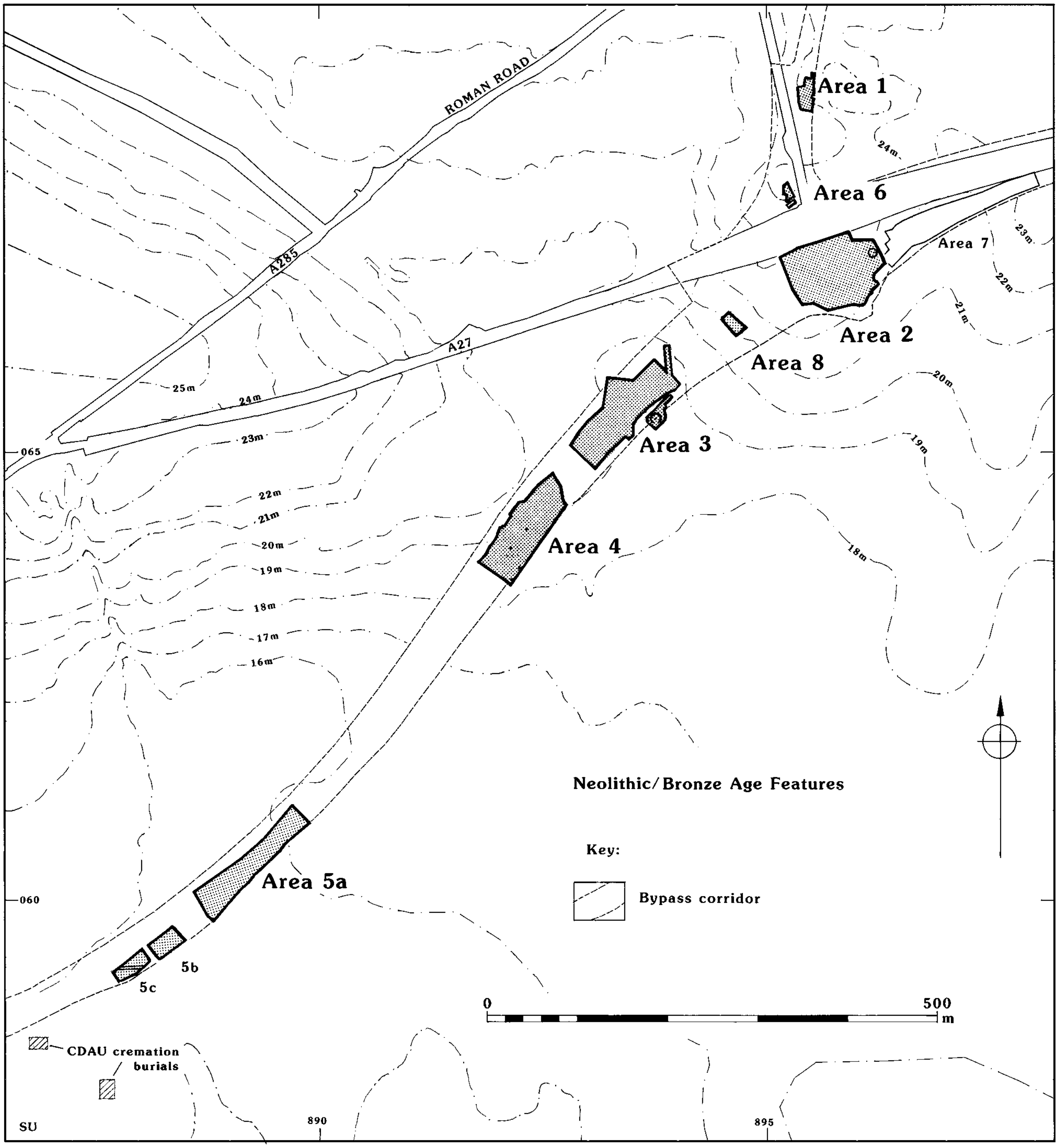


Figure 37 Excavation areas with features of Neolithic and Bronze Age date

Middle Bronze Age features (feature 40275 and pit 40282), each of which also contained single sherds of Peterborough Ware (Fig. 42). Feature 40275 produced 42 sherds of Middle Bronze Age pottery (Table 30), and charcoal from pit 40282 gave a Middle Bronze Age radiocarbon date: 1620–1160 cal BC (OxA-4172, 3130±80 BP). Three sherds of Late Neolithic pottery were also found in a shallow and narrow gully (feature 40273), the plan, form and position of which suggest it was probably one of a group of shallow gullies of Bronze Age date.

Beaker/Early Bronze Age

Like the Late Neolithic, finds of Beaker and Collared Urn pottery were located in the southern part of the area. In addition, a single sherd of Early Bronze Age type was recovered from the ploughsoil. Flints of Late Neolithic/Early Bronze Age date were also recovered from the ploughsoil and some features.

About half of a complete Beaker (Fig. 38) was found in gully 40325, which formed part of the group of Bronze Age gullies. There was no indication of a

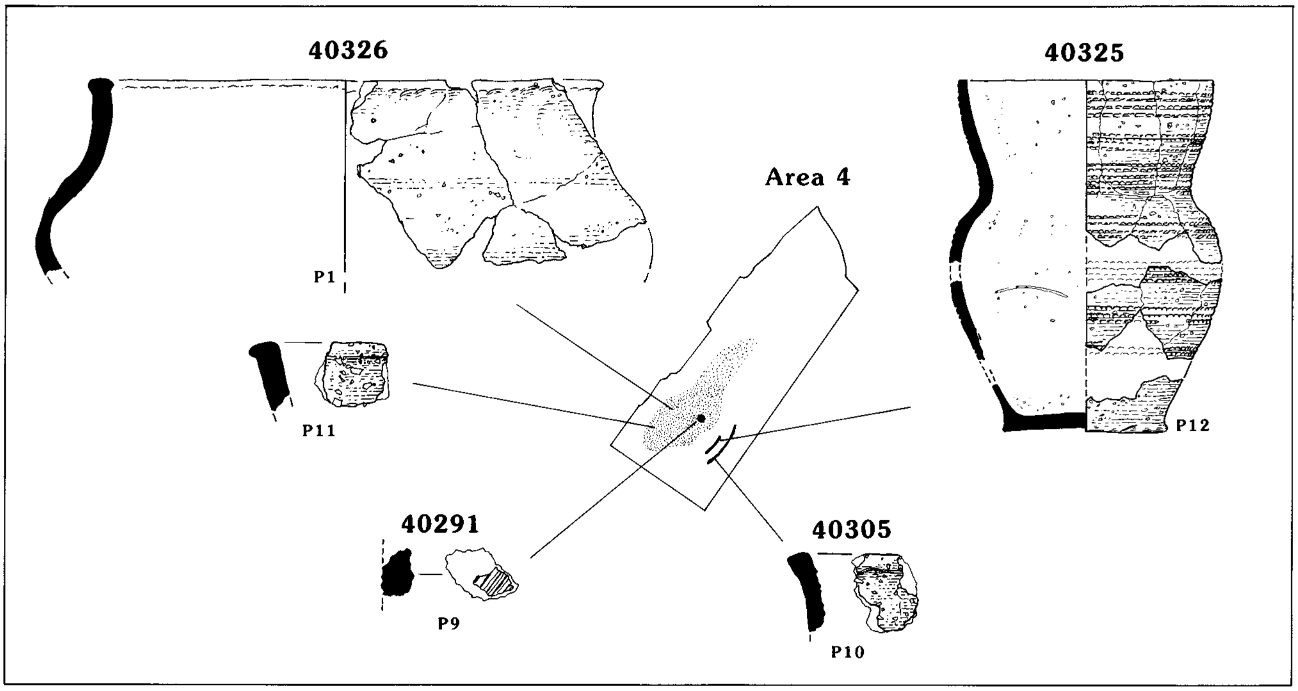


Figure 38 Area 4: Neolithic and Beaker pottery

Plate 12. Beaker 47002 in situ *in gully 40325 in Area 4. Scale 0.2 m*

Plate 13. Early Bronze Age pit 40218 in Area 4 under excavation looking north. Scales 1 (vertical) and 2 m

burial and the discovery of such a large part of a pot in a shallow feature is noteworthy (Pl. 12).

A large number of sherds (109) from Collared Urns was recovered from a large pit (40218) (Fig. 43) (Pl. 13). This pit was 3.3 m long by 2.2 m wide and 1.25 m deep. It had steep, smooth sides and a flat base measuring *c.* 1.9 m by 1.3 m. Given its size, the pit may originally have been dug as a waterhole. The primary fill (40235) covering the base and most of the sides to a thickness of up to 0.4 m was a yellowish-brown silty clay that did not contain any finds. The secondary fill was a greyish brown silt loam (40234), up to 0.18 m thick, containing some fragments of charcoal. A layer of charcoal (40233/40253), which was 0.13 m thick against the northern side of the pit but thinned towards the south, overlay this. The distinct tip lines suggested material had been dumped from the north side. This layer contained 55 Collared Urn sherds, as well as burnt and worked flint and 52 fragments (174 g) of featureless, undiagnostic fired clay similar to that from other Bronze Age contexts. The charcoal provided a radiocarbon date of 2020–1700 cal BC (GU-5307, 3510±50 BP) which falls within the date range of the Collared Urn sherds. Further slumped material (layers 40232 and 40236) deriving from the southern side and containing only flecks of charcoal, was partly covered by a second layer of charcoal (40219) up to 0.1 m thick. The upper fill of the pit consisted of a 0.75 m thick layer of dark brown silty clay (40217/40243) that contained a further 54 Collared Urn sherds, as well as a small number of worked flints. The homogeneous nature of this upper fill, which contained small

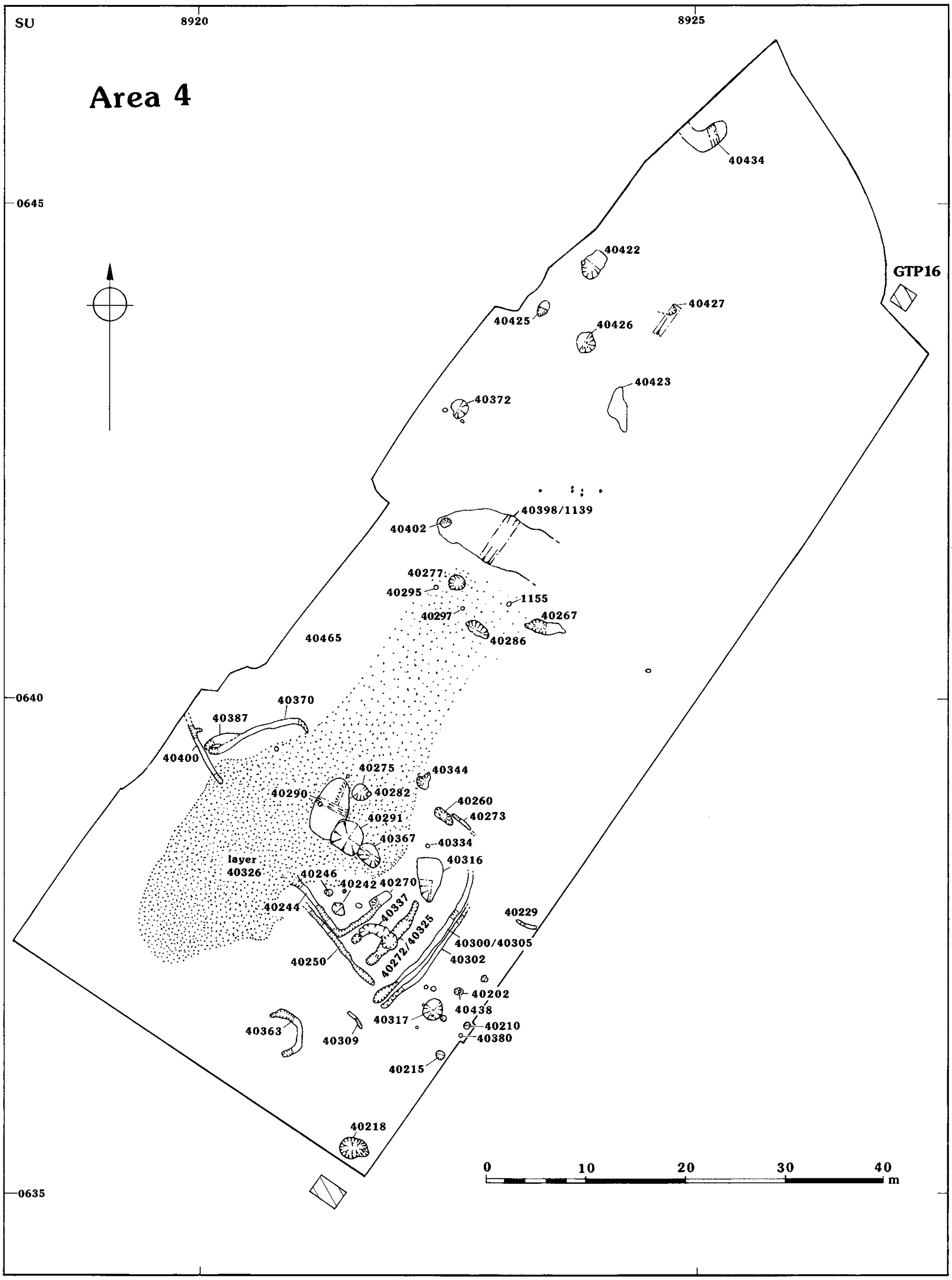


Figure 39 Area 4: plan of features of Neolithic and Bronze Age date

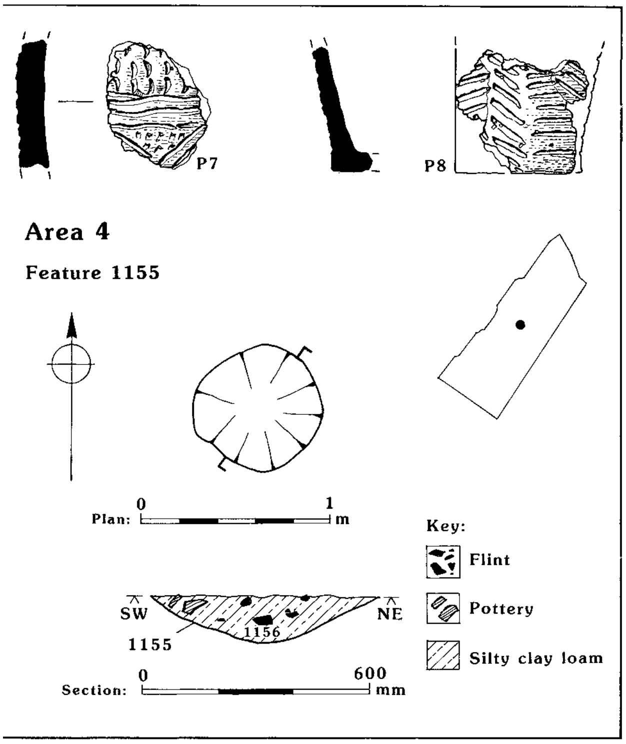


Figure 40 Area 4: plan and section of Neolithic pit 1155 and associated pottery

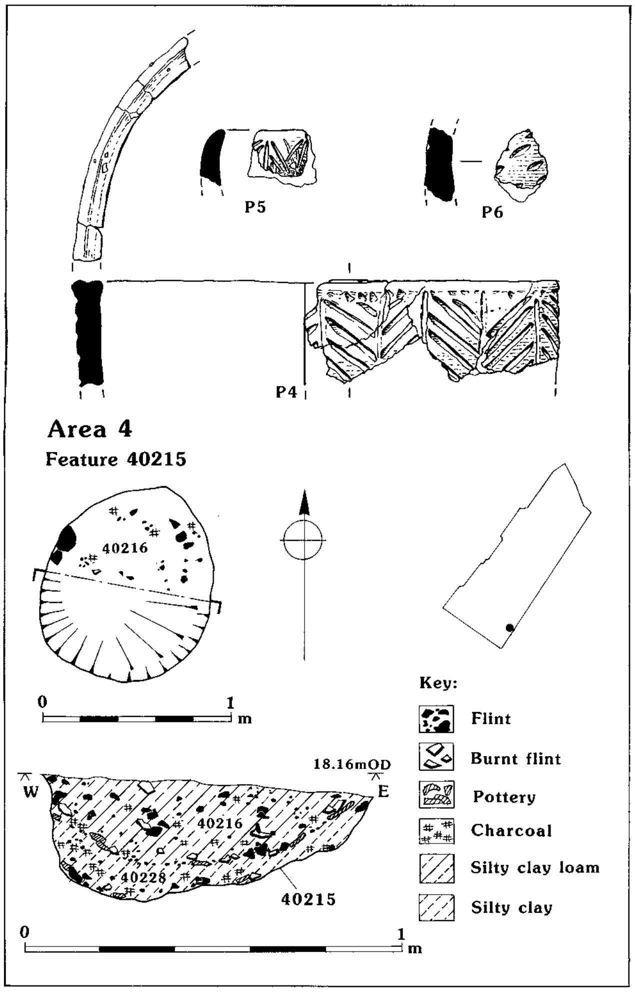


Figure 41 Area 4: plan and section of Neolithic pit 40215 and associated pottery

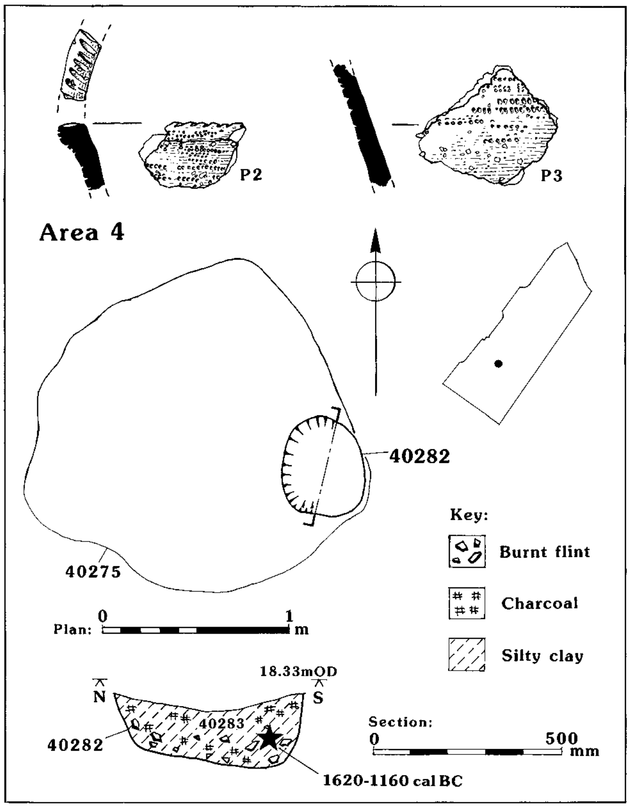


Figure 42 Area 4: plan and section of Middle Bronze Age pit 40282 and associated Neolithic pottery

patches of charcoal, is interpreted as deliberate infill. Pollen was absent from monolith 49009.

A further six sherds of Collared Urn came from the group of gullies and one sherd came from Middle Bronze Age hollow 40316. All the finds of Collared Urn were from an area 30m across.

Middle Bronze Age

Most of the pottery from Area 4 was of Middle Bronze Age Deverel-Rimbury style. A number of features, most of them at the southern end of the site, provided no dating evidence. Their proximity to Bronze Age features suggests that they were associated with them, though the possibility that they are earlier in date cannot be excluded (Fig. 44). Most of them were either small pits or postholes, many of which were located around a hearth (feature 40317), and the Middle Bronze Age pit 40202 and posthole 40210, to the south-east of the enclosure.

Enclosure

A series of linear features in the form of shallow gullies, at the south-west end of Area 4, represented some form of enclosure (Fig. 44). Although not all could be dated, and a number yielded sherds of pottery dating variously from the Late Neolithic, the Early Bronze Age, the Middle Bronze Age and the Middle/Late Iron Age (Table 30), the relationships

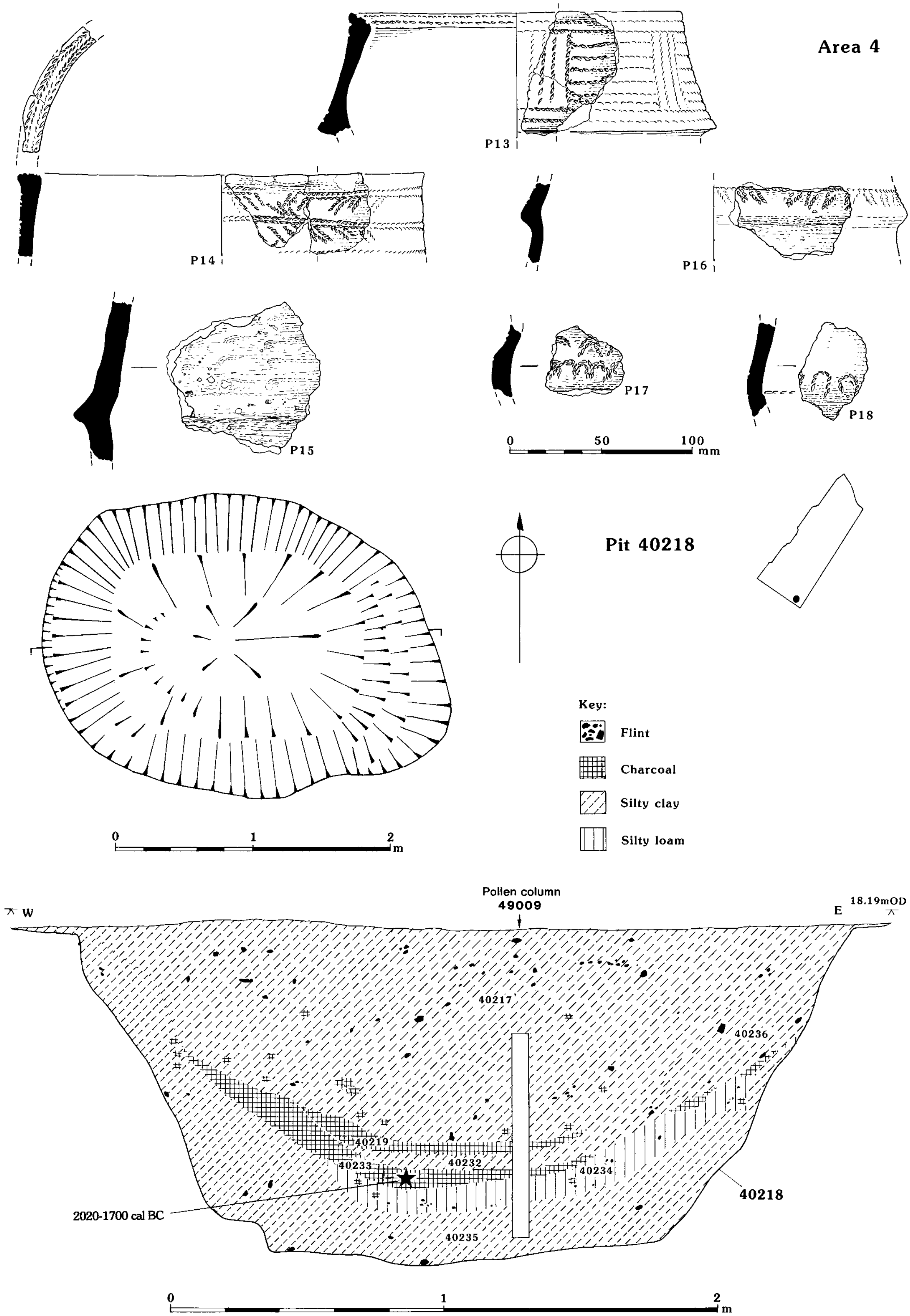


Figure 43 Area 4: plan and section of Early Bronze Age pit 40218 and associated pottery

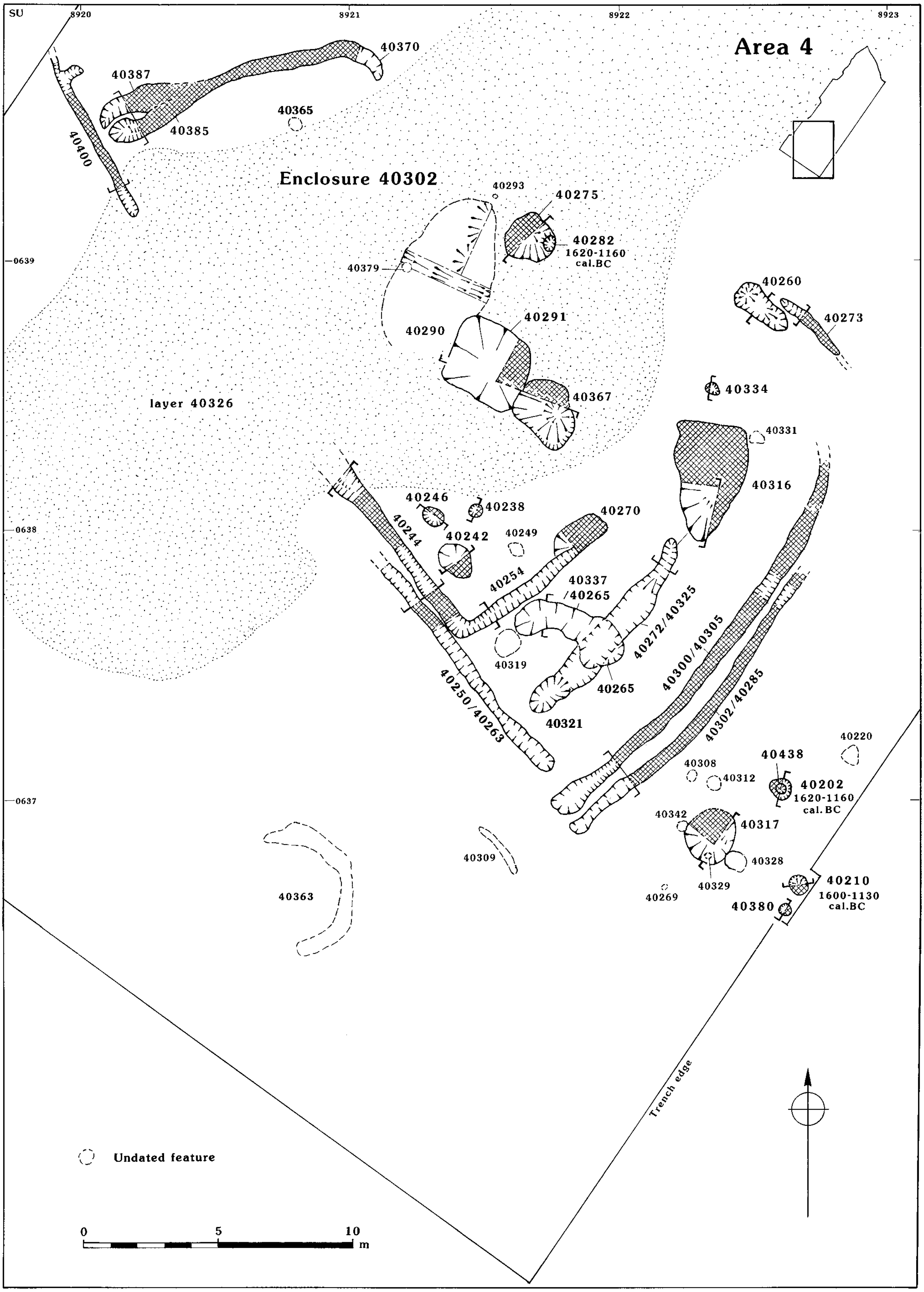


Figure 44 Area 4: Plan of Middle Bronze Age enclosure 40302 and associated features

Plate 14. Gully 40250/40263 in Area 4 under excavation looking south-east showing how shallow the gullies were

between the various gullies indicate that they were broadly contempory. The gullies have been ascribed to the Bronze Age on the basis of the largest quantity of pottery types present, with the very small number of later forms taken to be intrusive into the shallow features (Pl. 14).

The heavy truncation of features in this area meant that the full form and layout of the enclosure could not be fully established. The south-western side of the enclosure was formed by three gullies. At the north-west was gully 40400, which ran for 7 m from close to the edge of the excavation, where it could no longer be traced, to a rounded terminal at its south-east end. A 1 m long arm ran off to the north-east at an approximate right angle, close to the north-western end.

On approximately the same line as gully 40400, but at least 12 m to the south-east, there were two parallel gullies. Ten metres of gully 40250/40263 were identified, its north-western terminal having been truncated by evaluation trench 33. Gully 40244/40254, the north-eastern (inner) gully, ran south-east for 7 m, before turning at a right angle to the north-east. It ran in that direction for a further 5 m before cutting through and appearing to end at Middle Bronze Age feature 40270. The north-western end of gully 40244/40254 was not distinguishable but it may, like gully 40400, have terminated next to layer 40326.

Parallel to the north-eastern arm of gully 40244/40254, and some 3 m to the south-east, there was another 7 m length of gully (40272/40325). Its south-western end cut Middle Bronze Age feature 40321. The north-eastern end contained a virtually complete Beaker (pp. 92–3, Fig 38) that may have been redeposited from an earlier feature, although no evidence for this was identified. The gully was in turn cut by curvilinear feature 40265/40337.

A further 3 m to the south-east there were another two parallel gullies, in places only 0.2 m apart, gully 40300/40305 on the inside (north-west) and gully 40285/40302 on the outside. These both ended at terminals immediately south-east of the south-eastern terminal to gully 40250/40263, leaving a gap only 0.8 m wide at the southern corner of the enclosure. The parallel gullies ran to the north-east, curving slightly to the north, the outer gully being traced for 12.5 m, the inner one for 17 m where it started to curve markedly to the north.

Some 3 m further north, and on approximately the same arc, was a 3.5 m long section of gully 40273, truncated at the south but apparently ending in a terminal at the north. If this was an extension of gully 40285/40302 it would form part of the north-eastern side of the enclosure. It was 0.37 m wide and 0.15 m deep with shallow sides and a concave base. Its fill (40274) was a dark yellowish-brown silty clay.

The north-western side of the enclosure was represented by gully 40370, which ran some 11 m east-north-east from gully 40400. It appears to have been recut as its western terminal is split into two (40387, 40385). At the east, the gully curved sharply to the south-east in the general direction of gully 40273, probably as part of the enclosure's north-east side.

There were two short linear features situated close to the enclosure and possibly associated with it. Feature 40229, which ran west-north-west to east-south-east some 5 m east of the enclosure (Fig. 39), was 2.3 m long, 0.24 m wide and 0.09 m deep, with a shallow U-shaped profile. Feature 40309, which ran north-west to south-east some 2 m outside the southern corner of the enclosure, was 2.2 m long, 0.34 m wide and 0.1 m deep, with moderately steep sides and a flat base. Both features had silty clay fills (40310 and 40230 respectively) containing some burnt flint.

While the enclosure gullies were considerably truncated, most appear to have had similar profiles, with moderately steep sides and flat bases, and similar dimensions, measuring 0.4 m–0.5 m wide and up to 0.2 m deep (Fig. 45). Only gully 40272/40325 was substantially wider at 1.25 m. The excavated sections contained varying quantities of charcoal, fired clay, burnt flint and worked flint, although because of the number of features in the vicinity some of this material is likely to be redeposited. The gullies also yielded a wide range of earlier, and some later, pottery (p. 95, Table 30).

Pits, scoops and hollows (Fig. 45)

Pit 40202 was roughly circular, *c.* 0.65 m in diameter and 0.45 m deep, with vertical sides and a concave base. Its primary fill was a very dark greyish-brown silty clay (40214), 0.14 m thick, containing a high concentration of charcoal, as well as burnt clay, burnt flint, and 12 sherds of Deverel-Rimbury pottery. Scorch marks were noted on the sides near the base, suggesting that burning had taken place *in situ*, and implying that the feature was a cooking pit of some description. The charcoal provided a radiocarbon date of 1620–1160 cal BC (OxA-4174, 3140±80 BP). The primary fill was sealed by a 0.06 m thick layer of dark yellowish-brown silty clay (40225), also containing charcoal and burnt clay, although in much smaller quantities. The upper fill was a 0.28 m thick deposit of dark yellowish-brown silty clay (40224). While the

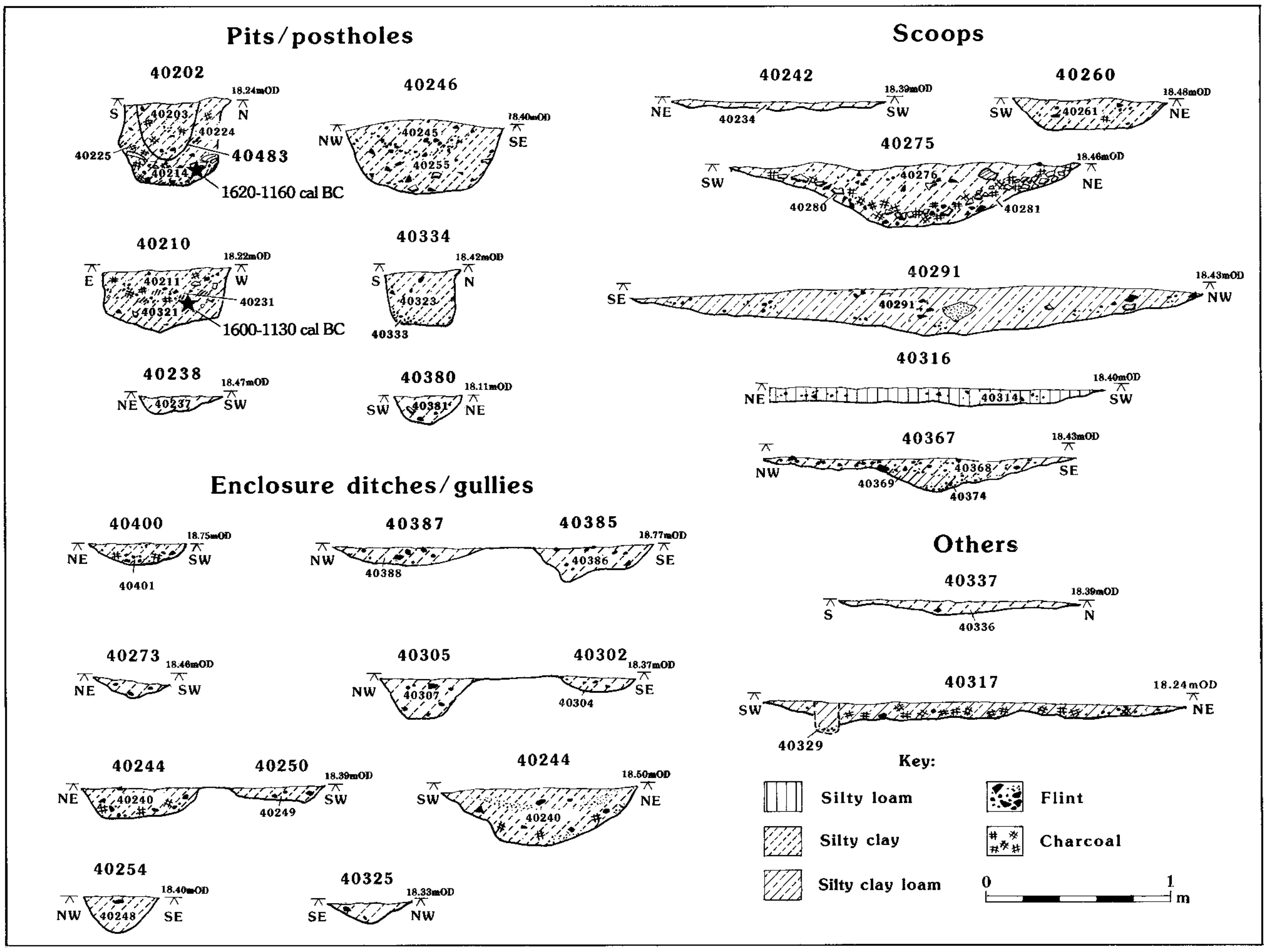


Figure 45 Area 4: sections of Middle Bronze Age features

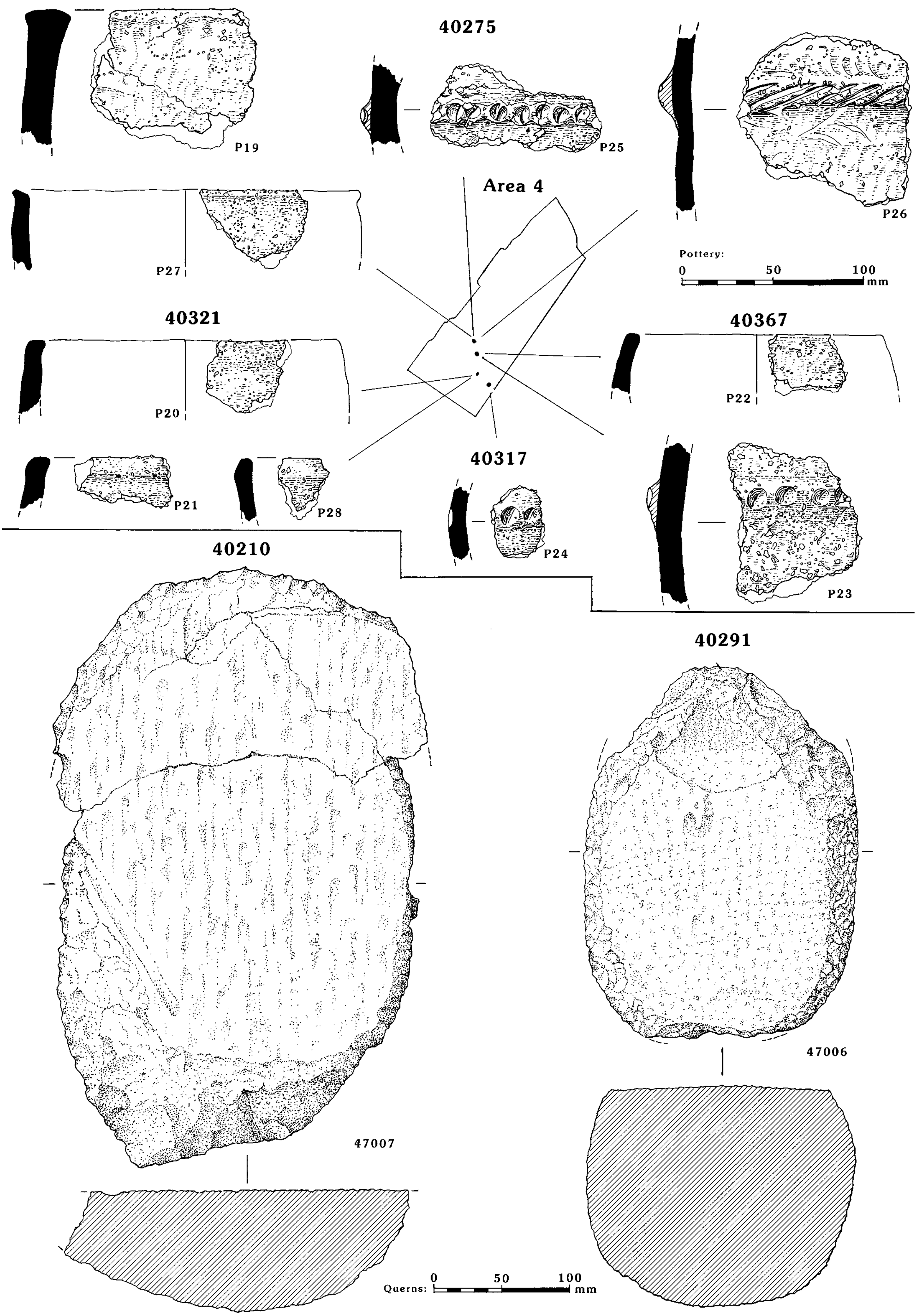


Figure 46 Area 4: Bronze Age pottery and querns

outer part of this layer contained only occasional charcoal flecks, there was higher concentration in the centre (layer 40203). This central deposit, which yielded a further five sherds of pottery, is thought to be a later posthole (40483) that was cut into the upper fills of the pit.

Feature 40246 was a circular pit *c.* 0.8m in diameter and 0.4 m deep with steep sides and a flattish base. The primary fill, filling most of the feature, was an orange brown silty clay (40255) containing burnt flint, charcoal flecks and a single sherd of Deverel-Rimbury pottery. Above this, and in the centre, was a 0.18 m thick layer of yellowish-brown silty clay (40245), containing burnt flint and worked flint, with charcoal fragments concentrated in the bottom 0.05 m.

Feature 40282 (Fig. 42) was small, circular and steep-sided pit, 0.57 m in diameter and 0.32 m deep, and filled with a dark brown/black silty clay (40283) containing tiplines of charcoal, fired clay and burnt flint. Although a sherd of Late Neolithic Peterborough Ware was recovered from this layer, the charcoal produced a radiocarbon date of 1620–1160 cal BC (OxA-4172, 3140±80), placing the feature firmly within the Bronze Age. The pit was truncated by feature 40275.

Feature 40275 was subcircular, *c.* 1.8 m in diameter and 0.31 m deep, with shallow sides and a flat base. Its south-eastern side had been recorded in evaluation trench 33 (as feature 1138), and yielded flint, burnt flint, fired clay, a Peterborough Ware sherd and five Middle Bronze Age sherds. During the excavation three fills were recorded. The primary fill (40281) was a 0.06 m thick layer of orange/brown silty clay containing a few pieces of burnt flint. This was overlain by a similar layer (40280), also 0.06 m thick, but which contained large quantities of burnt flint, charcoal and burnt clay. The upper fill (40276), a brownish-grey silty clay, was 0.15 m thick and yielded burnt flint, charcoal, fired clay and a fragment of a sandstone saddle quern. All three fills contained sherds of Deverel-Rimbury pottery. It is possible that the feature was a cooking hollow.

Feature 40210 was located against the south-eastern side of the excavation area towards the south of the site, the excavation being enlarged slightly to expose the whole feature. It was circular, *c.* 0.7 m in diameter and 0.3 m deep, with vertical sides and an irregular base. The primary fill (40321) was a layer of brown silty clay 0.14 m thick filling the base of the feature, and containing pieces of sandstone and burnt flint. Above this, in the centre, was a patch of dark greyish-brown silty clay (40231), 0.1 m thick, containing a large quantity of charcoal, as well as fired clay. The charcoal provided a radiocarbon date of 1600–1130 cal BC (OxA-4175, 3110±80 BP). The upper fill (40211) was a 0.18 m thick layer of greyish-brown silty clay containing charcoal, burnt flint, burnt clay and most of a sandstone saddle quern (ON 47007, Fig. 46), the sandstone pieces in the primary fill possibly being fragments of the same object. It is possible that a loose group of undated features in the same general area, mostly small pits and postholes, may be associated with this feature and constitute some form of structure, although no recognisable pattern in their layout is immediately evident. The fired clay from this feature (71 pieces, 213 g) accounts for 58% of the fired clay from Middle Bronze Age features in Area 4.

Feature 40334, probably a posthole, had vertical sides and a flattish base, measuring 0.4 m in diameter and 0.3 m deep. At the base of the cut there was a layer of dark brownish-grey silty clay (40333) up to 0.05 m thick, which was overlain by a brown silty clay (40323) in which, against the south-western face, there were a number of small stones possibly used as packing. In addition to eight sherds of Deverel-Rimbury pottery, both layers contained burnt flint and fired clay, as well as charcoal which was concentrated towards the base of the cut. There was a similar but undated posthole (40331) 2 m to the south-east.

In addition to the deeper features described above, there was a series of shallow hollows, of varying size and unclear function, from which Middle Bronze Age pottery was recovered. Feature 40238 was 0.44 m in diameter and 0.09m deep, filled with a greyish-brown silty clay (40237) and containing occasional flecks of charcoal, burnt flint and three sherds of Deverel-Rimbury pottery

Feature 40242 was a very slight oval depression, measuring 1.2 m by 1 m, with a maximum depth of 0.05 m. It contained a mid grey-brown silty clay containing occasional charcoal flecks, fragments of burnt clay, and seven sherds of Deverel-Rimbury pottery.

Feature 40260 was an irregular linear hollow, 2.3 m long and 0.9 m wide, with very shallow sides and a maximum depth of 0.13 m. Its fill (40261) consisted of brown silty clay, and contained worked and burnt flint, fired clay, and three Deverel-Rimbury sherds.

Feature 40270 was an oval depression 2 m by 1.15 m with very shallow sides and a depth of 0.08m. Its fill (40252), a greyish brown clayey silt, contained charcoal flecks and a single Deverel-Rimbury sherd. Its southern corner was cut by gully 40254 (see above).

Feature 40291 was shallow sub-circular depression up to 3.7 m wide and 0.18 m deep. It contained a brown silty clay loam containing charcoal fragments and fired clay, as well as worked flint and ten Deverel-Rimbury sherds (plus two intrusive Grooved Ware sherds). Its south-eastern edge was partially cut by hollow 40367.

Feature 40295 was located some 20 m north of the main group of Middle Bronze Age features (Fig. 39). It measured 0.36 m by 0.44 m, and was 0.08 m deep, filled with a yellowish-brown clay silt (40296). One piece of worked flint and two sherds of Deverel-Rimbury pottery were recovered.

Feature 40321 was an irregular pit at least 1.4m long and 0.8m wide with shallow sides and an irregular base 0.2m deep. It was filled with a dark yellowish-brown silty clay (40322) containing charcoal, burnt flint and 226 Deverel-Rimbury sherds (amounting to 45% of all the Deverel-Rimbury pottery from the Area 4). The feature was cut at the south by gully 40272/40325.

Feature 40316 was a shallow irregular depression measuring 4.4 m by 2.6 m, containing a brown silty loam in which 36 Deverel-Rimbury sherds were found.

Feature 40367, the northern edge of which cut Middle Bronze Age hollow 40291, was an irregular hollow measuring 2.5 m by 2 m with shallow sides and a maximum depth of 0.32 m. The primary fill (40374) was a layer of brown clay, 0.04 m thick, with occasional charcoal flecks and containing a fragment of a saddle quern (ON 47005). This was overlain by 40369, a layer up to 0.3 m thick, of dark brown silty clay loam. This contained a large quantity of charcoal and charred plant remains and some fired clay and burnt flint, as well as two sherds of pottery of Iron Age type. The upper fill of the hollow (40368) was a brown silty clay, with occasional charcoal flecks. The charcoal included oak, ash, *Prunus,* hazel and Pomoideae, and fragments of oak sapwood and heartwood were identified.

Other features

Feature 40265/40337 was a curvilinear gully of unknown function, with a west-pointing terminal situated immediately south-east of the north-eastern arm of gully 40244/40254. It was *c.* 4.5 m long, curving to the south-east and cutting across gully 40272/40325, before ending in a rounded terminal immediately beyond that gully's south-eastern edge. It was up to 1.2m wide and 0.1 m deep with moderately steep sides and a flat base, and was filled with a dark yellowish-brown silty clay (40262/40335–6) containing charcoal as well as burnt and worked flint. Among the pottery from this feature were four Late Neolithic sherds, 35 Middle Bronze Age sherds and four Iron Age sherds.

Just outside the south-east corner of the enclosure there was a shallow oval feature (40317), measuring 2.2 m by 1.8 m. It was up to 0.1 m deep and filled with a reddish-brown silty clay loam that contained charred plant remains and a single sherd of Middle Bronze Age Deverel-Rimbury pottery. The colour and texture of the fill, indicating burning, and the large lumps of charcoal suggested that the feature was a hearth. Archaeomagnetic dating of a series of samples from the fill produced three calibrated date ranges for this feature, spanning approximately 6750 BC to 5450 BC, 4950 BC to 1800 BC, and 400 BC to AD 150 (Clark, below, pp. 115–16).

Activity belonging to all three of these phases is present in the excavated area. The presence of Middle Bronze Age pottery might seem to exclude the two earlier ranges, but although Area 4 produced a small quantity of Iron Age pottery, no features can be confidently ascribed to this period. It may be that the Deverel-Rimbury sherd is intrusive (see below) and the hearth could be associated with the nearby Early Bronze Age pit 40218, which included dumps of charcoal. It should be noted though, that the nearby Middle Bronze Age pit 40202 has evidence for burning *in situ*.

Hearth 40317 was cut by stakehole 40329 and two shallow scoops, 40342 to the north and 40328 to the south. Another possible stakehole (40269) was situated 2 m to the south-west. There was a pair of postholes (40308 and 40312), 0.5 m apart, immediately to the north, with another circular feature (40220) 5 m to the north-east. Although possibly associated with the hearth, or with each other, all of these features were undated. As described above, the two small pits (40202 and 40210) adjacent to the hearth yielded radiocarbon dates in the Middle Bronze Age and it seems likely that these undated features are of a similar date. If so, the activity that they represent could be responsible for introducing the single Deverel-Rimbury sherd into what may have been an earlier hearth.

Undated features

In addition to the undated features referred to above, there were a further six small undated features inside the area defined by the enclosure gullies. Feature 40319, a shallow oval hollow, was situated immediately south-west of the south-west terminal of feature 40337. Some 3 m to the north was an oval posthole (40249) within a group of Middle Bronze Age features. Posthole 40331 was situated in the north-east corner of the enclosure, 2 m north-west of Middle Bronze Age posthole 40334, and towards the north of the enclosure there were two V-shaped stakeholes (40293 and 40379), and an irregular patch of silty clay (40365), *c.* 0.6 m wide and 0.08 m deep, containing charcoal.

Other undated features were closely associated with features of other dates. Two possible postholes, 40295 and 40297, were 3 m apart, south and west of Mesolithic feature 40277 (Fig. 31), while 40223 cut the western edge of Mesolithic feature 40422 (see p. 78). Another pair, 40375 and 40377, was situated south and west of Anglo-Saxon feature 40372 (see p. 247). Feature 40222, located close to the south-eastern edge of the excavation, was a steep-sided, roughly oval pit, measuring 0.9 m by 0.5 m and 0.3 m deep, containing frequent fragments of charcoal and patches of fired clay.

Natural features

A large undated feature (40290) inside the enclosure (Figs 39 and 44), exposed after the removal of remnant ploughsoil layer 40326, was oval in shape, measuring 6 m by 3.5 m, and 0.5 m deep with irregular sides and base. On the surface there were two patches of moderately compact greyish-brown clayey silt, layers 40288 to the north, and 40289. Both produced charcoal and burnt flint, but 40289 also contained burnt clay, and worked flint. More material, including three Deverel-Rimbury sherds, was found over the rest of the surface of the feature, but was interpreted as being incorporated by plough action, and probably associated, therefore, with the overlying layer 40326. The feature was interpreted as a natural feature.

Feature 40363 was as a C-shaped hollow situated close to the south of the site. It measured some 4 m in diameter, 0.5 m wide and 0.4 m deep, and contained a light greyish-brown silty clay (40364) in which were fragments of charcoal, as well as worked and burnt flint. However, because the sides and base were very irregular and no clear demarcation could be established between the fill and the natural brickearth, the two appearing to be mixed in places, the feature is interpreted as a tree throw.

The Pottery, by Lorraine Mepham

Methods

The pottery has been analysed in accordance with the principles recommended for prehistoric pottery (PCRG 1992). Using a binocular microscope (×20 magnification), the assemblage was divided into separate fabric types on the basis of the range and size of inclusions. These fabric types fall into two broad fabric groups based on the dominant inclusion type: Group F (flint-tempered fabrics); and Group G (grog-tempered). Fabric types have been coded, within the overall Westhampnett fabric series, using an alphanumeric code which combines the fabric group letter with a chronologically significant number (1–99 for prehistoric fabrics). Fabric totals are presented in Table 29. Fabrics were assigned to chronological periods on the basis of the occurrence of diagnostic sherds; where diagnostic material was lacking, a more tentative attribution on the basis of fabric type alone has been made.

Type series were constructed for rim and base sherds, and for decorative motifs. Pottery was quantified, both by number and by weight, by fabric type within each context. Details of sherd type (rim, base, body etc.), vessel form where known, rim/base diameters, surface treatment, decoration and manufacturing technique were also recorded, and can be found in the archive. The pottery is discussed by chronological period below, and the distribution of pottery by context is given in Table 30.

In the fabric descriptions throughout this report, the following terms are used to define the frequency of inclusions, following the density charts devised by Terry and Chilingar (1955): rare (1–3%); sparse (3–10%); moderate (10–20%); common (20–30%).

Table 29 Area 4, Neolithic and Bronze Age pottery fabric totals

Fabric type	*No. of sherds*	*Weight*
Early Neolithic		
F15	**57**	**345**
Later Neolithic		
F16 (?Grooved Ware)	2	8
F17 (?Peterborough Ware)	2	39
F18	12	59
G14 (Grooved Ware)	90	416
G16 (Grooved Ware)	1	22
Total	**107**	**544**
Early Bronze Age		
G10 (Collared Urn)	74	684
G11 (Collared Urn)	38	458
G12 (Collared Urn)	4	31
G15 (Beaker)	112	238
Total	**228**	**1411**
Middle Bronze Age		
F5	66	356
F12	368	3940
F13	19	397
R1	11	192
Total	**464**	**4885**

Petrological Analysis

Given the predominantly non-distinctive nature of the inclusion types represented within the earlier prehistoric assemblage, the thin-sectioning of every fabric type for petrological analysis was not felt to be appropriate. Instead, a small sample of sherds was selected in order to answer specific questions. Samples were taken of fabrics from each chronological period represented (Early Neolithic: F15; Late Neolithic: F18, G14; Early Bronze Age: G15, G10, G12; and also Middle Bronze Age: F12, see below) with the intention of comparing the clay matrices. Similarities or major differences between these matrices might indicate the exploitation of the same or different sources of raw materials through time, although the general supposition is that most, if not all, of the earlier prehistoric fabrics derive from the local area. Dr David Williams (University of Southampton), whose full report is held in archive, carried out the analysis. Results showed that with the exception of samples of fabrics F15 (Early Neolithic) and F18 (?Peterborough Ware), none of the samples appeared to share significant fabric similarities. There is no conclusive evidence to indicate either local or non-local manufacture for any of these fabrics, apart from the presence of rare shell inclusions in the Collared Urn fabric G12, which were not noted in any of the other fabrics examined.

Table 30 Area 4, Neolithic and Early Bronze Age pottery by feature (number/weight in grams)
PW= Peterborough Ware, GW = Grooved Ware

	Early Neolithic	*Late Neolithic*			*Early Bronze Age*		*Middle Bronze Age*
Fabrics	*F15*	*PW*	*GW*	*F18*	*Beaker*	*C. Urn*	*Deverel-Rimbury*
Late Neolithic features							
Pit 1155	–	–	24/96	–	–	–	–
Pit 40215	–	–	67/342	–	–	–	–
Early Bronze Age features							
Pit 40218	–	–	–	–	–	109/1102	–
Middle Bronze Age features							
Pit 40202/40283	–	–	–	–	–	–	16/528
Posthole 40238	–	–	–	–	–	–	4/4
Hollow 40242	–	–	–	–	–	–	7/96
Pit 40246	–	–	–	–	–	–	1/16
Gully 40250/40263	–	–	–	–	–	1/30	3/21
Hollow 40260	–	–	–	–	–	–	3/4
Gully 40265/40337	–	–	–	2/6	–	–	35/333
Hollow 40270	–	–	–	–	–	–	1/5
Gully 40272/40325	–	–	–	–	112/238	1/14	7/21
Gully 40274	–	–	–	3/11	–	–	–
Feature 40275	–	1/13	–	4/15	–	–	42/961
Pit 40282	–	1/26	–	–	–	–	–
*Feature 40290	–	–	–	–	–	–	3/40
Hollow 40291	–	–	2/8	–	–	–	10/159
Posthole 40295	–	–	–	–	–	–	2/10
Gully 40300/40305	–	–	–	1/6	–	3/18	24/113
Gully 40302	–	–	–	–	–	1/3	5/33
Hollow 40316	–	–	–	–	–	1/6	37/175
Hollow 40321	–	–	–	–	–	–	226/2142
Layer 40326	57/345	–	–	2/21	–	–	16/175
Posthole 40334	–	–	–	–	–	–	8/39
Hollow 40367	–	–	–	–	–	–	14/280
Total	**57/345**	**2/39**	**93/446**	**12/59**	**112/238**	**116/1173**	**464/4885**

Early Neolithic

Fifty-seven sherds (345g), almost certainly representing a single vessel, in a flint-tempered fabric (F15), were found.

F15 Soft, moderately coarse-textured sandy matrix; moderate, fairly well-sorted, subangular flint <3 mm; rare iron oxides, 1 mm; rare subrounded quartz <0.5 mm; rare fine mica. Unoxidised; brown-grey.

Petrological analysis of a sample sherd showed that the clay matrix of fabric F15 shared significant similarities with the possible Peterborough Ware fabric F18, but with no other prehistoric fabrics.

The vessel, for which a partial reconstruction of rim and shoulder is possible (Fig. 38, P1), can be described as a rounded bowl with restricted mouth and a flattened, T-shaped rim. A projection of the profile would give a proposed mouth:depth ratio of approximately 1.4:1. The exterior surface is smoothed. The vessel form corresponds to Drewett's 'necked bowl' form (1980, fig. 6).

The difficulties of classifying earlier Neolithic pottery have been highlighted by Cleal (1992a), and the relevance of regional styles to Sussex in particular have been questioned (Drewett 1980), since the area has been the subject of contention between the two main proponents of regional classification schemes (Smith 1974; Whittle 1977). Sussex could fall either at the junction between Smith's Hembury and Grimston-Lyles Hill Styles, or within Whittle's Decorated Style (Drewett 1980, fig. 2). In an attempt to formulate a more soundly based framework for the study of Earlier Neolithic pottery in Sussex, therefore, petrological analysis has been carried out in order to define fabric groups which might be used as a basis for the identification of local and traded pottery (*ibid.*). Five fabric groups have been defined, three tempered with calcined flint, one with shell and one with grog. The Westhampnett fabric F15 can be assigned to Drewett's Fabric II (medium to fine calcined flint inclusions). Not surprisingly, given the widespread distribution of suitable flint sources across the county, flint-tempered pottery comprises the bulk of all Earlier Neolithic assemblages in Sussex, and the conclusion is that these fabrics represent local production (*ibid.*, 26). Petrological analysis for fabric F15 does not contradict this supposition.

The vessel was recovered from layer 40326 and the survival of such a large group of sherds (it may be estimated that approximately one-third of the vessel is present) argues for relatively little post-depositional disturbance.

Later Neolithic

A total of 107 sherds (544 g) have been assigned to the later Neolithic period, including sherds diagnostic of both Peterborough Ware and Grooved Ware. Nine plain body sherds, all in the same coarse, flint-tempered fabric (F18), have been tentatively included in this chronological group on the basis of fabric type. The four fabric types identified are described as follows:

F16 Soft, friable, fine silty matrix, slightly micaceous; sparse, poorly sorted, subangular flint <4 mm. Unoxidised; brown-grey.

F17 Soft, fine sandy matrix, slightly micaceous; moderate, very poorly sorted, crushed calcined flint <5 mm. Unoxidised (dark grey) with patchily oxidised (buff-orange) exterior surface. Peterborough Ware.

F18 Soft, fine silty matrix, slightly micaceous; sparse, very poorly sorted, subangular flint <5 mm; rare iron oxides <2 mm; rare carbonaceous material <1 mm. Unoxidised; brown-grey.

G14 Soft, friable, moderately fine sandy matrix; common, poorly sorted grog <2 mm (petrological analysis indicates that this derives from vessel(s) of similar fabric); rare patinated flint <3 mm; rare subrounded quartz <0.5 mm; rare iron oxides <1 mm; rare mica. Unoxidised; grey-brown. Grooved Ware.

The identifiable Peterborough Ware comprises one body sherd and one rim sherd (Fig. 42, P2, P3), both decorated with round-toothed comb impressions, both in the same flint-tempered fabric (F17). The two sherds may have originally derived from the same vessel; one came from pit 40282, and the second from feature 40275, which cut pit 40282.

The latter also contained Middle Bronze Age sherds. A radiocarbon date of 1620–1160 cal BC (OxA-4172, 3140±80) was obtained from pit 40282, suggesting that the Peterborough Ware is residual in this context.

Of the 93 Grooved Ware sherds, 91 derived from two contexts: pits 40215 and pit 1155. The sherds from pit 40215, all in fabric G14, came mainly from the primary fill (59 sherds), with eight sherds occurring in the upper fill. Within this feature, some variation was observed in the coarseness of the sherds, and base sherds in particular were noticeably coarser than the remainder, containing a slightly higher proportion of flint, although such variation is quite possible within a single vessel. Rim sherds, however, indicate that at least two vessels are represented in pit 40215, and decorated sherds suggest a third. The first vessel has a squared rim and decoration in the Durrington Walls sub-style (Fig. 41, P4). The second vessel, represented by a single rim sherd, has a slightly hooked rim; the decoration is abraded but also appears to be in the Durrington Walls sub-style (Fig. 41, P5). A small number of body sherds from a third vessel in a slightly coarser variant of fabric G14 bear impressed decoration (Fig. 41, P6).

The 24 sherds from pit 1155 are in two fabrics: 23 sherds in fabric G14 would appear to represent the base of a single vessel with decoration possibly in the Durrington Walls sub-style (Fig. 40, P7). The remaining sherd is in a more groggy, soapy fabric (G16), with incised and impressed decoration characteristic of the Clacton sub-style (Fig. 40, P8).

Two further sherds in a flint-gritted fabric (F16) have been tentatively identified as Grooved Ware; one has shallow grooved decoration (Fig. 38, P9). These two sherds came from a shallow hollow (40291), together with Middle Bronze Age material.

The identification of Grooved Ware at Westhampnett is significant, given the general paucity of this ceramic tradition in the south-east – only one other findspot in Sussex has been noted, at Findon, West Sussex (Wainwright and Longworth 1971, 287; Drewett *et al.* 1988, 68; Longworth and Cleal 1999, 196). Outside of Scotland this is a ceramic type not commonly found on sites that can easily be termed domestic, and occurs in large quantities at henges. Sites on which Grooved Ware occurs with Peterborough Ware, either singly or in association, are rare, though the radiocarbon date ranges overlap in part (Gibson and Kinnes 1997; Garwood 1999).

Twelve sherds in a coarse, slightly micaceous, flint-tempered fabric (F18) may also belong to this period, and have been assigned on the basis of the fabric, which is similar to that used for the positively identified Peterborough Ware. Several of the sherds, most notably the group of three sherds from gully 40274, are very abraded and could have lost any surface decoration. Two rim sherds, both of flat-topped, externally-expanded form, are present (Fig. 39, P10, P11), from gully 40300/40305, and layer 40326 respectively. Other sherds came from gullies 40265, 40274 and 40337.

Early Bronze Age

The Early Bronze Age material comprises one almost complete Beaker vessel, fragmented and very abraded (112 sherds; 238 g), and 116 sherds (1173 g) in grog-tempered fabrics (G10, G11 and G12) deriving from Collared Urns. The four Early Bronze Age fabrics are defined as follows:

G15 Soft, moderately fine sandy matrix; moderate, fairly well-sorted grog <1 mm; sparse, poorly sorted, subangular flint <1 mm; rare subrounded quartz

<0.5 mm; rare fine mica. Oxidised (buff-orange) with unoxidised core. Beaker.

G10 Soft, fine, silty matrix; common, poorly sorted grog <3 mm (petrological analysis suggests that this derives from vessel(s) of similar fabric); very rare subrounded quartz <0.5 mm; soapy feel. Oxidised (pale pink-orange) with unoxidised interior.

G11 Soft, moderately fine matrix; common, poorly sorted grog <3 mm; rare subangular flint <5 mm; rare subrounded quartz <0.5 mm; rare fine mica; soapy feel. Oxidised (orange to orange-pink) with unoxidised interior.

G12 Soft, fine, silty matrix; moderate, poorly sorted grog; moderate quartz <0.25 mm; rare shell (petrological analysis could not determine whether fossiliferous or modern). Oxidised (pale pink-orange).

The Beaker (Fig. 38, P12) is decorated with bands of rectangular-toothed comb impressions; the belly angle is rounded and the neck relatively short and slightly convex. At least one half of the vessel is present. This vessel came from gully 40325. The complete nature of the vessel, and its isolation on the site, might suggest that it is a funerary vessel but there was no evidence for a grave or a disturbed burial, nor was there any associated evidence of human remains.

Collared Urn material was identified firstly on the basis of decorated and other diagnostic sherds, while associated plain body sherds have been assigned to this ceramic tradition on the basis of similarity of fabric type. All sherds are in grog-tempered fabrics, with slight variations in the coarseness and in the presence of additional inclusions which might merely reflect the use of variants of a single fabric type for individual vessels. The largest group of sherds derived from fills (40217/40243 and 40233/40253) within a substantial pit (40218). While no cross-context joins could be found within the context groups, fabrics and diagnostic sherds are sufficiently similar to suggest that the fills contain a mixture of sherds from a single group of vessels.

At least three vessels are present; two represented by rim sherds and one by the base of the collar. The first two vessels, both in fabric G10, have linear twisted cord-impressed decoration on the collar and on top of the rim (Fig. 43, P13, P14). Two sherds from the shoulder area, with twisted cord arcs (Fig. 43, P17, P18), both in fabric G10, may derive from either of these two vessels. The third vessel, in fabric G11, has no decoration surviving (Fig. 43, P15). A collar sherd with twisted cord decoration (Fig. 43, P16) may represent a fourth vessel, or may belong with one of the two decorated rim sherds. While full profiles cannot be reconstructed for any of these vessels, there is sufficient evidence to pick out several traits, such as 'peaked' collar bases, bold hurdle and basket-weave motifs, and the use of corded arcs on the shoulder, which would place all vessels in Longworth's 'Secondary Series' of Collared Urns (1984), or Burgess's 'Late' group (1986, 345). A Collared Urn of potentially similar date came from the centre of the penannular ditch in Area 3 (see below), although the latter vessel was in a form and fabric (G9) quite dissimilar to the vessels from Area 4.

Other sherds of Collared Urn occurred in very small quantities (three sherds or less) in the group of gullies and also in a shallow depression (40316) of Middle Bronze Age date.

As with the Beaker, these vessels are best known from funerary vessels, for example the Collared Urn from Area 3. There is, however, no evidence to support a mortuary association. Instead the vessels may join the group of Collared Urns from domestic and non-funerary contexts (Longworth 1984, 76–8).

List of illustrated sherds

P1 Early Neolithic bowl; fabric F15. PRN 1650, context 40326; remnant ploughsoil. Fig. 38.

P2 Peterborough Ware rim, externally expanded; round-toothed comb-impressed decoration on exterior; impressions (?fingernail) on top of rim; fabric F17. PRN 1641, context 40281; feature 40275. Fig. 42.

P3 Peterborough Ware body sherd; round-toothed comb-impressed decoration; fabric F17. PRN 1642, context 40283; pit 40282. Fig. 42.

P4 Grooved Ware rim; incised decoration; fabric G14. PRN 1611, context 40216; pit 40215. Fig. 41.

P5 Grooved Ware rim sherd; traces of incised decoration on exterior; fabric G14. PRN 1611, context 40216; pit 40215. Fig. 41.

P6 Grooved Ware body sherd; impressed decoration; fabric G14. PRN 1612, context 40216; pit 40215. Fig. 41.

P7 Grooved Ware base; incised decoration; fabric G14. PRN 1657, context 1156; pit 1155. Fig. 40.

P8 Grooved Ware body sherd; impressed and incised decoration; fabric G16. Context 1156; pit 1155. Fig. 40.

P9 Later Neolithic body sherd, possibly Grooved Ware; grooved decoration on exterior; fabric F16. PRN 1643, hollow 40291. Fig. 38.

P10 Later Neolithic rim sherd, possible Peterborough Ware; rim expanded externally; fabric F18. PRN 1644, context 40301; gully 40300. Fig. 38.

P11 Later Neolithic rim sherd, possibly Peterborough Ware; rim expanded externally; fabric F18. PRN 1651, context 40326; remnant ploughsoil. Fig. 38.

P12 Beaker; square-toothed comb-impressed decoration; fabric G15. ON 47002, context 40324; PRN 16 49, gully 40325. Fig. 38.

P13 Collared Urn; twisted cord decoration on outside of collar an on inside of rim; fabric G10. PRN 1620, context 40233; pit 40218. Fig. 43.

P14 Collared Urn; twisted cord decoration on outside of collar and on top of rim; fabric G10; PRN 1632. context 40253 = 40233; pit 40218. Fig. 43.

P15 Collared Urn, plain; fabric G11. PRN 1637, context 40253 = 40233; pit 40218. Fig. 43.

P16 Collared Urn; twisted cord decoration on outside of collar; fabric G10. PRN 1633, context 40253 = 40233; pit 40218. Fig. 43.

P17 Collared Urn, body sherd from shoulder; twisted cord 'arcs'; fabric G10. PRN 1631, context 40253 = 40233; pit 40218. Fig. 43.

P18 Collared Urn, body sherd from shoulder; twisted cord 'arcs'; fabric G10. PRN 1631, context 40253 = 40233; pit 40218. Fig. 43.

Middle Bronze Age

A total of 464 sherds (4885 g) have been assigned to the Middle Bronze Age, largely on the basis of fabric type, combined with the presence of diagnostic traits such as vessel form and decoration, although it should be noted that both are frequently shared with ceramics of later Bronze Age date. Most sherds are in coarse fabrics tempered with crushed, calcined flint, except for a small group of sherds in an unusual granitic-tempered fabric. Four fabrics have been defined, although the distinctions between them, particularly fabrics F5 and F12, are not always clear-cut. Methods of analysis are as set out for the later Neolithic and Early Bronze Age pottery and fabrics have been coded within the overall type series for Westhampnett. Fabric totals are presented in Table 29, and the distribution of pottery by context in Table 30.

F5 Soft, moderately fine sandy matrix, slightly micaceous; moderate to common, very poorly sorted, crushed calcined flint <3 mm; rare iron oxides <0.5 mm. Irregularly fired; generally unoxidised with patchily oxidised (pale pink-orange) exterior.

F12 Soft, moderately fine sandy matrix; moderate to common, very poorly sorted, subangular flint <5 mm; rare fine mica. Unoxidised.

F13 Soft, moderately fine matrix; abundant, poorly sorted, crushed calcined flint <5 mm; rare fine mica. Unoxidised.

R1 Soft, very friable, moderately coarse matrix; moderate felspar <2 mm; sparse, poorly sorted subangular polycrystalline quartz <2 mm; rare granite fragments <1 mm; rare biotite mica <1 mm. Oxidised (pale orange) with unoxidised core.

A sample of fabric R1, as an unusual and obviously non-local fabric, was submitted to Dr David Williams for petrological examination. Thin sectioning confirmed the presence of inclusions derived from a granitic rock source, although the precise source could not be identified; possibilities include the south-west peninsula, the Channel Islands or Brittany. This fabric type is of uncertain date – only plain body sherds are represented, probably from just one vessel. The fabric, however, seems quite distinct from the granitic fabrics identified amongst the early Anglo-Saxon assemblage from Area 7.

At least six further vessels are represented on the basis of rim sherds, four in fabric F12 and one each in fabrics F5 and F13. Vessels in fabric F12 have upright or slightly inturned rims, simple or expanded (Fig. 46, P19–P22), and are from large, thick-walled vessels, probably of bucket shape. Decorated body sherds, from incised or fingertip-impressed cordons or shoulders (Fig. 46, P23–P26) derive from either these or similar vessels. The rims in fabrics F5 and F13 are from thinner walled vessels with slightly everted rims (Fig. 46, P27, P28).

These vessels are typical of the Deverel-Rimbury ceramic style of southern England. Both forms and fabrics are standard, and are well paralleled in Sussex, from both funerary and domestic contexts, for example from Itford Hill (Burstow and Holleyman 1957; Holden 1972) and Steyning (Burstow 1958).

Deverel-Rimbury material occurred in a number of features, the largest group deriving from pit 40321. Other features (see Table 30) form a definite cluster. Yet again it is difficult to assess the context in which these vessels were originally deposited. The fact that Deverel-Rimbury funerary vessels are indistinguishable from the domestic ceramic repertoire is amply demonstrated by the parallels cited above and from other sites in southern England. This is a markedly homogeneous group of sherds, apparently derived from a small number of very similar vessels, which may suggest deliberate deposition though this was not apparent during excavation.

List of illustrated sherds (Fig. 46)

P19 Deverel-Rimbury urn; fabric F12. PRN 530, context 40276; feature 40275.

P20 Deverel-Rimbury urn; fabric F12. PRN 553, context 40322; pit 40321.

P21 Deverel-Rimbury urn; fabric F12. PRN 554, context 40322; pit 40321.

P22 Deverel-Rimbury urn; fabric F12. PRN 570, context 40369; hollow 40367.

P23 Deverel-Rimbury urn with applied, finger-impressed cordon; fabric F12. PRN 571, context 40369; hollow 40367.

P24 Deverel-Rimbury urn with finger-impressed shoulder; fabric F12. PRN 548, context 40317; hearth.

P25 Deverel-Rimbury urn with applied, finger-impressed cordon; fabric F12. PRN 531, context 40280; feature 40275.

P26 Deverel-Rimbury urn with applied, incised cordon; fabric F12. PRN 532, context 40280; feature 40275.

P27 Deverel-Rimbury urn; fabric F13. PRN 535, context 40281; feature 40275.

P28 Deverel-Rimbury urn; fabric F5. PRN 538, context 40322; pit 40321.

Worked Stone, by H.F. Beamish

Five quern fragments, from four querns, were recovered from Middle Bronze Age features; two from feature 40275, two joining fragments from posthole 40210 (Fig. 46, 47007) and one from hollow 40291 (Fig. 46, 47006). All are partial or almost complete saddle querns of Greensand. Greensand outcrops widely over southern England, and no saddle quern production sites have yet been identified. The production of Iron Age and Romano-British Greensand rotary querns is well attested at Lodsworth, some 17 km to the north of Westhampnett. There is as yet, however, no evidence to support the earlier production of saddle querns there, and there are no known finds of saddle querns in Lodsworth rock earlier than the Late Bronze Age (Peacock 1987, 66–7). In addition, a saddle quern fragment, and a small fragment from a quern of unknown type, both in Greensand, came from layer 40326 which contained finds covering a wide span, but they seem most likely also to be Middle Bronze Age.

Illustrated objects (Fig. 46)

1 Greensand saddle quern, almost complete, in two joining fragments; burnt on underside. Posthole 40210, ON 47007/47508.
2 Greensand saddle quern, almost complete. Hollow 40291, ON 47006.

Neolithic and Early Bronze Age Lithics, by W.A. Boismier

The Ploughzone Assemblage

As described in Chapter 4 (p. 75), the ploughzone assemblage from Area 4 contained a number of flints diagnostic of the Early and Late Neolithic, and the Early Bronze Age.

The Neolithic tools include two arrowheads, one being a complete and bifacially retouched kite-shaped leaf arrowhead (Fig. 47, 7). A probable transverse arrowhead preform with secondary use as an awl/piercer was recovered from a ploughzone/brickearth interface context (Fig. 47, 5). The artefact is also complete with a transverse flake scar on its dorsal surface and marginal retouch on its ventral surface. Bifacial secondary utilisation scars occur on its distal end.

Two polished axe flakes (Fig. 47, 6) may also be of this date, while a thumbnail scraper is probably Early Bronze Age in date. In addition, a proportion of the waste material generated by core preparation and reduction, and the manufacture and rejuvenation of retouched tools, is also likely to belong to these periods.

The Assemblage from Excavated Features

While the majority of the flints from the excavation of features in Area 4 belong to the Mesolithic, 798 lithic artefacts derive from Neolithic, Bronze Age and later features (Table 31). Other than the identification of artefact class groups present, only those 118 artefacts from identifiably Neolithic and Bronze Age features are analysed below, although temporally diagnostic artefacts recovered from the later contexts are also described.

The 118 artefacts (excluding burnt) from Neolithic and Bronze Age features have been analysed on the basis of both frequency and attribute or 'metric' data. A systematic random sample (Torrence 1978) was used to generate attribute data with sampling fractions of 47% complete unretouched flakes and 41% for complete unretouched blades (flakes n =29, blades n = 7). The remaining type classes were not described metrically. Selected Neolithic and Bronze Age artefacts recovered from the area are illustrated in Figure 47.

Patination on individual artefacts is variable and ranges from a light waxy film to a grey or greyish-white. Some 77 artefacts (65.0%) exhibit some degree of patination, with 41 (35.0%) unpatinated. Thirty-eight pieces have excavation-induced damage in the form of isolated trowel nicks and impact fractures produced by mattocks and shovels.

Cortical condition and flint colour indicate that the majority of the assemblage has been obtained from locally available sources with approximately 95.7% derived nodular flint from probable coombe deposit sources and 4.4% from riverine gravel sources. No artefacts manufactured from Tertiary flint or chert sources were identified in the assemblage.

Artefact class groups for the assemblage are presented in Table 31. Some 94.9% of the artefacts from Neolithic and Bronze Age features comprises manufacturing and rejuvenation debitage class groups (n =112) of the assemblage, and show assemblage composition to be dominated by various 'waste' types generated by core preparation and reduction activities. Retouched tools comprise 5.1% (n = 6) of the assemblage.

Cores

Two cores were recovered from the features. One is a multiplatform flake core (from Late Neolithic pit 40215), and the other a fragment of a single platform blade core (from Middle Bronze Age feature 40275). Neither core had any evidence for secondary use.

Core shatter/trimming debris

There is a single piece of core shatter or trimming debris in the assemblage (from Early Bronze Age pit 40218). It is a cortical piece with a large bulb of percussion and a thick platform, indicating that it was detached by direct percussion with a hammerstone.

Core rejuvenation flake

One core rejuvenation flake was recovered from a Middle Bronze Age context (40367). The piece is a complete core edge type of rejuvenation flake.

Unretouched flakes and blades

Unretouched flakes and blades comprise 88.1% (n = 104) of the total number of artefacts recovered from the various Neolithic and Bronze Age features and consist of 80 flakes (complete n = 62; fragmentary n = 18) and 24 blades (complete n = 17; fragmentary n = 7).

As an estimate of the relative contribution of unretouched pieces produced at different stages of core reduction to assemblage composition, complete

Table 31 Area 4, flint assemblage from features of Neolithic and Early–Middle Bronze Age date

	Neolithic			*Early Bronze Age*			*Middle Bronze Age*		
	Complete	*Fragment*	*Burnt*	*Complete*	*Fragment*	*Burnt*	*Complete*	*Fragment*	*Burnt*
Unretouched flake	13	2	–	36	10	–	13	6	–
Unretouched blade	5	–	–	8	5	–	4	2	–
Flake core	–	–	–	–	–	–	1	–	–
Blade core	–	1	–	–	–	–	1	–	–
Core trimming debris	–	–	–	1	–	–	1	–	–
Core rejuvenation flake	–	–	–	–	–	–	1	–	–
Microdebitage	–	–	–	–	–	–	2	–	–
Other retouched tool	1	–	–	4	–	–	1	–	–
Total	19	3	49	49	15	23	24	8	85

artefacts were divided into primary, secondary and tertiary cortical class groups. Primary pieces comprise 1.3% (n = 1), secondary 46.8% (n = 37), and tertiary 51.9% (n = 41). Ratios calculated for the pieces recovered show the frequency of secondary pieces to be around 37 times greater (37:1) than primary pieces, with the frequency of tertiary pieces 1.14 times greater in their occurrence than secondary pieces. Non-cortical tertiary pieces are only around 1.08 times greater in their pattern of representation than primary and secondary pieces combined and indicate that approximately 48% of the unretouched component recovered from the features are the by-products of core decortication stages.

Complete flakes can be subdivided into four distinctive shapes: narrow, proportional, squat and irregular (for the definitions of these shape classes see p. 70). Narrow flakes or flake-blades comprise 29% (n = 18) of the unretouched flakes, proportional flakes and squat flakes 53.2% (n = 33) and irregular flakes 17.7% (n = 11). The small number of dated features and the size of the assemblage recovered from them do not allow for any meaningful characterisation of any chronological differences on the basis of flake shape characteristics.

The sample of unretouched flakes and blades drawn from subsurface feature contexts has been designed to reflect the relative proportions of complete artefacts recovered from individual features. Sample statistics, together with their standard errors for the variables platform thickness, platform angle, length, width and the length/width ratio by context group, are held in archive. In general, for both flakes and blades, mean platform thickness increases from Neolithic to Middle Bronze Age contexts with later contexts exhibiting a more variable pattern of mean thickness. Striking platform angle exhibits little or no variation in mean values between phases. Flake mean length, width and length/width values indicate that Middle Bronze Age flakes tend to be either squatter or more evenly proportioned in their dimensions than those recovered from other dated contexts. Mean blade length and width increase with a reduction in the length/width ratio from Neolithic to Middle Bronze Age contexts and suggest that blades become both larger and wider at the site through time.

Tool manufacturing and rejuvenation debris

Two polished axe flakes were recovered, one from gully 40265 and the other from gully 40305. No other types of tool manufacturing debris were identified for the assemblage.

Microdebitage

Two pieces of microdebitage were recovered by the sieving programme from the fill of Middle Bronze Age feature 40275. Both pieces are less than 10 mm and are small flakes produced during tool manufacture.

Tools

Six temporally diagnostic tools were recovered from Neolithic and Bronze Age features, and one from a post-medieval feature.

Scrapers

Four scrapers were recovered, one from Late Neolithic pit 40215, and three from Early Bronze Age pit 40218. All four are complete examples and consist of three end-scrapers and one side-scraper. Two scraper edges are convex, one concave and one straight. Three of the scrapers occur on flakes and one on a piece of core shatter.

Awl

One complete awl was recovered from Middle Bronze Age feature 40275. The piece is a flake with retouch/utilisation scars on its distal end (ventral surface).

Marginally retouched piece

One complete marginally retouched flake was recovered from Early Bronze Age pit 40218. The retouch is situated on its right lateral (medial-distal).

Fabricator

One bifacially retouched fabricator (Fig. 47, 8) was recovered from a post-medieval field boundary (40206).

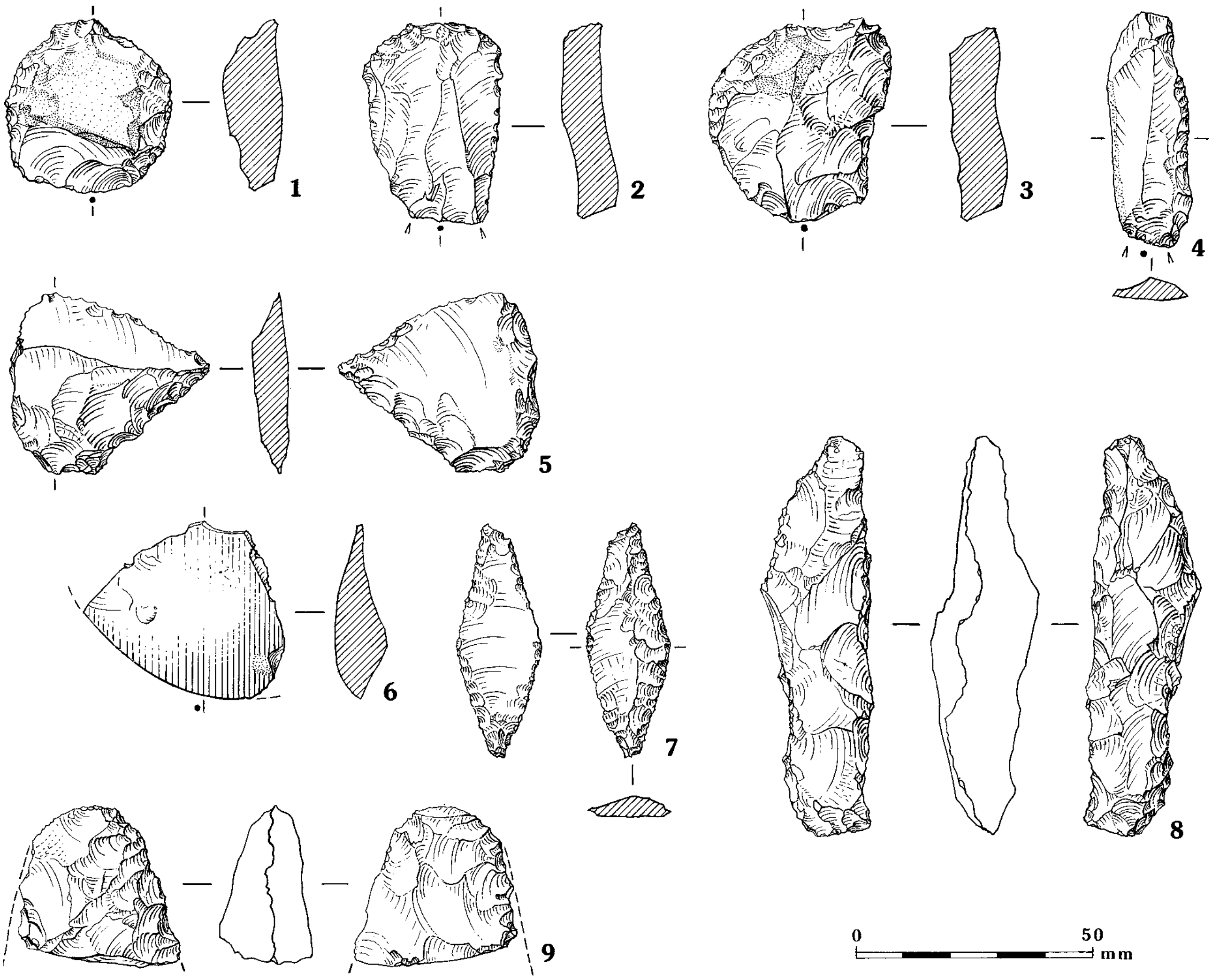


Figure 47 Area 4: Neolithic/Early Bronze Age flints and polished stone

Discussion

The small size of the identifiably Neolithic and Bronze Age lithic assemblage poses a number of problems regarding the identification and interpretation of site function for the Neolithic and Early–Middle Bronze Age activity and must be considered in conjunction with those recovered from the ploughzone. Artefacts recovered from ploughzone and subsurface deposits document the presence of both Earlier Neolithic and Later Neolithic/Early Bronze Age components and agree with the date range identified for other artefactual materials recovered from the site. Identifiably Bronze Age flint artefacts are restricted to those for the Early Bronze Age with later types missing from the assemblage.

The range of retouched tool types and both the quantity and diversity of debitage class groups recovered from ploughzone and subsurface contexts indicate that the assemblage was produced by activities related to core reduction and the manufacture, use and rejuvenation of tools. These patterns of assemblage composition are largely characteristic of the debris produced by domestic activities associated with occupation and suggest that the site functioned as a residential location.

Illustrated pieces (Fig. 47)

1 Double end scraper. Context 40200.
2 End scraper. Context 40201.
3 Side scraper. Context 41154.
4 Retouched blade. Context 40139.
5 Transverse arrowhead reused as scraper/awl. Context 41245.
6 Polished axe fragment. Gully 40265/40337. Context 40262.
7 Kite-shaped leaf arrowhead. Context 40031.
8 Fabricator. Context 40201.
9 Axe fragment. Context 41398.

Table 32 Area 4, charcoal from features of Neolithic and Bronze Age date

Feature	*Taxa* *Alnus*	*Corylus*	*Fraxinus*	*Pomoideae*	*Prunus*	*Quercus*	*Salix*	*Taxus*
Neolithic pit 40215								
Context 40228	–	9	1	1	5	7sh	–	1
EBA pit 40218								
Context 40233	–	6	–	9	7	8sh	2	–
Context 40219	7	2	–	7	10	13h	–	–
MBA feature 40275	–	4	1	–	3	15	–	–
MBA pit 40202	–	–	5	–	10	33	–	–
MBA pit 40282	–	–	2	–	1	23	–	–
MBA posthole 40210	–	–	–	2	10	2	–	–
MBA posthole 40331	–	–	–	–	1	9s	–	–
MBA hollow 40367	–	7	12	7	–	8sh	–	–

s = sapwood; h = heartwood

Charcoal, by Rowena Gale

Late Neolithic pit 40215 contained charcoal of oak, hazel, ash, *Prunus*, Pomoideae, and yew (Table 32). This was mixed with pieces of pottery and burnt flint, suggesting its origin as fire debris.

Charcoal was recovered from the Early Bronze Age pit 40218, which contained discrete tip lines (Fig. 43) of charred material dumped into the upper fills. This included oak (sapwood and heartwood), ash, hazel, *Prunus*, Pomoideae, alder and willow/poplar.

The Middle Bronze Age pits often contained charcoal mixed with other materials (Table 32). Oak (including fragments of sapwood and heartwood), ash, *Prunus* and hazel were identified from feature 40275, while the pit that it cut, 40282, contained oak, ash and *Prunus*. Pit 40202, with evidence for either *in situ* burning or the deposition of material while still very hot, contained oak, ash and *Prunus*. Posthole (40210) was similar in charcoal content but also included Pomoideae. Hearth 40317 produced large lumps of ash, oak (sapwood and heartwood), Pomoideae and hazel.

Discussion

Alder and willow/poplar are generally considered inferior as wood fuel. Their presence here, if from hearth debris, may be attributed to the secondary use of woodworking waste (e.g. hurdle-making), or to the secondary use of damaged or discarded items such as basketry, hurdles, tools etc. The absence of these species from most other contexts tends to support this idea.

The presence of yew is of interest since it was identified from only one other context, an Iron Age pyre in Area 2 (Vol. 82, 82). Yew is generally associated with calcareous soils but its tolerance of neutral or slightly acid soils is attested by the discovery of ancient yew trees buried in the Fens (Godwin 1975). Yew grows in dense shade as understorey in oak, ash or beech woods; it is also common on chalk downland either as scrub on exposed scarps or, when sheltered, sometimes forming dense clumps of mature trees. Chalky soils were present at Westhampnett (a strip of chalk marl/alluvium straddled Area 3) and on the downland to the north of the site. Evidence from other early sites in southern Britain suggests that yew was very rare (Tittensor 1979). However, the sparse occurrence of yew charcoal at Westhampnett may be attributable to the peculiar properties of the wood, the difficulty of working it with primitive tools and/or ritual customs and folklore.

Although large areas of woodland had probably been cleared in the Bronze Age the presence of some semi-mature or mature oak trees (inferred by the identification of heartwood) indicates the survival of pockets of natural woodland. The comparison of charcoal from the Neolithic and Early Bronze Age pits indicates that oak and ash were common throughout; hazel was probably equally dominant; and *Prunus* and members of the Pomoideae were also relatively common.

Charred Plant Remains, by Pat Hinton

The evidence from the Late Neolithic pit 40215 is limited, but the Early Bronze Age pit 40218 included emmer, possible spelt, naked and hulled barley and fragments of undetermined cereals (Table 33). Other evidence of an increase in cultivated crop plants in the Early Bronze Age is *Vicia faba* var. *minor* (broad or field bean). There are instances of the earlier occurrence of these beans as impressions in Neolithic pots but other Sussex records, so far, are from Late Bronze Age sites.

Hazel continues to be present but apart from the hazelnut fragments, the only macro-fossil of a non-cultivated plant from the Area 4 pits is of a sedge nutlet. This measures 1.3 × 0.9 mm, is obovate,

Table 33 Area 4, charred plant remains from features of Neolithic and Earlier Bronze Age date

Feature type	*Neolithic pit*	*Early Bronze Age pit*	
Feature	*40215*	*40218*	
Sample no.	*49022*	*49011*	*49010*
Sample volume (litres)	*10*	*10*	*10*
Cultivated			
Triticum cf. *dicoccum* – emmer			
grains	–	2	–
glume base	–		1
Triticum sp. – undifferentiated wheat	–	2	1
Hordeum vulgare L. – hulled barley	1	1	–
Hordeum vulgare var *nudum* – naked barley		1	–
Cerealia indet. – unidentified cereals – fragments	1	>2	2
Vicia faba L. var. *minor* – broad/field beans	–	2	–
Arable, waste and grassland			
cf. *Carex viridula* ssp brachyrrhyncha – yellow sedge	–	1	–
Woodland, margins, clearings			
Corylus avellana L. – hazel – nutshell fragments	5	35	10

with conspicuous angles, and higher magnification shows a rather unclear pattern of cells with very small papillae. *Carex viridula* ssp. *oedocarpa* and ssp. *brachyrrhyncha,* two of the yellow sedge group, are possible identifications. A slight depression on either side of the angles is a feature of *C.* ssp. *brachyrrhyncha* (Nilsson and Hjelmqvist 1967) but this may not be as reliable in a charred seed. Both these sedges occur in base-rich fens but *C.* ssp. *oedocarpa* also grows in inorganic conditions, e.g. gravelly lake margins and streamsides.

In the Middle Bronze Age features more plant taxa are represented, with potential indications of the agricultural background (Table 34).

The samples from intercutting features 40275 and 40282 contained only small amounts of cereals with very few weeds and some hazel fragments, but samples from pit 40202 and postholes 40210 and 40331, although not containing large amounts, do illustrate a wider range of species. *Triticum spelta* (spelt) is probably now present, in addition to emmer, but the few chaff fragments are not in sufficiently good condition for identification to be completely certain. *Hordeum vulgare* (hulled barley) occurs in two samples but only in very small numbers. *Avena* sp. (oats) is represented in two postholes and in one pit, but in the absence of diagnostic floret parts cannot be identified as cultivated or wild.

Samples from two hollows, 40275 and 40367, contained only small amounts of cereals and only a single weed. *Hordeum vulgare* occurs in both samples, but only in very small numbers, and as naked barley in the sample from hollow 40367.

Bromus cf. *secalinus* (rye brome) was found in two features and the presence of this grass, which is so often associated with spelt, might almost be taken as confirmation of the otherwise uncertain identification of that wheat species. These two plants occur together so regularly that rye brome is likely to be either a very common weed of spelt or, because of its large seeds, was tolerated or even encouraged as a useful addition to the crop. It is far less common today but when it does appear, it is usually as a weed of autumn sown crops.

The majority of the weed seeds, like rye brome, are of annuals and some such as *Galium aparine* (cleavers), *Chenopodium* species (goosefoot), and *Sherardia arvensis* (field madder) may also occur as ruderals, usually in nutrient-rich conditions. Usually associated with autumn-sown crops are cleavers, *Anagallis arvensis* (scarlet pimpernel), and *Papaver* spp. (poppies), while goosefoot, *Odontites vernus* (red bartsia) and *Fallopia convolvulus* (black bindweed), a very typical twining weed of cereals, are spring-germinating and might occur with spring-sown cereals.

Most of these plants are relatively undemanding in their requirements; scarlet pimpernel and field madder are typical of calcareous loams, while black bindweed often occurs in sandy, more acid, situations. Red bartsia, often found in damp pasture, suggests a heavier type of soil.

Two grass seeds are comparable to a small seeded *Festuca* (fescue) but have not been identified more closely. Fescues are perennial grasses, of open, scrub or waste conditions, but could well have spread into a cultivated area from its margins.

Any interpretation of these assemblages is difficult since so many of the cereals are fragmentary and chaff is very sparsely represented. It appears that cereals are outnumbered by probable weed seeds and it is most likely that the assemblages are burned waste from the processing of cereals. If activities such as threshing and

Table 34 Area 4, charred plant remains from features of Middle Bronze Age date

Feature	*hollow 40275*	*pit 40202*		*ph 40210*	*ph 40331*	*pit 40282*	*hearth 40317*	*hollow 40367*
Sample no.	*49026*	*49017*	*49006*	*49023*	*49018*	*49020*	*49008*	*49015*
Sample vol. (litres)	*10*	*10*	*10*	*8*	*10*	*10*	*10*	*12*
Cultivated								
Triticum cf. *dicoccum* – emmer								
grains	1	1	2	–	–	2	–	1
glume bases	–	–	–	4	–	–	–	2
Triticum dicoccum/spelta – emmer or spelt								
grains	–	1	1	–	–	–	–	–
glume bases	–	2	–	1	–	–	–	–
Tr*iticum* cf. *spelta* – spelt	–	1	–	–	–	–	–	–
Triticum sp. – indeterminate wheat – fragments	2	2	3	>2	1	1	6	–
Hordeum vulgare L. – hulled barley	–	1	–	2	–	1	(1)	21
Hordeum vulgare var *nudum* – naked barley	–	–	–	–	–	–	–	(6)
Avena sp. – oats								
grains	–	2	2	–	–	1	–	–
awn frags.	–	1	2	>2	–	1	–	–
Cerealia indet. – indeterminate cereals – fragments	12	>40	>30	>30	–	>1	>50	>50
Arable, waste and grassland								
Papaver sp. – poppy	–	–	–	1	–	–	–	–
Chenopodium cf *rubrum/polyspermum* – red/many-seeded goosefoot	–	–	1	3	1	1	–	–
Fallopia convolvulus (l.) A.– Love black bindweed	–	–	–	–	–	1	–	–
Stellaria media/neglecta – chickweed	–	1	5	–	–	–	–	–
Polygonum lapathifolia (L.) *Gray* – pale persicaria	–	–	–	1	–	–	–	
Polygonum aviculare s.l. – knotgrass	–	1	–	1	4	–	–	–
Rumex sp. – dock	–	1	–	1	–	–	–	–
Viola sp. – violet/pansy	1	–	–	–	–	–	–	–
Anagallis arvensis L. – scarlet pimpernel	–	–	1	–	–	–	–	–
Medicago lupulina L. – black medick	–	1	2	2	–	–	–	–
Vicia cf t*etrasperma* – smooth tare	–	>3	–	–	–	–	–	1
cf. *Vicia* sp. – tare	–	1	–	1	–	–	–	
Plantago lanceolata L. ribwort plantain	–	1	2	3	–	–	–	
Odontites vernus (Bellardi) Dumort – red bartsia	–	–	–	1	–	–	–	
Sherardia arvensis L. – field madder	–	–	–	4	–	1	–	
Galium aparine L. – cleavers	–	–	–	>1	–	–	–	–
cf. *Festuca* sp. – fescue	–	1	4	–	–	2	–	–
Arrhenatherum elatius (L.) Beauv. ssp. *bulbosum* – onion couch – 'tubers'	–	1	4	–	–	–	–	–
Bromus cf *secalinus* – rye brome	–	1	4	1	–	–	–	–
Poaceae inc. cf. *Poa*, cf. *Phleum* spp. – small-seeded grasses	1	6	14	9	–	–	–	–
Woodland, wood margins, clearings								
Corylus avellana L. –hazel – nutshell frags	1	–	1	–	1	1	–	–
Crataegus cf *monogyna* – hawthorn – fruit stones	–	–	1	–	5	–	–	–
Cornus sanguinea L. – dogwood – fruit stone	–	–	–	–	1	–	–	–
Sambucus nigra L. – elder	–	–	–		6	–	–	–
Root/culm fragments	–	>10	>8	>10	–	>10	–	–

ph = posthole

winnowing were carried out nearby, or in whatever structure these features represent, the presence in them of waste presumably came about by gradual or repeated drifting in, perhaps on many occasions.

If, on the other hand, many of the seeds had a grassland origin then it is likely that they represent dried plants, perhaps gathered as tinder. This is backed up by the presence of tubers, strictly root nodes, of *Arrhenatherum elatius* ssp. *bulbosum* (onion couch) in two samples. These are reported quite frequently in contexts such as cremation pyres, where fuel seems the most likely explanation (as suggested from penannular ditch in Area 3 below). Their frequent occurrence in Bronze Age deposits seems to indicate that grassland that was no longer or only infrequently grazed was becoming more common at this time, and this has been discussed by Robinson (1988a). Detached 'tubers' may also become incorporated in arable land.

The hazel and hawthorn fruits indicate another source. The contents from posthole 40331 are different from the other features in that, except for one indeterminate wheat and two species of weed plants, the other four species of macrofossils are all of woodland or wood-margin origin. Hazel and hawthorn occur in other contexts but here they are joined by *Cornus sanguinea* (dogwood), and *Sambucus nigra* (elder). The significance is debatable; are they the remains of fuel, clearance burning, cutting back of over-hanging branches, or were they gathered as fodder? Hazel and elder are of course likely to represent collected edible foodstuffs.

There are other instances of Bronze Age plant remains in Sussex but many are from pottery impressions which, although of value in demonstrating the general availability of certain species, cannot be precisely linked to their source. Two Late Bronze Age downland sites in East Sussex, Itford Hill (Helbaek 1953; 1957) and Black Patch (Hinton 1982) have, however, produced more valuable information from large deposits of charred cereals and at both sites hulled barley was dominant, with emmer in lesser numbers. *Triticum spelta* (spelt), *Avena* sp. (oats) and *Vicia faba* (beans) were also present at Black Patch. Neither site yielded any evidence of naked barley, which was present at Westhampnett in the Early Bronze Age and possibly also in the later Bronze Age.

The weed species from Itford Hill and from Black Patch have been compared with those from Westhampnett to search for differences between crops probably grown on chalk rather than on the Coastal Plain. Most are common to all three sites, or indeed to most cultivated fields. Perhaps the only significant difference is *Lithospermum arvense (*corn gromwell), typical of chalky fields, which was present at Black Patch but not at Westhampnett, and *Anagallis arvensis* (scarlet pimpernel), frequent on calcareous loams, present here but absent from the chalk sites.

Radiocarbon Results (Table 35), by Michael J. Allen

Four samples were submitted from features in Area 4 (Fig. 48). The date from Early Bronze Age pit 40218 falls within the date range of secondary series Collared Urns (Longworth 1984; Burgess 1986), the type recovered from the pit.

Another sample, from pit 40282, was submitted on the basis that it contained only Peterborough Ware of Neolithic date. However, the date of 1620–1160 cal BC is consistent with the other two Middle Bronze Age dates from the area and with the general expected range for a Bronze Age settlement associated with Deverel-Rimbury style pottery. It is concluded, therefore, that the single sherd of Peterborough Ware, and not the charcoal, was residual in this feature which was cut by a Middle Bronze Age feature. Samples from the two other Middle Bronze Age features both produced determinations that were anticipated. All three dates are

Table 35 Area 4, radiocarbon determinations from features of Neolithic and Bronze Age date

Feature	*Context no.*	*Material*	*Lab. no.*	*Determination*	*cal BC*
Neolithic					
30270	30269	Human femur	AA-40353	4195±40	2900–2620
Bronze Age					
40218	40233	Charcoal: mixed[1]	GU-5307	3510±50	2020–1700
40210	40231	Charcoal: mixed[2]	OxA-4175	3110±80	1600–1130
40282	40283	Charcoal: mixed[3]	OxA-4172	3130±80	1620–1160
40202	40214	Charcoal: mixed[4]	OxA-4174	3140±80	1620–1160

mixed 1 = *Quercus, Prunus* sp., *Corylus,* Pomoideae and *Salix/Populus*
mixed 2 = *Quercus, Prunus* sp. and Pomoideae
mixed 3 = *Quercus, Fraxinus* and *Prunus* sp.
mixed 4 = *Quercus, Prunus* sp. and *Fraxinus*

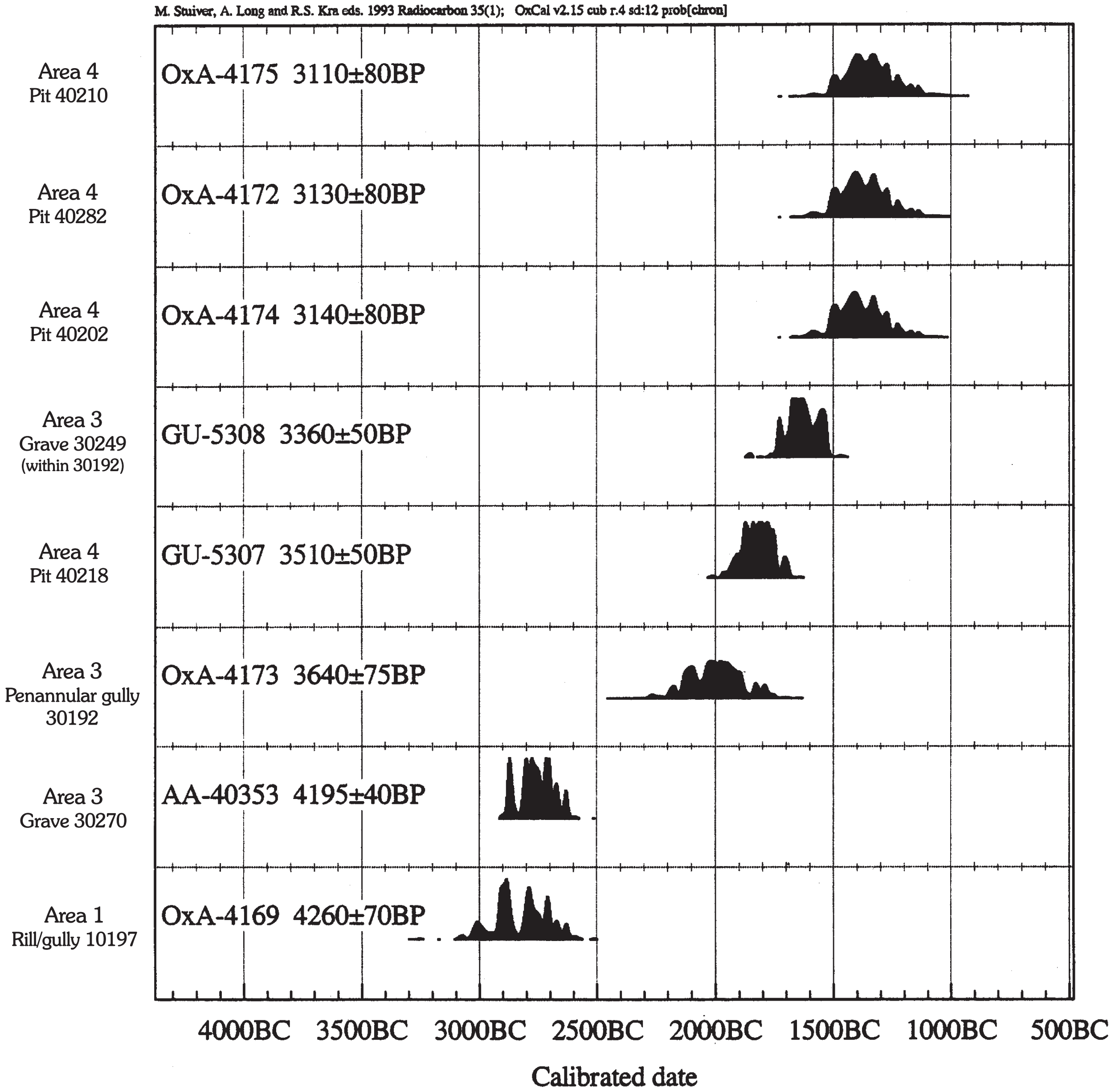


Figure 48 Areas 1, 3–4: probability distribution of Neolithic and Bronze Age radiocarbon dates

not significantly different at the 95% confidence level (Ward and Wilson 1978) and therefore all belong the same phase of settlement and occupation activity. There is little local material with which to compare this group, as there are relatively few excavated Deverel-Rimbury settlements in Sussex, and particularly West Sussex, and none have produced radiocarbon dates.

Archaeomagnetic Dating, by A. J. Clark†

The archaeomagnetic programme attempted to date hearth 40317 in Area 4, and details of the principles and methods of archaeomagnetic dating used in this work are contained in Clark *et al.* (1988).

Hearth 40317 (Ref. AJC-111) remained as a strikingly reddened area in the natural brickearth. A test sample taken on an initial visit was found to retain a remnant magnetisation of fairly high intensity, indicating that it was worth attempting a dating exercise on the hearth. Because of its softness, it was sampled by a method normally used for sediments: levelled uPVC tubes 0.5 m in diameter and length were pushed into the reddened brickearth (Pl. 15). After orientation by sun compass, these were removed and the samples sealed within them with plaster of Paris.

Initial measurements on the 12 samples showed substantial variability in directional values, with intensities ranging from 85 to 672 mA/m. The standard test of partial stepwise demagnetisation was applied to two pilot samples. This showed that the material was of low magnetic stability, but the grouping of directions was greatly improved

Plate 15 The late Dr Tony Clarke sampling hearth 40317 in Area 4 for archaeomagnetic dating

by reduction of viscous magnetic components at an alternating field level of 7.5 mT, which was therefore applied to the rest of the samples. After two particularly unstable samples had been rejected, the remaining 10 samples gave the following mean field direction:

$$\text{Dec} = 3.90\text{W}; \text{Inc} = 70.65; \alpha 95 = 6.57$$

The rather large error limit represented by $\alpha 95$, and the repeatability of magnetic directions at different times, combine to make a useful interpretation of this result in terms of date impossible without invoking the support of archaeological probability. Using the archaeomagnetic curve of Clark *et al.* (1988), and the lake sediment derived curve of Turner and Thompson, as modified by Clark (1992), date spans (calibrated) of approximately 6750–5450 BC, 4950–1800 BC, and 400 BC–AD 150 are all possible. The second span brackets the whole of the Neolithic and the earlier part of the Early Bronze Age, and more modern dates than AD 150 are not excluded.

The result does, however, exclude the period 1800–400 cal BC, which includes the middle to later Bronze Age period that was initially thought to be probable on the basis of the surrounding archaeological evidence. If, therefore, the hearth does belong to a Bronze Age context, it is an early one.

The quality of results from this hearth were clearly affected by physical as well as magnetic instability, the latter perhaps due to rather low temperature heating. At its shallow depth, it would have been vulnerable to bioturbation, including human activity, and even the passage of farm machinery. A control sample taken from the unburnt brickearth at the same level, about 2 m north-west of the centre of the hearth, had an intensity of 26 mA/m (about 10% of the mean value for the hearth samples), a steep inclination of 77.55, and a declination of about 66°W. This direction may be related to the time of deposition of the brickearth, although it is likely to have been upset by activity around the hearth and the other disturbing effects noted above.

Neolithic and Early Bronze Age (Area 3), by Andrew B. Powell

Neolithic Inhumation Burial

A shallow grave (30270) located within the north-west corner of a Romano-British enclosure (Chapter 7) contained a severely truncated crouched (on the basis of its size) inhumation burial (30269) – a subadult, possibly female, of whom only some teeth and parts of both legs and the right arm remained (Fig. 49; Pl. 16). The bone was in poor condition, possibly resulting from disturbance. The grave, which survived as an oval scoop 0.08 m deep, was *c.*1 m long and 0.6 m wide. A sherd of later prehistoric pottery, a flint flake and two very small iron fragments were found in the grave. Further human bone in slightly better condition, possibly from the same individual, was found in a ditch section of the enclosure (30356) *c.* 12 m to the north suggesting that the grave may have been disturbed in the Romano-British period.

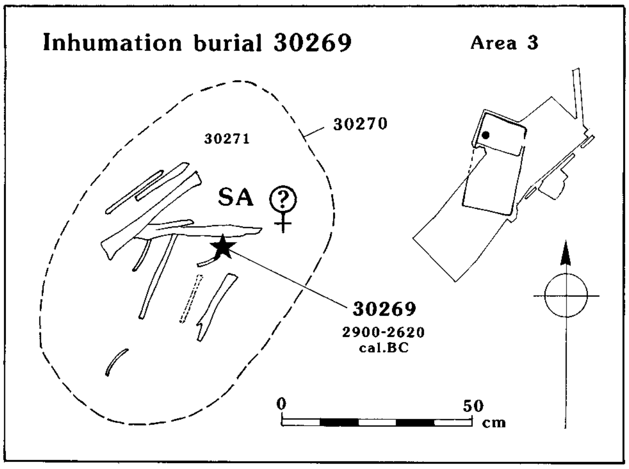


Figure 49 Area 3: Neolithic inhumation burial 30269

Plate 16 The severely truncated remains of the Neolithic inhumation burial 30269 in Area 3 looking north-east. Scale 1 m

A radiocarbon date from the burial of 2900–2620 cal BC (AA-40353, 4195±40 BP) shows that it was Late Neolithic in date (Table 35). This dating is close to that from charcoals in Area 1, but it is unusual in that inhumation burials of this date are rare. As the grave was disturbed, the bone in poor condition and the small fragments of iron intrusive, and perhaps the pottery also, the date could be viewed as archaeologically unacceptable. However, such unaccompanied inhumation burials will usually only be dated by radiometric methods.

Isolated earlier Neolithic inhumation burials, in which the body was often laid out in a crouched position and which date to between *c.* 3700–3100 BC, are relatively well known in southern England (Kinnes 1979, 122–7; 1992; Barclay and Halpin 1999, 275–6). Late Neolithic burials, which are by no means common, are mostly cremation burials (e.g. Manby 1974); in southern England the cemeteries at Dorchester-on-Thames, Oxfordshire (Whittle *et al.* 1992) and Stonehenge, Wiltshire, are the best known examples (Cleal *et al.* 1995, 154–5, 163–4).

If the radiocarbon date is sound, little more can presently be said beyond the observation that in terms of date it is as close to the earlier Neolithic group as it is to the start of the Beaker horizon (Kinnes *et al.* 1991) in which Garwood suggests that there is almost no evidence for burials before 2600 and very little before 2400 BC (Garwood 1999).

Early Bronze Age Penannular Burial Enclosure 30369

A Bronze Age enclosure defined by a penannular ditch was excavated on the south-east side of Area 3 (Fig. 50), with a central grave containing an inverted urned cremation burial. The ditch had been recorded at the eastern end of evaluation trench 30, but its true nature and date were not recognised at that time. During the excavation of a geological test pit (GTP 2) and test trench (30383) to establish the extent of the Lateglacial Interstadial palaeosol (Chapter 3), two further sections of the ditch were recorded, making it evident that it was circular in plan. With the permission of the landowner, the area of excavation was enlarged to expose the full circuit of the ditch. No traces of any mound or other earthwork survived, the whole monument having been levelled by ploughing.

Penannular Ditch

The penannular ditch 30192 was originally examined by five 2 m long sections, but on the discovery of a deposit of charcoal in the western ditch terminal the whole of the ditch was excavated (Pl. 17). The ditch was almost circular but the sides were slightly flattened, resulting in a squarish shape. On the southern side there was a 2.8 m wide causeway

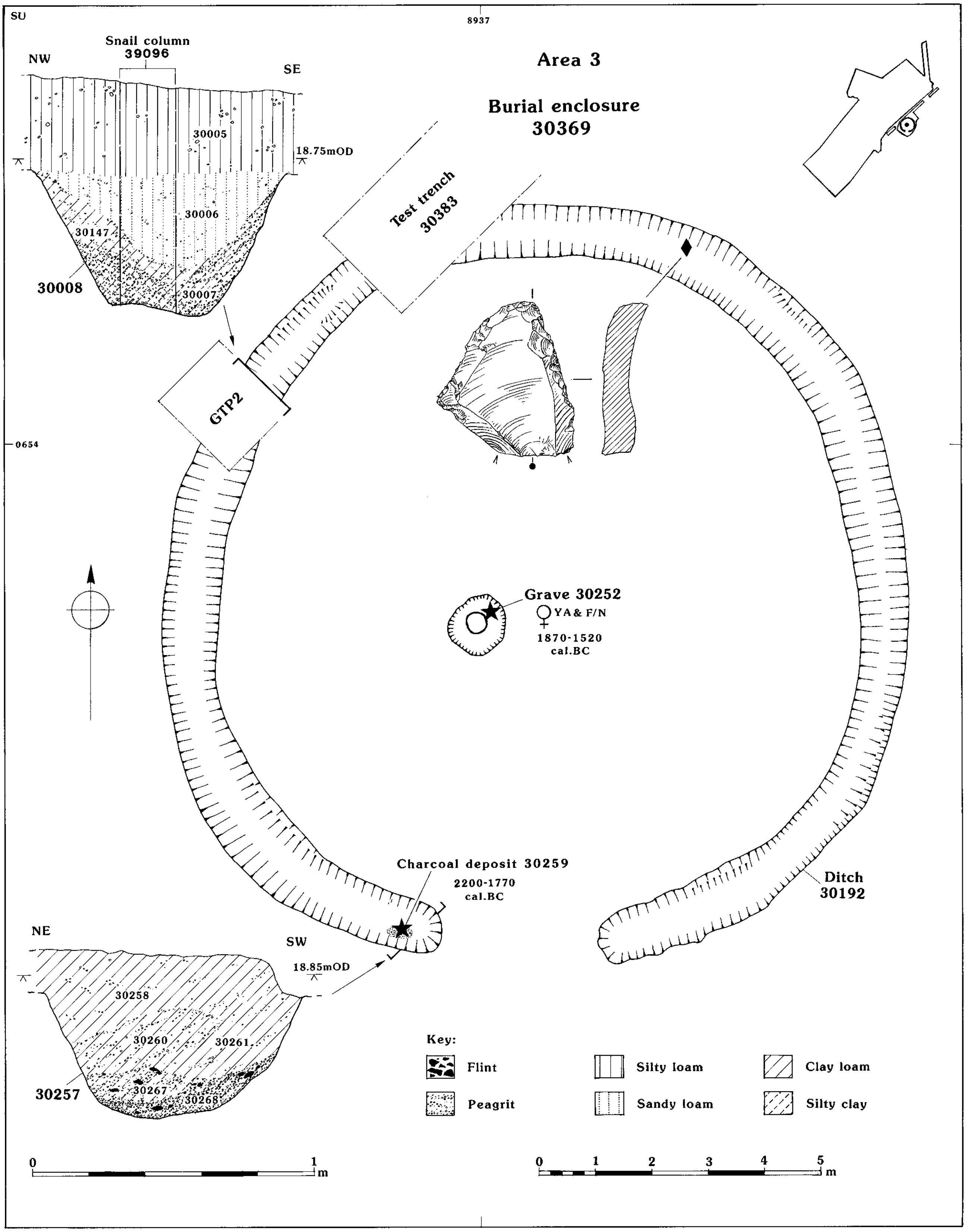


Figure 50 Area 3: Plan and sections of penannular burial enclosure 30369 and associated worked flint

Plate 17 Bronze Age penannular enclosure 30369 in Area 3 looking south-west. The entrance is to the top left of the photograph and cremation burial 30252 is near the centre of the ditch. The western side of the ditch is cut by test pit 30371 and test trench 30383, where the locations of the palaeo-environmental samples can be seen. The excavations in Area 4 are just visible beyond the hedge line

between its terminals. The ditch had an external diameter of 13.2 m, east to west, and was 0.85 m–1.2 m wide and up to 0.8 m deep, with moderately steep V-shaped sides and a flat base (Fig. 50).

For most of its circuit the ditch was cut into calcareous marl and the primary silting layer was a light brown silty clay containing small flints and peagrit. In some sections a secondary fill was identifiable, consisting of a brown clay loam, again containing peagrit. Both layers yielded significant quantities of burnt flint. The peagrit content in these fills was highest near the western ditch terminal, where the ditch was cut into fine calcareous gravel. The lack of a silt or clay component in this gravel meant that the ditch sides were more easily eroded, and five interleaving layers were recorded in the western ditch terminal. Lying on top of the secondary fills in this terminal (not seen in section) there was a charcoal deposit from hazel and *Prunus* (30259) containing fragments of burnt flint and a very small quantity (1 g) of cremated human bone. This is interpreted as pyre debris. The charcoal in 30259 yielded a radiocarbon date of 2200–1770 cal BC (OxA-4173, 3640±75 BP). The upper fill of the ditch was a brown sandy loam, the western terminal containing occasional fragments of burnt flint (9 pieces, 212 g), and sherds of Romano-British pottery came from two locations. One of these was the eastern terminal (30289), the other the machine-excavated geological test pit (GTP 2, context 30006). As Romano-British material is otherwise is so rare in the ditch fills, it must be considered likely that the pottery was introduced into 30006 when the test pit was excavated through the ploughsoil.

Cremation Burial

Grave 30252 was positioned *c.* 1.5 m south-west of the centre of the penannular ditch. The grave was sub-circular in plan, 1 m in diameter, with vertical sides surviving to a depth of 0.28 m, and a flat base (Fig. 51). A deposit (30250) consisting of a black silt layer, 0.07 m thick, and containing 393 g of cremated bone and a large quantity of oak charcoal, was evenly spread over the base of the grave. Amongst this material were five very small fragments (1 g) of what may be shale or mudstone. It is not clear if these represent pyre goods or material accidentally incorporated in the pyre. The deposit was overlain by a compact layer, *c.* 30 mm thick, of large pieces of flint in a brown sandy silt matrix. A Collared Urn (30251) had been placed in an inverted position centrally and on top of the flint layer (Pl. 18). The urn contained 526 g of cremated bone,

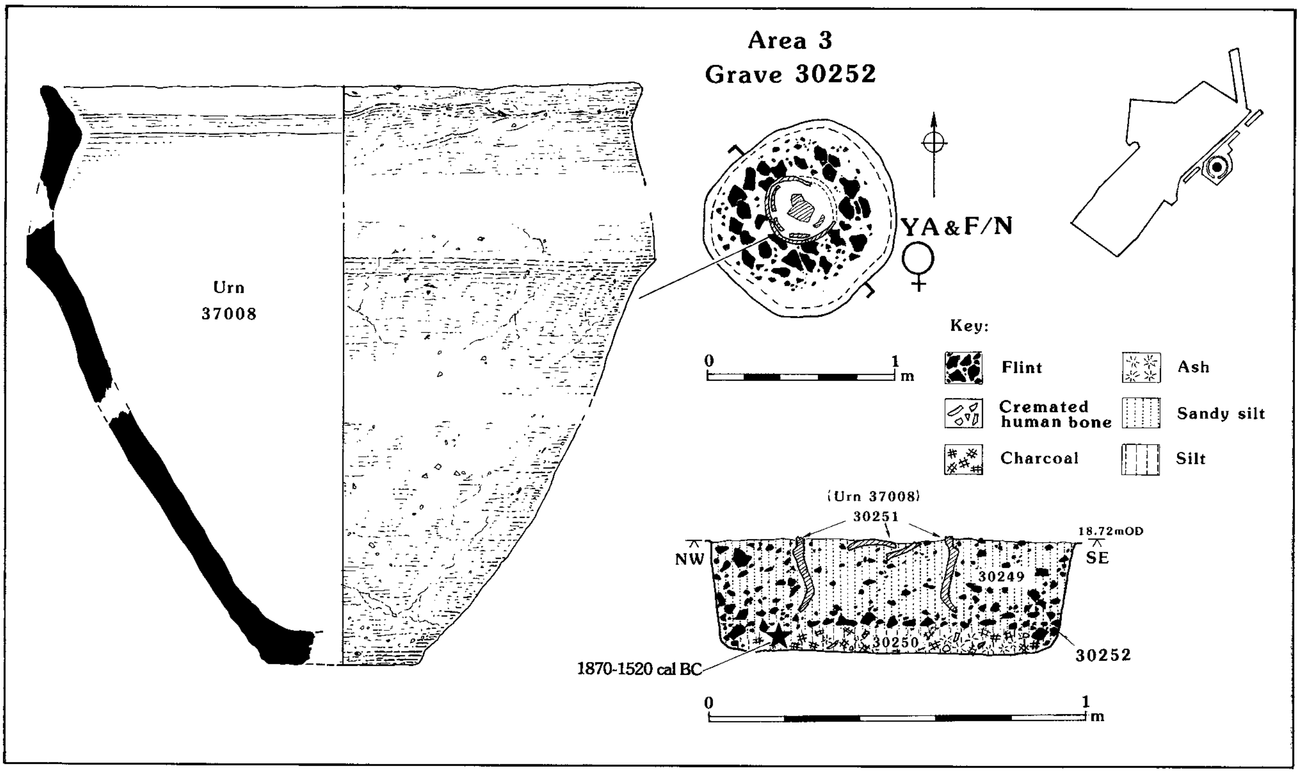


Figure 51 Area 3: Plan and section of cremation burial 30252 and burial urn

Plate 18 Cremation burial 30252 near the centre of the Bronze Age penannular enclosure 30369 looking south. Truncated remains of the inverted Collared Urn 30251/ON 37008 overlie the flint layer that sealed the deposit of pyre debris (30250). Scale 1 m

but fewer than five fragments of charcoal. Further flints had been packed around the urn (30249). A very small quantity of cremated bone (4 g) was recovered from the backfill of grave 30252. The grave had been badly damaged by ploughing, and the grave and urn severely truncated so that only the top 200 mm of the upturned urn survived. The oak charcoal in 30250 yielded a radiocarbon date of 1870–1520 cal BC (GU-5308, 3360±50 BP).

The Cremated Human Bone, by Jacqueline I. McKinley

Cremated bone was recovered from four contexts within the Bronze Age burial enclosure, including the remains of a truncated urned burial with pyre debris (grave 30252) and redeposited bone from the western terminal of the penannular ditch.

Methods

The cremation-related contexts were subject to whole-earth recovery in excavation and wet sieved to 1mm fraction size. The bone from the 10 mm and 5 mm fractions was extracted, and the 1 mm and 2 mm fraction residues were not sorted but retained for scanning. Consequently, in considering the total weights of bone and weights of bone from the 2 mm fraction it should be remembered that it has not been possible to present the full weight of bone in the 2 mm fraction.

Analysis followed the writer's standard procedure for the examination of cremated bone (McKinley 1989; 1994a). Age was assessed from the stage of tooth development (van Beek 1983), ossification/epiphyseal bone fusion (Gray 1977; McMinn and Hutchings 1985; Webb and Suchey 1985), the general degree of cranial suture fusion, and other age-related degenerative changes to the bone (Bass 1987). The sex of individuals was ascertained from the sexually dimorphic traits of the skeleton (Bass 1987), including the maximum cranial vault thicknesses '1a' and '1b'

Table 36 Area 3, cremated human bone from Bronze Age grave 30252

Context	*Type*	*Total wt (g)*	*No. ind.*	*Age*	*Sex*	*Animal*
30249	redeposited pyre debris	3.8		adult >18 yr	?	
30250	redeposited pyre debris	393.1	2	1) young/mature adult *c.* 19–45 yr		
				2) foetus/neonate	?female	u/b pig, frag.
30251	urned burial	525.8	2	1) young adult *c.* 19–25 yr		
				2) foetus/neonate	?female	
Total		**922.7**				

according to Gejvall (1981). Full details of all identified bone are presented in the archive report.

Results

Pyre debris 30259

A very small quantity of cremated bone (0.1 g) was deposited with other pyre debris in the western terminal of the penannular ditch. The charcoal from the pyre debris yielded a radiocarbon determination (see p. 123 below) that suggests that it may pre-date the rituals relating to the burial in grave 30252.

Grave 30252

The cremated bone from grave 30252 (contexts 30249, 30250 and 30251) (Table 36) comprised the remains of a young adult, probably female, and a foetus/neonate, implying a mother and child succumbing to some pre-natal, parturition or shortly-post-natal complication. This combination of individuals has been identified in other central burials under Bronze Age barrows, e.g. Guiting Power, Gloucestershire (McKinley 1992; older mature adult female with foetus/neonate). Dual or multiple cremation burials have frequently been reported from other Bronze Age sites, e.g. Simons Ground, Dorset (Petersen 1981); Jodrell Bank, Cheshire (McKinley 1994b) and Hurst Park, Surrey (McKinley 1996a), and their possible nature has been discussed elsewhere (McKinley 1997). In this instance, the interpretation of dual cremation rather than just a dual burial, is likely.

Most of the bone appeared well cremated, being almost uniformly buff-white in colour, indicative of full oxidation of the organic components of the bone (Shipman *et al.* 1984). Slight differential burning to individual bones was noted, with some black and blue colouration in fragments of finger phalanx, scapula, lumbar and femur shaft. Such variations are within the scope of what may be considered 'normal' and may have resulted from any slight problem with either time, temperature or oxygen supply (McKinley 1989; 1994a). No specific difficulties with technology are indicated.

The total weight of bone (922.7 g) from grave 30252 represents a maximum of 92.3%, but probably more in the region of *c.* 56%, of the expected weight of bone from an adult cremation (McKinley 1993). When compared with the cemeteries in Area 2, the quantity of bone is considerably greater than the maximum weights noted in from the Romano-British burials and the average weight from the Iron Age burials. It has been noted elsewhere by the writer that burials central to Bronze Age barrows consistently include greater quantities of bone than either other types of cremation burial of the same date, or burials from other periods (McKinley 1997). In the central barrow burials mentioned above, the range of weights was 902.3–2747.1 g, with an average of 1525.7 g. As with other aspects of the cremation ritual in these cases, it may be that the time expended on collecting bone for burial in some way reflected the status of the deceased, in whatever terms that may have been calculated.

Fifty-two per cent of the bone from the grave was recovered from the 10 mm fraction; the maximum fragment size was 48 mm. The fragment sizes are within the normal range noted (McKinley 1994c) and there is nothing to suggest that any deliberate fragmentation of bone took place prior to burial.

Bone from all areas of the adult skeleton were identified from both the burial and the underlying pyre debris, indicating the entire body was present at cremation and that there was no selection of particular skeletal elements for burial. The neonate was represented by a few fragments of long bone shaft and metaphyses. The quantity of bone from such a young infant would be small and fragile, and since possibly only 56% of the adult bone was incorporated in the grave it is no surprise that so little of the neonate survives (McKinley 1989; 1994a).

Blue and/or green spot staining was noted on a fragment of rib shaft. The colours noted are similar to those generally attributed to copper-alloy staining and it is possible these stains were the result of copper-alloy being adjacent to bone fragments prior to burial, either on the pyre or in some pre-burial holding-place and that the copper-alloy itself was never buried. However, it has been suggested that this type of staining is not related to any external agency but is caused during cremation by the manganese in the bone apatite (mineral; Herrmann pers. comm.). Observations at modern crematoria and experimental work by Dunlop has suggested green staining results from the proximity of iron or steel to the bone during cremation, and that copper results in pink staining. Yellow staining was noted on rare occasions and only where the body was cremated in a zinc coffin (Dunlop 1975; 1978).

Pyre Technology and Ritual

Probable modes of collection of bone from the combusted pyre for burial have been discussed elsewhere by the writer (Vol. 2, 68–9; McKinley 1996b; 1997). In grave 30252, a deliberate deposit of pyre debris (30250) was made in the base of the grave. The cremated bone included in the pyre debris was from a young adult female and a foetus/neonate, with no duplication of the skeletal elements identified from the burial, and so most probably came from the same cremation. The pyre debris was sealed by a thin (30 mm) layer of flints prior to the urned burial (30251) being inserted into the grave. The backfill of the grave contained further pyre debris including a small quantity of cremated bone. Fifty-seven per cent of the bone was recovered from the urned burial, 42.6% from the pyre debris below the burial and 0.4% from the pyre debris in the backfill.

The incorporation of pyre debris in grave fills is not uncommon in the Bronze Age, and there is evidence that, at least in some cases, it was a deliberate act rather than accidental e.g. Linga Fold, Orkney (McKinley 1996b). There is also evidence of the deliberate deposition of pyre debris in separate features e.g. Guiting Power (McKinley 1992). The latter act may be seen as an extension of the deliberate inclusion of pyre debris in the grave backfill. The formalised deposit of pyre debris in the base of the grave cut here, with what may be seen as deliberate sealing prior to the insertion of the burial, may represent a similar form of activity to the formal deposition of pyre debris in a separate pit. Here the same cut feature was used but separation from the burial was still maintained. Deliberate deposition of pyre debris over the burial from the same cremation has also been noted in other Bronze Age contexts, one at Linga Fold being separated from the burial by a capstone to the grave.

The Cremated Animal Bone, by Pippa Smith

The primary deposit of pyre debris (30250) in grave 30252 contained an unburnt pig tooth (M 2/3; weight 2.2 g), while the backfill (30249) of the grave contained a small fragment of cremated animal bone, from an immature animal, whose species could not be identified. Small fragments, possibly of cremated and fragmented dental enamel, were also noted in these contexts.

The Collared Urn, by Lorraine Mepham

The Collared Urn (ON 37008) which contained some of the cremated bone (Fig. 51) had been deposited in an inverted position but subsequent disturbance had truncated the base of the vessel, leaving *in situ* only the top part of the vessel from the rim to a depth of about 200 mm. The surviving pottery weighed 2356 g; one further sherd (8 g) in a similar fabric and probably from the same vessel came from context 30247, which is considered to be a natural feature, *c.* 45m to the north-west. The sherd must have been incorporated within that feature after it had been dislodged from the grave. The fabric of the vessel is a coarse, friable, detrital fabric that may be described as follows:

G9 Soft, friable, moderately fine clay matrix, slightly micaceous; moderate, very poorly sorted, irregular grog or clay pellet <5 mm; sparse, poorly sorted, subangular flint <3 mm; rare iron oxides <1 mm. Unoxidised with patchily oxidised surfaces.

The unoxidised core of the vessel is dark grey, the surfaces varying from buff-brown to brown-orange in patchy oxidisation. All aspects of manufacture from clay preparation through shaping to surface finishing appear to have been undertaken with the minimum of effort, the result being a very crudely formed, poorly finished vessel in a clay which has had little or no preparation to increase its workability. As far as can be ascertained, owing to the very fragmentary nature of this vessel, the original form was relatively straight-sided with a collar with a poorly-defined base and an everted rim with pronounced internal bevel. No decoration is visible on the surviving portions. The lack of a complete profile and the absence of decoration makes problematic the placing of this vessel within the Collared Urn sequence on typological grounds. The everted rim would, however, seem to indicate a closer affinity with the urns of Longworth's Secondary Series and Burgess's Late Urns (Longworth 1984; Burgess 1986, fig. 1). This vessel shows no resemblance in either fabric or form, however, to the Collared Urns from Westhampnett Area 4, which have also been assigned to the later part of the Collared Urn sequence.

Residue in the Collared Urn, by Frances McLaren

A residue found in the Collared Urn (ON 37008) was subjected to X-ray fluorescence (details in archive), which showed that it was unlikely to be food, indicating instead a pattern of probable limescale against a typical earth background (with a high iron content). There was also evidence of a probable degraded copper alloy.

Ground water, which contains dissolved carbon dioxide (from the atmosphere and soil-atmosphere), can also accumulate calcium carbonate by flowing over gypsum, limestone or chalk. The carbon dioxide in the ground slowly converts the carbonate into soluble bicarbonate, sulphate and other salts. The water becomes temporarily hard. When the water is heated the bicarbonate is reconverted to the insoluble carbonate, which then forms a scale on the side of the pot. Although at Westhampnett the limescale could be a result of ground conditions, there is the possibility that the urn had at some previous time been used to heat or evaporate water.

The residue also produced evidence of a degraded copper alloy but the piece was so small that no further analysis could be pursued. It is not known if this derived from a pyre good or was an accidental inclusion.

The Flints, by W.A. Boismier

With the exception of a small group from the penannular ditch, most of the lithic assemblage from Area 3 was residual, composing of 57 artefacts: 28 unretouched flakes, 10 unretouched blades, 14 fragmentary and burnt unretouched flakes and blades, one multiplatform flake core, three scrapers and one denticulate (Fig. 52). Most of this material is likely to be of Bronze Age date, although earlier material is present. Nine flakes, three flake fragments, one blade and one nose end scraper, representing 8% of the assemblage, were recovered from the penannular ditch.

All the artefacts recovered were made out of flint, with the cortical condition on 19 pieces indicating that derived nodular flint, probably from coombe deposits, was the major source of raw material. Patination occurs on all the artefacts recovered, ranging from a mottled bluish grey or greyish-white, reflecting the soil physical conditions induced by the calcareous marl. Nineteen artefacts exhibit occupation-related or tillage-induced edge damage and/or breakage.

Technologically, the majority of the artefacts recovered conform to the general characteristics of Bronze Age industries from southern England. Flakes are round/rectangular or squat with prominent bulbs of percussion and thick platforms. The single flake core is a multiplatform type roughly worked with a hard hammer. The retouched tools also appear to be largely characteristic of the Bronze Age. Earlier material, probably of Mesolithic or Earlier Neolithic date is also indicated by some of the blades recovered.

Illustrated Late Neolithic/Early Bronze Age Worked Flint from Area 3 (Fig. 52)

1 Denticulate scraper. Context 30155
2 Side scraper. Context 30962

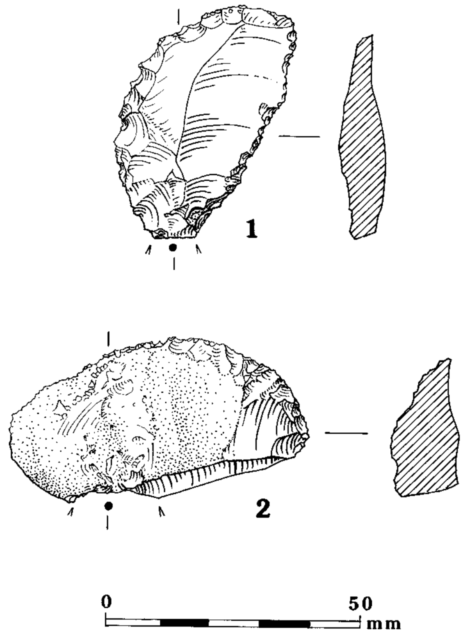


Figure 52 Area 3: Neolithic/Early Bronze Age flints

The Burnt Flint

Only a small quantity of burnt flint was recovered (25 pieces/264 g) but despite the small total it is apparent that the material was concentrated in the terminals of the penannular ditch, though most came from one of the tertiary fills.

Radiocarbon Results (Table 37), by Michael J. Allen

The determination from oak charcoal selected for the pyre and found with the central cremation burial (1870–1520 cal BC, GU-5308, 3360±50 BP), associated with a secondary series Collared Urn, falls in the date range expected (Longworth 1984; Burgess 1986) (Table 37). This date is relatively late within the general range of these vessels, and accords well with the ascription of the urn to a date late in the series on stylistic grounds.

The charcoal lens (pyre debris) in the ditch was assumed to relate to a secondary cremation burial. The radiocarbon determination, however, although falling within the expected Early Bronze Age date range (2200–1770 cal BC, OxA-4173, 3640±75 BP), is *c.* 300 radiocarbon years earlier than the central burial.

Table 37 Area 3, radiocarbon determinations from Bronze Age penannular burial enclosure 30369

Feature	*Context no.*	*Material*	*Lab. no.*	*Determination*	*cal BC*
central cremation burial					
30252	30250	Charcoal: *Quercus*	GU-5308	3360±50	1870–1520
charcoal in penannular ditch					
30192	30259	Charcoal: *Corylus, Prunus*	OxA-4173	3640±75	2200–1770

Although the two calibrated date ranges do overlap, the funerary activity represented by the pyre debris in the ditch terminal may pre-date the central burial.

Molluscs, by Michael J. Allen and Sarah F. Wyles

The penannular ditch (30192) was cut into calcareous marls and fine gravels (Fig. 15) and survived to a depth of 0.8 m deep (Fig. 50). The ditch fills were sampled where the ditch was dug in cohesive silty loam marls and chalky gravels (in segment 30008), rather than the loose calcareous fine gravels, to reduce the possibility of the inclusion of residual molluscs from the calcareous substrate. However, as shown earlier (Chapter 3; Table 12) neither the gravels nor the marls were rich in shells.

The ditch sequence revealed a shallow tripartite sequence of fills; primary, secondary and tertiary (Evans 1972; Limbrey 1975; Allen 1995c). It was sampled to determine the nature of the local environment and landuse in the Bronze Age. A series of five contiguous samples were taken from the eastern section of geological test pit GTP 2 (Fig. 50). The assemblages are presented as a histogram of relative abundance in Figure 53, and in Table 38 where mollusc nomenclature follows Kerney (1976). The Shannon index of species diversity has been calculated to aid with the interpretation of the assemblages (*cf.* Evans and Williams 1991; Magurran 1988). Unlike the mollusc assemblages from the calcareous marls, these assemblages are considered to be almost wholly autochthonous and thus species diversity indices can be applied here.

Two local landscape zones were recognised (Fig. 53) which equate to the primary and secondary fills (local landscape zone 5) and the tertiary fill (local landscape zone 6). The local landscape zones reflect local changes in land-use, rather than the chronostratigraphic or climatostratigraphic boundaries (*cf.* Lowe and Gray 1980) represented by local landscape zones 1 to 3 from the Allerød soil and marls. The fills from ditch segment 30008 were described as shown below.

Assemblages: Local Landscape Zones 5 and 6

The assemblages produced moderate shell numbers; although the tertiary fills produced up to 328 shells, this only represents 164 molluscs per kilogram. Shell preservation was fair despite the highly calcareous and soluble nature of the subsoil (calcareous marls and gravels). The preserved shells were not especially robust and some were both thin and slightly worn. The assemblages are considered to be autochthonous. Two species (*Anisus leucostoma* and *Gyraulus albus*) may be allochthonous and have derived from the marls; however, although *Anisus* was abundant in these deposits *Gyraulus albus* was not present in any of the samples. Most specimens were not particularly worn and therefore are not considered to have derived from the calcareous marls.

Local landscape zone 5 (primary and secondary fills)

The assemblages are characterised by being typical open country assemblages dominated by the Vallonias and *Pupilla muscorum* with *Abida secale*. Shade-loving

Fills from ditch segment 30008

Depth	*Context*	*Description*
Calcareous brown earth		
0–0.35 m	30005	Very dark greyish brown (10YR 3/2) silty loam with medium prismatic structure, common small and medium chalk pieces, rare very small chalk pieces and flints, common medium and small fleshy roots.
Tertiary fill		
0.35–0.55 m	30006	Brown (10YR 5/3) coarse sandy loam with weak massive structure and common small and very small chalk pieces derived from the calcareous gravels, and few medium flint nodules. Common coarse macropores, worm burrows containing very dark greyish brown (10YR 3/2) soil material.
Secondary fill		
0.5–0.65 m	30147	Yellowish brown (10YR 5/6) calcareous silty clay loam with medium blocky structure, occasional small and medium flints and common small and very small rounded chalk pieces. Rare medium macropores (worm burrows) present, some of which contain very dark greyish brown soil (10YR 3/2) but most contain brown (10YR 5/3) soil from the tertiary fill indicating ancient worm mixing.
Primary fill		
0.6–0.82 m	30007	Very pale brown (10YR 7/4) loose unconsolidated calcareous loam with rare flints and common small chalk pieces. Rare medium inclusions of calcareous marl (avoided when sampling if possible).
Calcareous marl		
0.82–1.2 m	30010	White (10YR 8/2) calcareous silty clay marl, virtually stone-free, but common vertical worm burrows seen adjacent to the ditch.

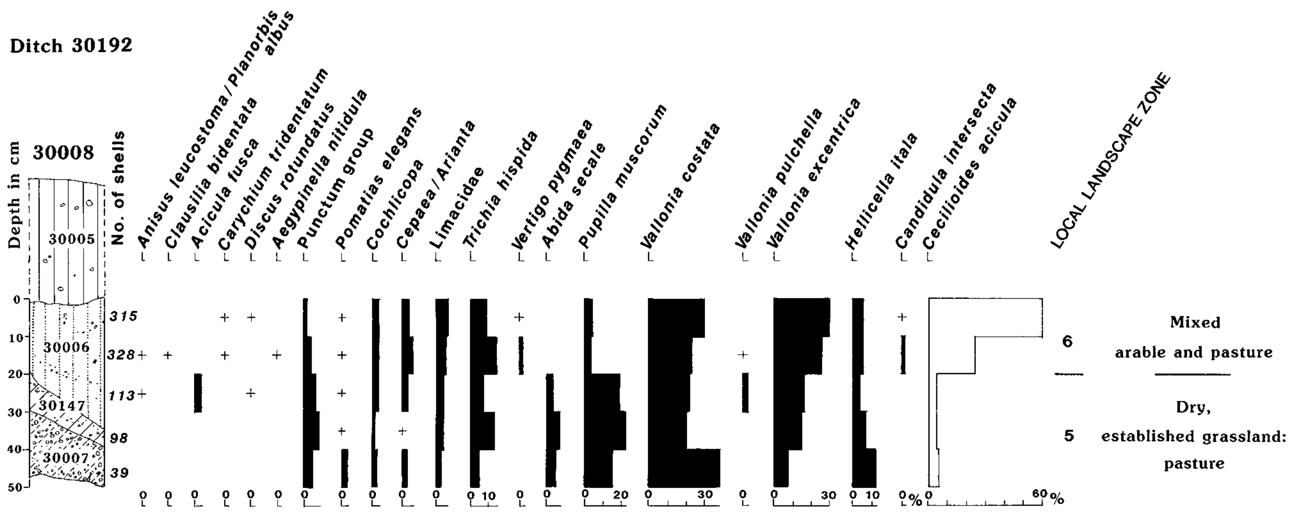


Figure 53 Area 3: mollusc histogram from penannular ditch 30192

Table 38 Area 3, molluscs from Bronze Age penannular ditch 30192

Feature 30192 (segment 30008)					
Local mollusc biozone	*5*	*5*	*5*	*6*	*6*
Sample	*39097*	*39098*	*39099*	*39100*	*39101*
Context	*30007*	*30007*	*30147*	*30006*	*30006*
Depth (cm)	*40–50*	*30–40*	*20–30*	*10–20*	*0–10*
Wt (g)	*1600*	*2000*	*2000*	*2000*	*2000*
MOLLUSCA					
Pomatias elegans (Müller)	1	+	+	3	+
Acicula fusca (Montagu)	–	–	5	–	–
Carychium tridentatum (Risso)	–	–	–	4	2
Cochlicopa lubrica (Müller)	–	–	2	5	4
Cochlicopa lubricella (Porro)	–	–	–	3	2
Cochlicopa spp.	1	2	2	5	8
Vertigo pygmaea (Draparnaud)	–	–	–	6	4
Abida secale (Draparnaud)	2	7	5	–	–
Pupilla muscorum (Linnaeus)	6	22	21	14	17
Vallonia costata (Müller)	15	20	25	74	95
Vallonia pulchella (Müller)	–	–	3	2	–
Vallonia excentrica Sterki	3	15	9	84	93
Vallonia excentrica/pulchella	–	–	10	–	–
Punctum pygmaeum (Draparnaud)	1	5	5	11	6
Discus rotundatus (Müller)	–	–	1	–	+
Vitrina pellucida (Müller)	1	2	3	1	–
Nesovitrea hammonis (Ström)	–	1	–	–	–
Aegopinella nitidula (Draparnaud)	–	–	–	3	–
Limacidae	1	4	4	16	19
Cecilioides acicula (Müller)	2	4	4	83	191
Clausilia bidentata (Ström)	–	–	–	2	1
Candidula intersecta (Poiret)	–	–	–	8	4
Helicella itala (Linnaeus)	5	7	5	20	20
Trichia hispida (Linnaeus)	2	13	8	47	28
Arianta arbustorum (Linnaeus)	–	–	–	+	–
Cepaea hortensis (Müller)	–	–	–	2	–
Cepaea spp.	1	–	–	–	–
Cepaea/Arianta spp.	–	+	4	16	12
Anisus leucostoma (Millet)	–	–	1	1	–
Gyraulus albus (Müller)	–	–	–	1	–
Taxa	12	13	15	21	16
Shannon Index	1.98	2.08	2.46	2.30	1.98
Total	**39**	**98**	**113**	**328**	**315**

species are absent, except the Evans' *Punctum* group (1972, 195) and the localised occurrence of *Acicula fusca*.

Local landscape zone 6 (tertiary fills)
Although shell numbers increase, the major changes in the assemblages are the relative decrease in *Pupilla muscorum* and increase in *Trichia hispida*, *Vertigo pygmaea* and the *Vallonia excentrica/pulchella* group. The introduced Hellicelid, *Candidula intersecta,* occurs. A few specimens of *Anisus leucostoma* and *Planorbis albus* also occur.

Interpretation

The assemblages from both local landscape zones are dominated by open country species with no marsh species or true aquatics. These assemblages contrast dramatically with those from the marls and Allerød soils, but are separated from them by over 5000 years.

Local landscape zone 5
The established open country assemblages indicate a short turf grassland (*Abida secale*), or even bare earth (*Pupilla muscorum*) but are not typical of arable assemblages (*cf.* Bell 1983; Allen 1994). The broken ground facies indicated by the presence of *Pomatias elegans* may represent the ditch fills and any barrow mound habitats. Although the *Vallonia excentrica/ pulchella* group are present (Table 38), no shells were positively identified as the marsh species *V. pulchella* and thus they are all considered to be the xerophile *V. excentrica*. The presence of *Acicula fusca* which is specifically a woodland species (Creek 1953) is odd, but it does occur in colluvium associated with rich woodland habitats such as Pitstone, Buckinghamshire (Evans 1966); Duxmore, Isle of Wight (Allen 1993), and Southerham Grey Pit, East Sussex (Allen 1994; 1995a). It may represent some of the vegetation regeneration on any barrow mound itself, as has been argued for Round-the-Down, East Sussex (Allen 1994; 1995b), but there are few other shade-loving species to confirm this hypothesis. Limited shady habitats are present (*Punctum* group), but these represent either limited vegetation colonisation of the ditch or any mound. The single specimen of *Anisus* in this local landscape zone is worn and is thought to have originated from the marls.

Local landscape zone 6
The tertiary fills can be considered to be of medieval or post-medieval date if the presence of *Candidula intersecta* is not intrusive down the worm burrows recognised in the section. At least one of the three specimens recovered retained parts of its periostrocum, indicating that it was a modern intrusive specimen. A landscape of mixed arable (*Vallonia costata* and *Trichia hispida*) and pasture is indicated. The amphibious and aquatic species present are not worn and here may represent occasional episodes where high groundwater levels and winter flooding provided localised temporary habitats for these species which might have been washed in. In particular *Planorbis albus* was not recorded from the marls but is widespread in almost all types of freshwater.

Discussion

The environment in which the burial enclosure was constructed contrasts strikingly with the wet marsh and alluvial environments represented by the marls. The Bronze Age environment was one of very dry, open, possibly grazed, calcareous grassland. There is no evidence to suggest the existence of the former wetland environments, and the nature of the mollusc assemblages from the primary fills indicate that the dry grassland had long been established prior to the raising of any mound within the enclosure. There are slight indications that the ditch and any mound may have been colonised by vegetation, but the surrounding landscape was under a mixed arable and pasture regime after the Bronze Age. In the infills post-dating the use of the enclosure as a funerary monument, there is slight evidence of higher localised groundwater, or possibly seasonal flooding.

Charcoal, by Rowena Gale

A large quantity of oak sapwood from the pyre (79 fragments) was found in layer 30250 in the central cremation burial, and the urn (30251) also included oak (four fragments). The large quantity, and apparently exclusive use of oak for the pyre may be significant, especially when compared with the multiple species identified from a charcoal lens (30259) in the south-western terminal of the penannular ditch, which included hazel (16 fragments) and *Prunus* (one fragment). Full details of the samples are presented in the archive report.

The presence of some semi-mature or mature oak trees indicates the survival of pockets of natural woodland. The comparison of charcoal from pits from sequential periods in Area 4 (p. 111), i.e. the Mesolithic–Bronze Age, indicates that oak and ash were common throughout; hazel was probably equally dominant. *Prunus* and members of the Pomoideae were also relatively common.

Charred Plant Remains, by Pat Hinton

Samples from the central grave provide little information. The few cereals, one weed and root and/or rhizome fragments may be part of the general background of burnt debris (Table 39). Both the fill of the urn (context 30251) and the deposit of charcoal and cremated bone on the base of the grave (30250), however, included fragments of tuberous roots.

Table 39 Area 3, charred plant remains from Bronze Age grave 30252

Context no.	*30251*	*30249*	*30250*
Sample no.	*37008*	*39048*	*39049*
Sample volume (litres)	*15–18*	*10*	*10*
Cultivated			
Triticum cf *dicoccum* – emmer – grains	1	–	–
Cerealia indet. – unidentified cereals – fragments	3	–	1
Arable, waste and grassland			
cf *Vicia* sp. – tare	–	1	–
Woodland, margins, clearings			
Root/rhizome fragments.	2	–	2
Tuberous root fragments	1	–	4

The tuberous fragment in the urn resembles half of a round tuber that measures *c.* 5.5 mm diameter at its widest part. The surface is irregular and flaking and there is at the centre a protrusion, which marks either the base of the stem or a root. The interior part has large unequal cavities, presumably formed during the charring, but no pattern of radiation from the centre could be discerned. In other respects this item closely resembles charred tubers found in Neolithic contexts on Whitesheet Hill, Wiltshire, and identified as *Conopodium majus* (pignut) by Hather (Hinton 2004). The urn sample also included fragments of featureless material, which differs from the usual charred vegetation masses, which are probably cereals, by being slightly less vacuolated.

Context 30250 contains four fragments, probably from two tuberous, or thickened, tap roots with rootlet scars, probably 8–9 mm long, and *c.* 2.2 mm in diameter at the widest part. Two other small fragments in this sample are probably root parts.

The tuber and other root fragments and the amorphous material might all be part of widely distributed burned waste in this area, perhaps representing gathered edible items, but it is also possible that they are remains of grassland vegetation used as fuel for the cremation. Tubers of *Arrhenatherum elatius* ssp. *bulbosum* (onion couch) are reported quite frequently in contexts associated with cremation and where fuel seems the most likely explanation. Their frequent occurrence in Bronze Age contexts seems to indicate that grassland, which was no longer or only infrequently grazed, was becoming more common at this time. Detached 'tubers' may also become incorporated in arable land.

The non-cultivated seeds, fruits and roots imply a landscape of grassland, with a wetter area and scrub vegetation in the vicinity.

Discussion, by A.P. Fitzpatrick

The evidence from the land snails suggests that the environment in which the burial enclosure was constructed was quite dry, open, possibly grazed, calcareous grassland. Assuming that the cremation took place not far from the place of burial, the presence of tubers possibly from onion couch amongst the charred plant remains might suggest grassland nearby that was no longer or only infrequently grazed. However, it seems likely that the onion couch might have been deliberately selected as tinder. The low-lying grassland lay between fields in which cereals were grown, and stands of natural woodland, whose presence is indicated by semi-mature or mature oak trees, which are inferred from the identification of heartwood.

Even allowing for the truncation of the enclosure ditch, it seems unlikely that it was the quarry for any substantial mound, if indeed there was one; there was no evidence from the ditch for a mound or for an encircling bank. Collared Urns have been found with burials associated with a wide range of barrows, including bowl, bell, disc, saucer and pond types (Longworth 1984, 48), as well as many flat cemeteries. The enclosure may have been a bermed barrow of some sort (Ashbee 1960, 24–5), disc barrows being usually much larger. Ring barrows have no mounds at all (Grinsell 1934, 224), a possible ring mound being noted at East Dean, Chichester (Grinsell 1934, 224, 247). The presence of an entrance through the ditch is not frequent in round barrows and although the existence of this feature in Sussex has been doubted (Russell 1996a, 33–4), the only doubt that attaches to the Westhampnett example is whether there was an upstanding barrow or not.

The low-lying location of the monument is noteworthy and if the Waterbeach–Tangmere stream course was seasonally wet the monument would have been close to water, a setting that is quite common amongst later round barrows (Tomalin 1996, 15, 17–19; Field 1998, 316). It is possible then, that between 1870–1520 cal BC the monument lay in an area of meadow set apart from arable farming. A distinction between the cultivated and the wild may have been as important to the burial place as any mound raised over the grave.

The range of flints certainly or probably of Bronze Age type and date found in Area 3 indicates other activities in the area during this period, but none seems to have required the excavation of earth-fast posts, and they may be associated with farm work away from settlements. The flint tools may have been deposited or lost centuries before or after the penannular ditch was constructed.

On the basis of the woods from which it derives, and also the radiocarbon determination it yielded, the deposit of cremation-related material in the terminal of the penannular ditch was probably associated with a cremation separate from that contained in the central grave. Although the radiocarbon determinations for the two deposits overlap, *prima facie* deposit 30259 pre-dates the central burial. The uncertainty over the date of the apparently Late Neolithic inhumation burial nearby (p. 117) should not be forgotten, however.

The central burial appears to be that of a mother and her child, both of whom died either at or near to delivery. The pyre was built of oak and was possibly lit by a tinder of cereals and onion couch. It is possible to identify archaeologically a series of acts, which took place after the cremation.

The presence of a small fragment of cremated animal bone in the fill of the grave, as well as a single unburnt pig tooth amongst the human bones, suggests that some or all of an animal was sacrificed on or near to the pyre, although its remains were not selected for burial alongside the mother and child. The possible degraded copper alloy might derive from a pyre good, but could also have been incorporated accidentally. A mixture of charcoal and cremated bones was placed on the bottom of the grave. This mixture was then covered by a layer of flints. As there is no evidence for the presence of a lid made of some organic material having been placed over the mouth of the urn, the next stage in the burial may have taken at least two possible forms. The first is that a second portion of the cremated bone, which contained rather less charcoal from the pyre, was placed on top of the flints and then covered with the upturned Collared Urn. The second possibility is that the second portion of bones and pyre debris was poured from the urn, which was then placed over it, upside down. Finally the grave was backfilled around the urn and closed. When, within this sequence, the penannular ditch was excavated (and any mound covering the grave was raised) is not known.

Platforms of stones in a grave and a pit were found in the Ewanrigg Cumbrian Bronze Age cremation burial cemetery, and the burial was in an inverted Collared Urn (Bewley *et al.* 1992, 352). Older reports of urned burials in Sussex often mention the presence of flints in graves without further details and it may be that platforms of flint, either unburnt and white or burnt and black, in graves may prove to be relatively frequent. The placing of Bronze Age burials on what have been suggested to be planks and/or reeds, rush or moss may be noted (Ashbee 1960, 91–3).

Although it is possible that some of the cremated bone and charcoal found in 30250 had been worked down from 30251 by natural processes, only a very small quantity of pottery, mostly from the rim of the urn, had done so. Consequently the covering of the first portion of the cremated bones and charcoal with a layer of flints indicates two distinct stages in the burial of the human remains. Although we cannot be certain, the preferred interpretation of the urn is as an accessory vessel, and not a cinerary urn. This role for Collared Urns has been noted elsewhere (Longworth 1984, 47). The possible limescale might suggest that the vessel had been used previously.

In the absence of evidence for any mound or other earthworks it is not known if other burials were cut into any such upstanding features.

Several older finds of Collared Urns are known from the area, on downland at Baldo Wood, and Bow Hill in Goodwood, from Westbourne on the Coastal Plain and from Chichester-Cattlemarket (Longworth 1984, 275, 277, no. 1548, 1577–9, pl. 56c, 137g, 171d, 215d; Musson 1954, 110–11, no. 347, 350, 361, fig. 4, 347, 350; 5, 361; Hannah 1932). The Westbourne find is a Primary Series form and was inverted over a cremation burial. The Baldo Wood and Bow Hill finds are both Secondary Series. Both the Baldo Wood and Bow Hill finds were also described as having been inverted. The latter came from a bowl barrow and was likely inverted over a cremation burial that was surmounted by a flint cairn (Smith 1870, 63–4, pl. lv). There is a more recent find of an almost complete secondary series Collared Urn from Chichester-Cattlemarket, presumably from a burial (Down 1989, 59, 87, fig. 13.1, 1) and the vessel in which a certain cremation burial from the site was contained is not yet specified (Browse 1989, 9).

Area 2, by A.P. Fitzpatrick and Andrew B. Powell

A ring ditch (20822) was recorded at the east side of Area 2 (Fig. 54) having been found, almost inevitably, on the penultimate day of excavation as the spoilheaps were being moved to ensure that the full extent of the Late Iron Age religious site was established (Pl. 19).

Consequently, only a single 1 m wide section was excavated through the ring ditch on its western side. There was no evidence for any graves having lain beneath any mound. There may never have been any graves originally, but it is possible that any that did exist may have been cut into a barrow mound, or they may have been destroyed by cultivation.

The ditch was *c.* 12 m in diameter, between 1.5 m and 2.3 m wide, and 0.7 m deep, the inner side being moderately steep at the top and near vertical towards the base. The primary fills at the sides of the base

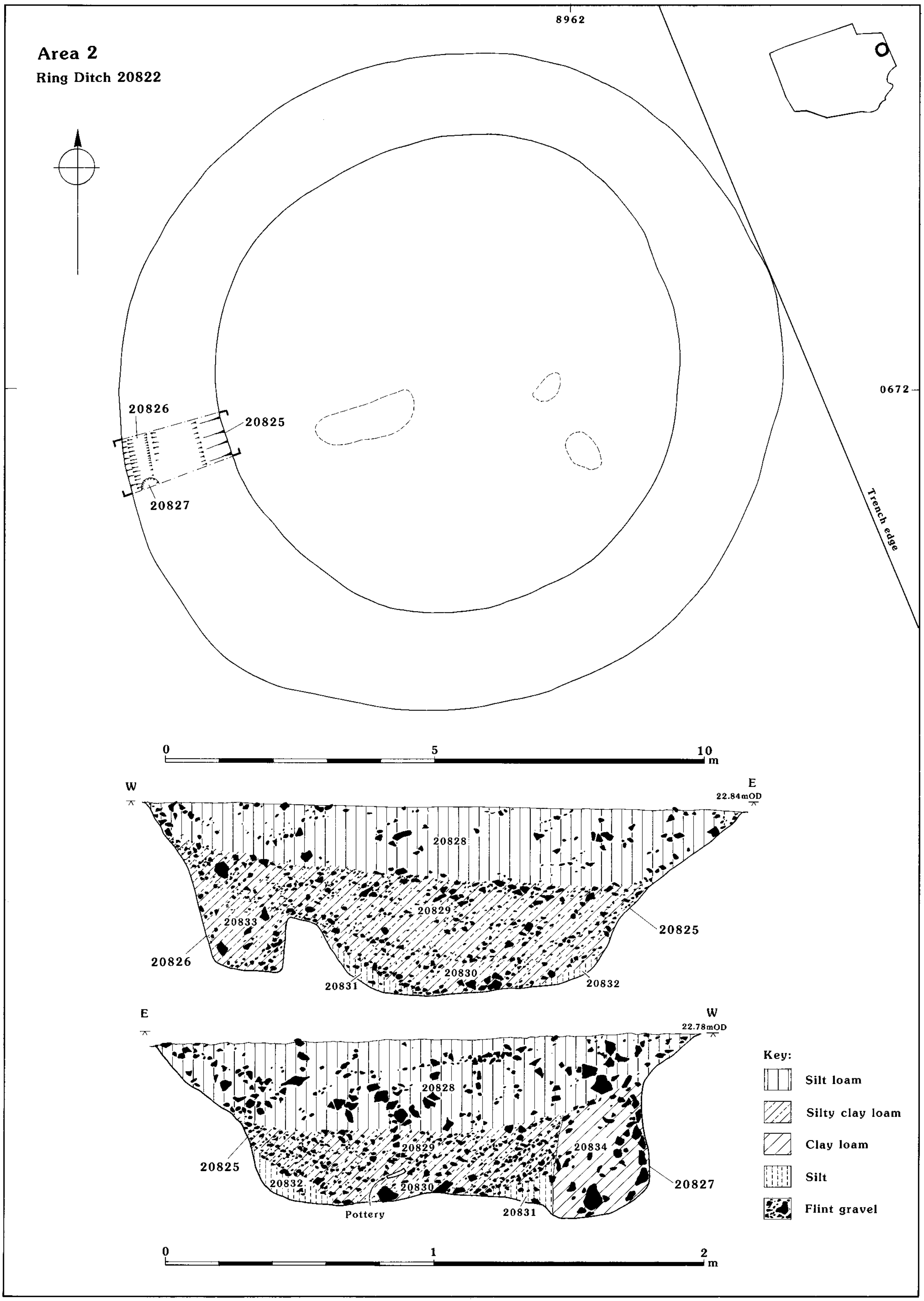


Figure 54 Area 2: plan and section of ring ditch 20822 (Vol. 2, Fig. 5)

Plate 19 Ring ditch 20822 as exposed when the excavation area was extended to the north-east in the final stages of excavation. The view to the south-west shows the ditched enclosure for Late Iron Age grave 20556 and the small spoil heaps resulting from the final machine cleaning of the area. Scales 2m

(20831 and 20832) consisted of light grey silt, with a light grey silty clay loam (20830) overlying them and covering the rest of the base. Cutting into the outer side of the ditch there was a 0.4m wide gully (20826), with a vertical inner side and a very steep outer side; its fill (20833), which was similar to 20830, yielded a burnt rim sherd from a Romano-British jar of 1st/2nd century AD date. These layers were sealed by a light grey gravelly layer (20829) containing sherds of coarse, flint-tempered Late Bronze Age pottery, including the rim of a small, rounded jar. This layer and the outer side of the ditch were cut, at the southern end of gully 20826, by a posthole (20827) 0.35 m in diameter and 0.5 m deep containing an orangey-brown clay loam (20834). The upper fill of the ditch (20828), which sealed the posthole, consisted of a light brown silty loam containing sherds of Romano-British pottery from at least two jars of 1st/2nd century date, some of which, appearing burnt, may come from the same vessel as the rim sherd from 20833.

Discussion

This dating evidence is insufficient to establish with certainty the date of the ring ditch. In view of the proximity of a Romano-British cemetery (Fig. 7) and also evidence for contemporary settlement only 150 m to the east in Area 7, the presence of Romano-British pottery is unsurprising. The fact that some appears burnt suggests that it could have derived from pyre sites or related features. Although the ring ditch may have been either Romano-British or Anglo-Saxon as, for example, some of the barrows on Bow Hill (Smith 1870, 59–62) were considered to be (Vol. 2, 278–8, 295), on balance a later prehistoric date, probably Bronze Age, seems most plausible. A single sherd of Middle Bronze Age date was found in a Late Iron Age pyre-related feature in Area 2 and quantities of worked flint and burnt flint also appeared to be residual in later features.

Bronze Age barrows are not well known on the Coastal Plain but penannular ditches and associated Deverel-Rimbury burials have been excavated more recently at Claypit Lane, Westhampnett (Chadwick in press). At Staple Lane, Lavant, West Sussex (Turner 1997, 21–2), a barrow, 14 m in diameter, also apparently lacking central burials but containing fragments of a Middle Bronze Age urn in its ditch, was found.

Small groups of Middle Bronze Age burials which do not appear to have been marked by any form of upstanding monument have been excavated in advance of gravel extraction at Shopwycke (Kenny 1992) and Drayton House, Oving, and at Pagham (Watson 2000). The Shopwycke group contained two or three urned burials that were associated with a number of contemporary features, some of which contained quantities of fire-cracked flint. A further possible urned burial lay 100 m away. At Drayton House, Oving, three urned and three unurned cremation burials and other

Bronze Age features were found. The Pagham group contained three urned cremation burials (*Archaeol. Chichester Distr.* 1997, 38; Watson 2000). An urned cremation burial found in a drainage ditch also lacked a barrow association (Kenny 1993a) as did a further example to the east at Rustington (Rudling and Gilkes 2000). The context of finds such as that from Middleton-on-Sea, from the near vicinity of which particles of burnt bone were collected (Wedmore 1982, citing other vessels in the area), is also likely to be funerary.

Old finds with little or no more information than their provenances, for exanple Deverel-Rimbury vessels from Selsey and Selsey-East Cliff (Musson 1954, 112, no. 407, 422; fig, 6, 407, 8, 422 and 112, no. 423, fig. 8, 423 respectively; White 1934; Aldsworth 1987, fig. 2, M1:19, nos 6–8; Kenny 1988), presumably or certainly also derive from burials. An inhumation burial with which a bronze dagger had been placed was found at Westbourne (Kenny 1989). This highlights the possibility that some of the stray finds of Bronze Age metalwork from the Coastal Plain, such as the probable dagger from Chichester, Westgate, derive from burials (Grinsell 1931, 50, no. 3)

The number of Early–Middle Bronze Age burials shows an increasing level of archaeologically visible activity on the Coastal Plain. The low-lying landscape of the Coastal Plain precludes specific topographical relationships of the sort outlined by Tomalin (1993), such as the siting of monuments at combe heads. Nevertheless, such areas were chosen for flat cemeteries as defined within the northern reaches of what is now Langstone Harbour. Many of the locations recorded there (Allen and Gardiner 2000, fig. 65), may have overlooked watercourses. The location of the penannular burial enclosure in Area 3 may seem anomalous when compared with the downland, but is compatible with the other evidence from the Coastal Plain.

It would be unwise to speculate further on this emerging data but it may be noted that the size of the recently discovered groups, between two/three and six graves, is rather smaller than those associated with cemeteries often associated with barrows (Ellison 1981; Bradley 1981; Russell 1996b).

Neolithic Activity in Other Areas (Areas 1, 2, 6 and 8)

Neolithic Pottery and Charcoal, Area 1

No structural evidence was identified for Neolithic activity in Area 1. However, a single small body sherd in a particularly coarse, flint-tempered fabric, found low down in the colluvium (10160) that filled the broad, deep hollow may, on the basis of similarity of fabric type with Late Neolithic material identified from Area 4 (see p. 105, fabric F18), be of Late Neolithic date. In addition, a sample of the charcoal from the upper fill (10169) of rill/gully 10197, which included oak (eight fragments), hazel (seven fragments), Pomoideae (five fragments), *Prunus* (two fragments), ash (one fragment), and willow/poplar (one fragment), produced a radiocarbon date within the Neolithic of 3040–2610 cal BC (4260±70 BP, OxA-4169), despite being associated with a Mesolithic flint assemblage and contemporaneous charred hazelnuts. Unlike the Neolithic charcoal from Area 4, this was not in an archaeological feature and therefore probably reflects the nature of the woodland rather than artefactual or structural elements. Oak, ash and hazel are common components of mixed deciduous woodland characteristic of clay soils. Marginal woodland or clearings may have included blackthorn and hawthorn.

Little can be said of this evidence other than that it indicates activity in the immediate vicinity, probably in the Late Neolithic, which would be broadly contemporary with some of the activity in Area 4. It may be that this activity, which could have been the cause of the burning that created the charcoal, was responsible for the creation of the run-off that created the rill in which many of the Mesolithic flints were found.

Neolithic Flints, Area 2, by W.A. Boismier

A residual assemblage of 433 artefacts was recovered and for this reason it has been analysed as a single group and no attribute or 'metric' description was undertaken. There are tools of Mesolithic and Neolithic date in the assemblage.

Condition

Patination ranges from a light waxy film to a grey or greyish-white on individual pieces. In total, 259 artefacts exhibit some degree of patination with 174 unpatinated. The condition of the pieces is variable, with post-depositional edge damage and/or breakage identified on 230 artefacts. This may have been caused by the subsequent funerary uses of the area and cultivation.

Raw Material

The assemblage is entirely of flint. Cortical condition and flint colour on 182 pieces indicate that derived nodular flint from probable coombe deposits was the major source of raw material.

Assemblage Composition

Artefact class groups represented in the assemblage are presented in Table 40. Debitage class groups comprise 97.2% (n = 421) of the assemblage with retouched tools making up the remaining 2.8% (n = 12).

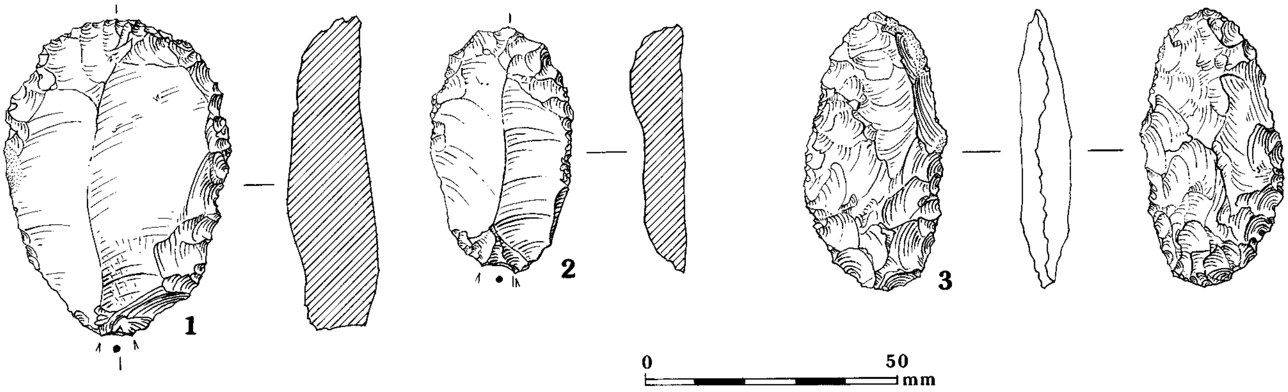


Figure 55 Area 2: Neolithic/Early Bronze Age flints

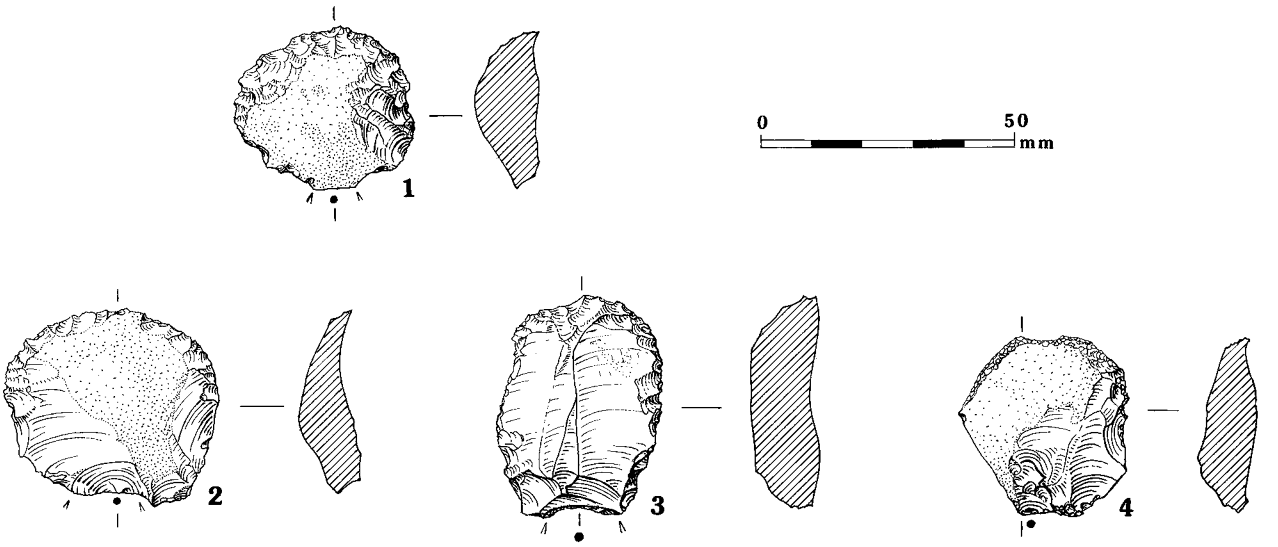


Figure 56 Area 5: Neolithic/Early Bronze Age flints

Cores

Eighteen complete, fragmentary and burnt cores occur in the assemblage (Table 41). Flake cores are predominantly prepared platform types, with single platform, multiple platform, and joint platform represented. The remaining pieces with flake scars are unclassifiable. There are two types of blade cores; single platform and bipolar platforms.

Core shatter/trimming debris

Three pieces of core shatter or trimming debris produced by the initial shaping and reduction of cores were recovered. All are cortical and have large bulbs of percussion and thick platforms, and one of them is burnt.

Core rejuvenation flakes

There are two complete core rejuvenation flakes; one is a core tablet and the other a face/platform.

Flakes and blades

Flake shape and the extent of the cortex indicate that about 50% of the unretouched component recovered from various secondary contexts are the by-products of core decortication stages. The residual nature of the assemblage does not allow for a determination of any chronological differences on the basis of flake shape or frequency.

Tools

Twelve retouched tools were recovered, 11 complete artefacts and one fragment (Table 42). There is one complete shouldered/incipient tanged point or hollow-based microlith (Fig. 28, 16) and a single microdenticulate in the form of a complete blade with retouch/utilisation scars situated along its right lateral.

There are seven compete and one fragmentary end scrapers, all of which have convex edges on their distal ends (Fig. 55, 1–2). There is also a complete, bifacially

Table 40 Area 2, composition of flint assemblage

	Complete	*Fragment*	*Burnt*	*Total*
Unretouched flake	192	19	11	222
Unretouched blade	119	53	4	176
Flake core	8	3	1	12
Blade core	5	–	1	6
Core shatter	2	–	–	2
Core rejuvenation flake	2	–	–	2
Retouched tool	11	1	–	12
Total	339	76	17	432

Table 41 Area 2, types of flint core

	Complete	*Fragment*	*Burnt*
Flake core			
Single platform	1	1	
Multiple platform	4		1
Joint platforms	2		
Unclass.	1	2	
Total	8	3	1
Blade core			
Single platform	1		1
Bipolar platform	4		
Unclass.			
Total	5		1

Table 42 Area 2, retouched flint tools

	Complete	*Fragment*
Microlith	1	
Flake knife	1	
Scrapers	7	1
Microdenticulate	1	
Marginal retouched	1	
Total	11	1

retouched, Late Neolithic flake knife, which suggests that although the scrapers are not intrinsically datable, they are also Neolithic rather than Mesolithic in date. The single marginally retouched flake is complete and exhibits retouch along its left lateral (Fig. 55, 3). One complete hammerstone plus one fragment, and nine flakes were also recovered. The complete and fragmentary stones are unmodified irregularly shaped flint nodules, both of which exhibit traces of battering on their surfaces.

Discussion

Typologically the assemblage represents a mixture of Mesolithic and Neolithic industries but its residual character does not allow for a determination of the nature or duration of the activities in the area.

Neolithic Flints, Areas 6 and 8, by W.A. Boismier

Areas 6 and 8 produced small, residual, assemblages of 32 artefacts, comprising 18 unretouched flakes, seven unretouched blades, and three burnt pieces. One complete and one fragmentary hammerstone together with a single hammerstone flake were also recovered from Area 8. All artefacts are made out of flint with cortical condition on 12 pieces indicating that derived nodular flint from probable coombe deposits was the major source of raw material. Patination occurs on all artefacts and ranges from a light waxy film to grey or greyish-white on individual pieces. Eight artefacts exhibit occupation-related or tillage-induced edge damage and/or breakage. Typologically the assemblage represents a mixture of Mesolithic and Neolithic industries.

Early Bronze Age Activity in Other Areas

Pottery and Flints, Area 5

Four sherds (12 g) from Area 5 have been identified as of probable Early Bronze Age date. All four sherds are in fabric G10 (see p.106 for fabric description), and are plain and undiagnostic. They may be compared with the grog-tempered fabrics used for Collared Urns from Area 4, although the use of grog-tempered fabrics is also demonstrated for later Neolithic Grooved Ware in the same area. One sherd came from the hollow-way 50432 at the northern end of Area 5, where it is redeposited in an Iron Age context. The other three sherds all came from Middle Bronze Age ditch 53006 in Area 5C.

One hundred and fourteen pieces of worked flint (1181 g) were recovered from various Iron Age or Romano-British features. Technologically, the majority of the artefacts recovered conform to the general characteristics of Late Neolithic/Early Bronze Age industries from southern England. The flakes are predominantly round/rectangular or squat with a smaller proportion of blades and/or flake-blades. Platform characteristics include thick and facetted platforms with bulbs of percussion reflecting the use of both soft and hard hammer percussion techniques. The small flake cores recovered are all prepared platform types roughly worked with a hard hammer. The retouched tools are largely undatable, although the occurrence of a number of large scrapers (Fig. 56, 1–4) would also appear to suggest a Late Neolithic/Early Bronze Age date.

Middle to Late Bronze Age Activity in Other Areas (Areas 1, 5–6 and 8)

Area 1

Two linear features each contained single sherds of Late Bronze Age pottery. Ditch 10212 ran east–west and was approximately 2 m wide and 0.25 m deep (Figs 6 and 86). It was filled with a single silty clay loam (10213) with some flint gravel and also contained a small quantity of flint. It was sealed by the colluvial deposit. Ditch or gully 10214, which was 1.1 m wide and 0.5 m deep, aligned north-west to south-east, was cut into gravels in the north of the area and was seen for a length of 9.5 m (Fig. 86). It contained one small, abraded sherd and several struck and burnt flints. In addition, a shallow scoop (10226) cut into the argillic brown earth (Fig. 24) was filled with a mixture of eroded humic, argillic brown earth material and a number of unworked flints. Although undated, its proximity to ditch 10212 and ditch/gully 10214, the presence of unworked flints, the fact that it was sealed by extensive colluvial deposits of Late Iron Age or Romano-British date, and its similarity in form to the shallow scoop (60001) in Area 6 which contained Late Bronze Age/Early Iron Age pottery, combine to suggest that the feature may also be of this date.

A total of 18 sherds from Area 1, all in coarse, flint-tempered fabrics, have been identified as Late Bronze Age, largely on the basis of fabric type, as no diagnostic forms are present. All sherds are small and abraded. Eleven sherds came from test pits (TP 10000, 10008–9, 10017), ranging from topsoil down to the fifth spit. Other sherds came from test pits 10002 and 10015 and five sherds were found below the colluvium (in ditches 10212 and 10214, and in an old soil layer). One small body sherd in a particularly coarse, flint-tempered fabric, found low down in the colluvium (10160) that filled the broad, deep hollow might be added to this total, though it has been ascribed tentatively to the Neolithic (p. 131 above).

Area 5, by Vaughan Birbeck and Lorraine Mepham

Two parallel ditches (53006 and 53008, Fig. 57), 2.2 m apart, ran roughly east–west across Area 5c. Both were of similar dimensions (0.65 m wide and between 0.2–0.35 m deep) and had comparable, slightly irregular, U-shaped profiles. Although only ditch 53006 contained finds, primarily Middle Bronze Age pottery, but also a few sherds of Late Neolithic or Early Bronze Age date, both ditches are assumed to be contemporary on the basis of their similar form and alignment. The parallel alignment of these ditches is suggestive of a trackway or droveway with flanking ditches. The ditches do not appear to have been encountered in the evaluation and excavation immediately adjacent to Area 5 undertaken by Chichester and District Archaeological Unit (Kenny 1992) (Fig. 64), suggesting either that the ditches terminated or that they could not be seen during the watching brief. Two small groups of urned Bronze Age cremation burials were recorded during these excavations *c.* 130 m to the south-west of Area 5c. At least one of these groups is Middle Bronze Age in date (Watson 2000) and it is likely that they are broadly contemporary with the trackway in Area 5c.

A small gully (53004) was encountered in the western end of Area 5c (Fig. 57). This was aligned roughly east-north-east to west-south-west, extending from the western limit of excavation for 4.9 m where it terminated. The gully had a slightly irregular U-shaped profile with an average depth of 0.35 m and width of 0.45 m. The only datable material recovered from this feature were two sherds of coarse flint-gritted pottery, possibly fragments of Middle Bronze Age urn.

In addition, pottery of Late Bronze Age/Early Iron Age date was found and suspected to be residual in well 50060 and associated hollow 50089/50458. Although the upper fills of the well contained Early/Mid-Iron Age pottery, it is possible that its origins are in the Late

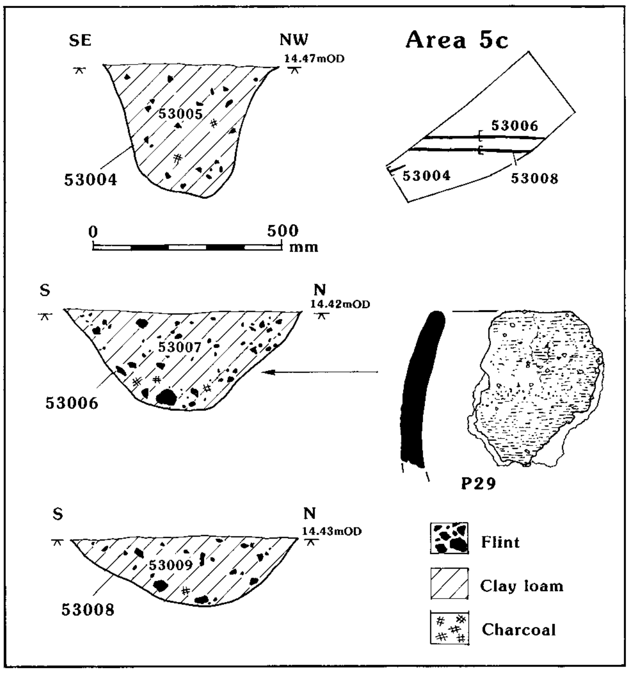


Figure 57 Area 5c: plan and sections of Bronze Age trackway/droveway 53006/53008 and gully 53004 and associated pottery from ditch 53006

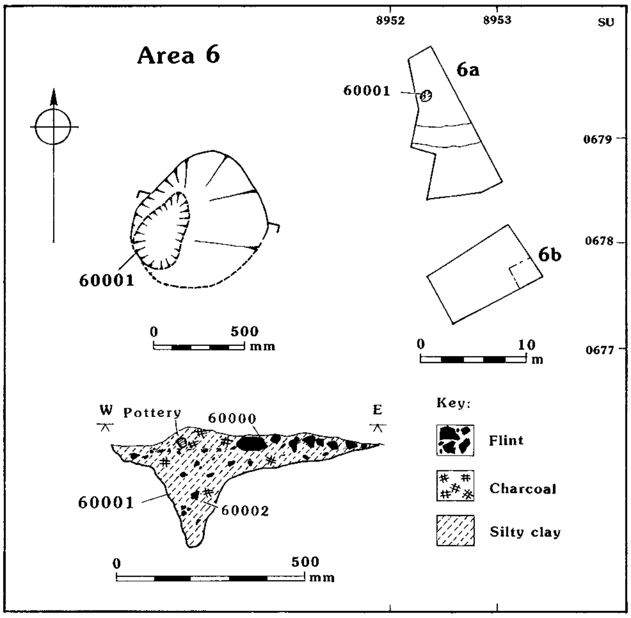


Figure 58 Area 6: plan and section of Bronze Age feature 60001

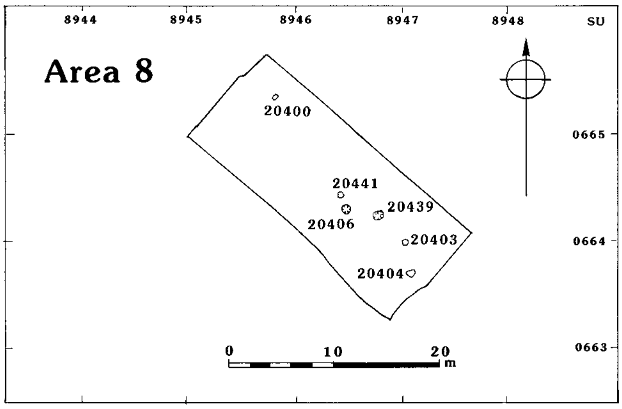


Figure 59 Area 8: plan of Bronze Age features

Bronze Age and could be contemporary with trackway 53006/53008.

A total of 21 sherds of pottery (231 g) from Area 5 was identified as of Middle Bronze Age, or possibly Late Bronze Age, date. Some were dispersed and redeposited in Iron Age and Romano-British features in the main excavated area, but most were concentrated in ditches 53004 (two sherds) and 53006 (ten sherds) in Area 5c. Two fabrics are represented (F5 and F12) (see p. 107). The markedly coarse, thick-walled sherds in fabric F12 in particular would suggest a derivation from urns of Deverel-Rimbury type, although such coarse fabrics, and indeed similar vessel forms, did continue in use into the Late Bronze Age. With the exception of one plain rim sherd from a large, thick-walled vessel, possibly a Deverel-Rimbury type barrel- or bucket-shaped urn (fabric F12. PRN 1064, Context 53007, Ditch 53006) (Fig. 57, P29), all sherds are plain and undiagnostic.

Area 6 (Fig. 58)

A very truncated feature (60001) containing sherds of Late Bronze Age/Early Iron Age pottery was recorded in Area 6 cutting a coarse flint gravel, and sealed by up to 0.5m of dark greyish-brown silty loam ploughsoil (60004). It consisted of a small steep-sided oval cut. Its fill (60002), the upper part of which (60000) was very disturbed, was a dark grey silty clay containing charcoal of oak, hazel, ash, *Prunus* and possibly maple.

Area 8 (Fig. 59)

Feature 20406, a pit recorded during the evaluation, was 0.65 m in diameter and 0.23 m deep and the-excavation of its remaining fill (20405) yielded three sherds of later prehistoric pottery. Another small pit, 20439, was 0.77 m in diameter and 0.2 m deep, and had been heavily disturbed by burrowing animals. Sherds of Middle/Late Bronze Age pottery and a quern fragment were produced from its fill (20438), which also included much charcoal flecking (from oak and hazel).

The fragmentary evidence from Areas 6 and 8 suggests Middle–Late Bronze Age activity in the immediate vicinity of the road corridor in this area.

Discussion, by Michael J. Allen and A.P. Fitzpatrick

Early Neolithic (Fig. 60)

The earliest evidence of activity in the Neolithic period at Westhampnett occurs over two-and-a-half millennia later than the Mesolithic activity summarised in Chapter 4. The single bowl found in layer 40326 and the arrowhead from the ploughzone assemblage represent some of the first finds of Early Neolithic date from the Coastal Plain, as the Neolithic of Sussex is best known from monuments on the downlands. The causewayed enclosure at St Roche's Hill on the Trundle is only *c.* 5 km to the north (Curwen 1929; 1931; Bedwin and Aldsworth 1981; RCHM(E) 1995) and others are known nearby at Bury Hill (Bedwin 1981a) and Court Hill (Bedwin 1984a), and possibly at Halnaker Hill (Bedwin 1992). Scattered along the dip slope of the chalk escarpment north of Chichester is a series of flint mines, including those at Nore Down, Stoke Down and Bow Hill (Curwen 1937, 119–22; Aldsworth 1983a; Field 1997; Barber *et al.* 1999; Russell 2000).

The Trundle, at least, appears to have been built in an area of recently cleared open chalk downland and, like other sites, may have been in a limited woodland clearing (Drewett *et al.* 1988; Thomas 1982; Drewett 1994). There are still relatively few finds of Early Neolithic date from the Coastal Plain. Sherds of a plain bowl were found nearby at Copse Farm, Oving (Bedwin and Holgate 1985, 220, fig. 5, 1), and other finds are recorded from Selsey (White 1933; Aldsworth

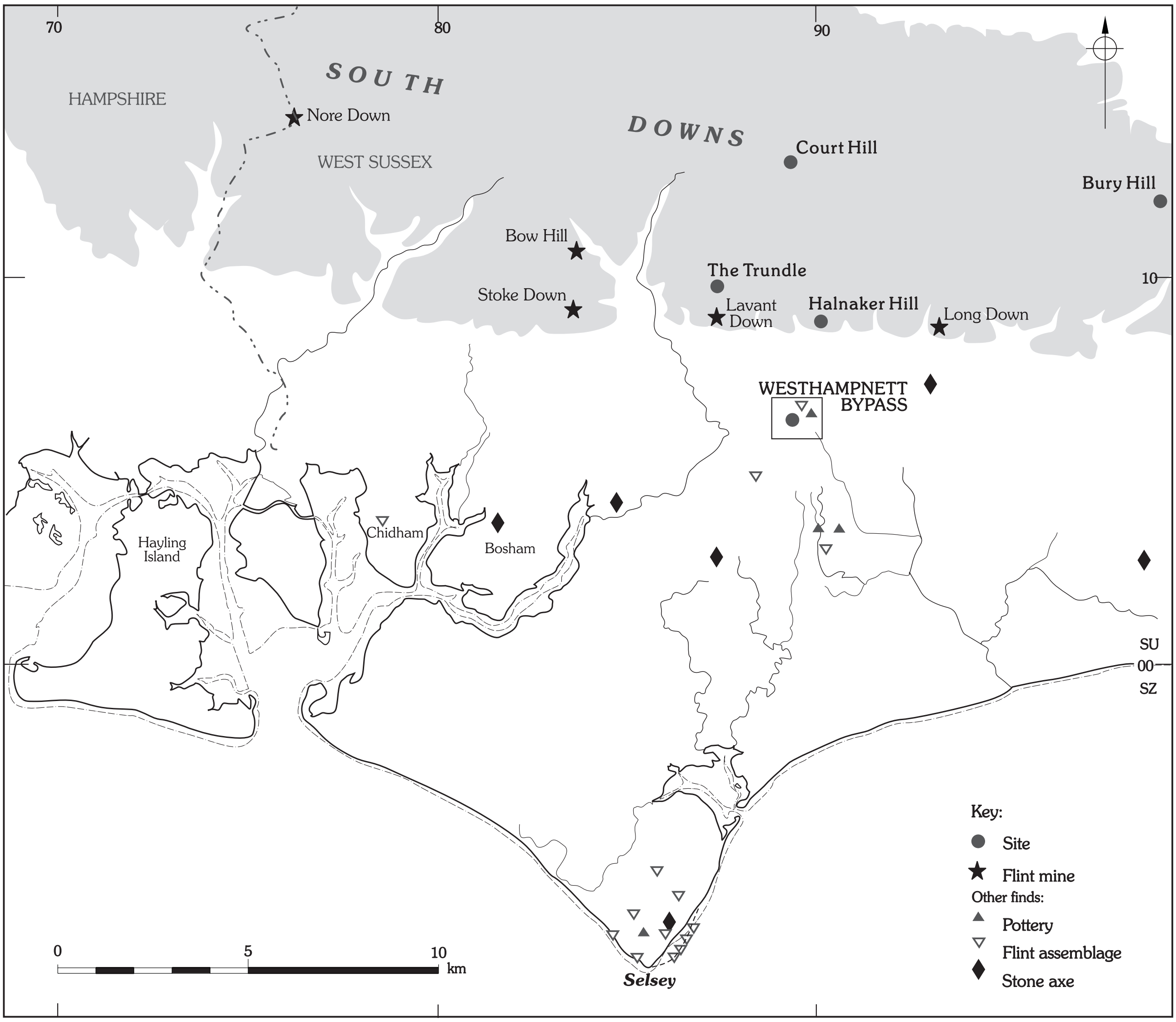


Figure 60 Selected Neolithic sites in the area

1987, M1:16–18, fig. 2), and possibly Chichester-Cattlemarket (Down 1989, 87, no. 15). These finds may provide an indication of comparable cleared areas and use of the Coastal Plain, which the causewayed enclosure on The Trundle and perhaps Halnaker Hill overlooked. These finds hint that the Coastal Plain provided a range of different and complementary resources to those of the chalk downland. The communities occupying and using the causewayed enclosures may have exploited these. As such the chalkland did not exist as an isolated socio-economic region in the earlier Neolithic but other areas, such as the Coastal Plain, provided important land and resources to supplement and augment the economy and life style (*cf.* Allen and Gardiner 2000, fig. 67).

Later Neolithic

There is rather more material of Late Neolithic date from Area 4. Much of the material was residual in later contexts but the Peterborough Ware and the lithic assemblage may have had a domestic origin. Some of the undated small pits and postholes to the north of pit 40215 might be associated with such activity but they are considered more likely to belong with the more extensive evidence for Middle Bronze Age activity. Peterborough Ware is known nearby from Oving (Bedwin 1983a) and from Selsey (White 1933; 1934; Aldsworth 1987, M1:16, no. 7–8), and perhaps at Portfield (J. Mills pers. comm.). At Racton Park Farm, Westbourne, a Bronze Age inhumation burial that was covered by a low chalk mound, which was presumably the remains of a cairn or barrow, lay directly on top of a buried soil that contained lithics of Neolithic date (Kenny 1989). Much of the evidence recorded during a survey of the foreshore of Chichester Harbour is also Neolithic (Cartwright 1984).

However, most of the Neolithic pottery from Area 4 is Grooved Ware, a pottery type that is commonly found with restricted sets of material and frequently deliberately deposited in isolated small pits or hollows, of which the two shallow pits or hollows from Area 4 are typical. Cleal has observed that later barrows are frequently located within 200 m of the findspots of Grooved Ware, and this is the case with the pits in Area 4 and the pennanular burial enclosure in Area 3 (Cleal 1999). The find of Grooved Ware from Area 4 is the first published from the Sussex Coastal Plain (Longworth and Cleal 1999, 196), one other findspot in West Sussex being in 'secondary deposits' of the flint mines at Findon (Money 1960, 211). To the west, on the Coastal Plain in Hampshire, a similar find of Grooved Ware comes from Wallington, Fareham, where it was associated with a few waste flint flakes and scattered charcoal (Hughes 1977, 79). The burial in Area 3, if it is Late Neolithic, is an unusual find.

Neolithic woodland

At present it is assumed that the Coastal Plain, like much of Britain, was once covered with deciduous woodland (Sheldon 1978). However, not only is there little environmental evidence to confirm this, there is little indirect indication of clearance in the form of axes or other flint implements. On the chalk, Neolithic axes are common (J. Gardiner 1988; 1990) and their rarity on the Coastal Plain cannot wholly be dismissed as the result of fieldwork bias. If the Coastal Plain was largely dry and covered with dense deciduous 'wildwood', this might account for the lack of artefactual or charcoal evidence for clearance from the limited archaeological features that have been explored. Alternatively, there may have been expanses of more open woodland (possibly dominated by alder – see for instance Birks *et al.* (1975) and Birks (1989) isopollen maps for the British Isles) with shrubs and open patches of grassland.

However, established open dry grassland, with no hint of a former closed woodland is indicated from the land snail evidence from the Bronze Age pennanular ring ditch in Area 3. Despite the known presence of ancient woodland in The Mens, near Chichester (Tittensor 1978), it may be concluded that the local Neolithic landscape was dry. The nature of the woodland remains uncertain, although we can tentatively suggest that only light and open woodland existed locally. This is a very different picture from that suggested in the 1980s by Drewett *et al.* (1988, 46 and fig. 2.1) and by Bedwin (Bedwin 1980, 165; Bedwin and Holgate 1985), who described the area of Oving as being the home of Neolithic marsh camps situated in salt marshes, and prone to periods of flood and standing water during the winter. Marshy conditions at Westhampnett seem likely to have been confined to the alluvial riverine course (Area 3 and Oving), that is thought to have dried out by the end of the Mesolithic.

Neolithic activities and the wider use of the Coastal Plain

The evidence here for the presence of temporary settlements may suggest that areas off the chalk were significant to the social organisation and subsistence economies of Neolithic communities based on the downs. The presence of cereal grains (barley), albeit few in number, suggests the possibility of widespread, if low-level, cultivation on the Coastal Plain, in addition to that already established for the downland (*cf.* Robinson 2000). The chalklands should not, therefore, be viewed in isolation from the adjacent areas, which contributed limited, but significant and integral resources to the Neolithic subsistence patterns and economic strategies (*cf.* Allen 1997).

Early Bronze Age

The slight evidence for Early Bronze Age activity may seem at first sight to be enigmatic – Beakers and Collared Urns from non-funerary contexts – but in part this arises from what is expected of an Early Bronze Age settlement. Settlements may well not have been permanent. Houses are extremely rare, particularly in southern England and the existing evidence is compatible with short-lived and episodic occupations (Brück 1999a). Similar objects and tools are found in funerary and domestic contexts and it is difficult to distinguish a domestic component in Beaker pottery (Gibson 1982, 69–76; Allen 1994). However, some small assemblages that are apparently domestic may be noted nearby, from North Bersted (Bedwin and Pitts 1978) and Chichester-Cattlemarket (Down 1989, 87). The same difficulty in distinguishing between domestic and funerary contexts is also true, albeit to a lesser extent, of Collared Urns (Longworth 1984, 76–8). Although it has been argued that these were exclusively funerary in use (Burgess 1980, 341; 1986, 341), large numbers in the Bournemouth, Dorset, area, for instance, do not appear to serve this function (Gardiner 1987; 1988).

The Collared Urns from Early Bronze Age pit 40218 are well stratified and there is no immediate evidence of funerary activity. The evidence is consistent with the debris of a single episode of occupation. The finds include pottery thought to be from a single group of vessels, burnt flint, fired clay that could be from hearths and ovens, flint including tools (scrapers), a marginally retouched piece and a piece of core shatter/trimming debris. The charcoals appear to be from hearth debris in which alder and willow/poplar may represent the use of woodworking waste such as from hurdle making or the burning of damaged or discarded items such as basketry or hurdles. The charcoals do not appear to be from a pyre. The charred plant remains include emmer, possible spelt, naked and hulled barley, fragments of undetermined cereals, and beans. The pit seems to have been filled in deliberately, perhaps at the end of the occupation, a picture compatible with the evidence from a Beaker pit from Dean Bottom, Wiltshire (Cleal 1992b, 133–5, 151–3).

It is suggested above that hearth 40317 may be of Early Bronze Age date, and the possibility remains that some of the undated pits and postholes ascribed here to the Middle Bronze Age could be earlier. Other fragments of Collared Urn were also found in gullies and pits that are thought to be later in date. The occurrence of occasional sherds of Collared Urn in non-funerary contexts in Sussex may also be noted (Bedwin 1981a, 196, fig. 11, 8) including the nearby Lavant Reservoir site (Kenny 1993b, 26).

The deliberate deposition or abandonment of domestic goods may provide an explanation for the presence of the nearly complete Beaker from gully 40325, though it is the only Beaker vessel identified in the assemblage. However, while Beaker burials are rare in the area (a possible example coming from Selsey (Musson 1954, 108, no. 050, fig. 1, 050; Aldsworth 1987, M1:18, no. 1, fig. 2)), a funerary origin for the Westhampnett vessel cannot be excluded.

Middle Bronze Age (Fig. 61)

In contrast to the Early Bronze Age there is, as Brück has observed, a deceptive familiarity in the settlements and field systems of the Middle Bronze Age. Middle Bronze Age settlements are comprised of round houses, often a pair made up of a house and an outhouse, and four-post structures. On the Downs of Sussex some settlements have barrow cemeteries next to them, and beyond them are field systems (Brück 2000; Barrett 1994). Many are topographically sited at coombe, or valley heads overlooking settlements (Tomalin 1993).

The evidence from Area 4 does not sit comfortably with this idyll. Apart from a small enclosure, no definite structures were found in the excavated area. There are substantial quantities of pottery, saddle querns, burnt flint and fired clay. The flint assemblage derives from activities related to core reduction and the manufacture, use and rejuvenation of tools. This, and the absence of 'formal' tools, is typical of a Middle Bronze Age assemblage. The preservation of charred plant remains is poor and chaff very sparsely represented but the cereals include emmer, hulled and naked barley, and spelt and they are outnumbered by many weeds of cultivation. It is most likely that the assemblages represent burned waste from the threshing and winnowing of crops that appear to have been both spring and autumn sown. All of this points firmly to domestic activity in the immediate vicinity and cultivation within a range of environments. Even allowing for the extensive truncation of archaeological features by ploughing, most of the larger pits are within the area defined by the enclosure considered below, while most of the smaller features, including undated ones such as postholes, are to the south-east of it.

The shallow gullies of the enclosure contained finds from many periods. Iron Age pottery was found in some of the gullies but the 48 sherds (229 g) of Iron Age type from the area (Table 58) amount to only *c.* 6% of all the pottery recovered and in almost every case the quantity of Bronze Age pottery recovered from individual features was greater. In a single case, 40370, was pottery of Iron Age type only found, but this was a mere two sherds (2 g). While it should be remembered that almost half the Deverel-Rimbury pottery from the area came from a single feature (40321), on balance, a Bronze Age date for the enclosure seems more likely. As the Middle Bronze Age pits also lie within the enclosure, the most economical, though not necessarily correct, interpretation is that the enclosure is also Middle Bronze Age.

The outer gullies enclosed a roughly D-shaped area measuring approximately 28 m by 16 m. The gullies do not appear to have been foundation trenches for buildings but the precise relationship between the gullies and the function(s) of the enclosure is not clear. The series of parallel gullies on the south-east side of the enclosure may have constituted some form of entrance way into the enclosure, subsequently closed by gully 40250/40263. Alternatively, it may indicate the replacement of one gully by another due to the expansion of the enclosure in that direction over time. This may explain why the gullies cut two Middle Bronze Age features; hollow 40270 was cut by gully 40254 and pit 40321 was cut by gully 40272/40325. Replacement and addition of enclosures is typical in many chalkland sites. The pits within the enclosure contain what appears to be domestic debris. Although there is no definite evidence for structured deposition, some of the complete quernstones could represent this (Seager Thomas 1999, 48–9).

There is insufficient evidence in the form of postholes to suggest whether buildings had stood within the enclosure. Some postholes did survive and one (40334) has evidence for stone packing, but on such a heavily truncated site ploughing may have destroyed many more. It may be that the round houses that are frequently found on Middle Bronze Age settlements (Brück 1999b) lie beyond the excavated area. Be that as it may, it is difficult to find parallels for the enclosure even within the diverse range of examples associated with Deverel-Rimbury pottery. The Bronze Age settlement of Sussex is, in comparative terms, very well known, and although new types of site, such as burnt mounds, have been identified recently (Stevens 1997), the slight enclosure at Westhampnett appears somewhat unusual in comparison with the well-known chalk downland sites. It may be a variation, perhaps with hedges, on the irregularly shaped fenced compounds seen on downland sites such as Black Patch (Drewett 1982; Russell 1996b) and Itford Hill (Burstow and Holleyman 1957) or the stone

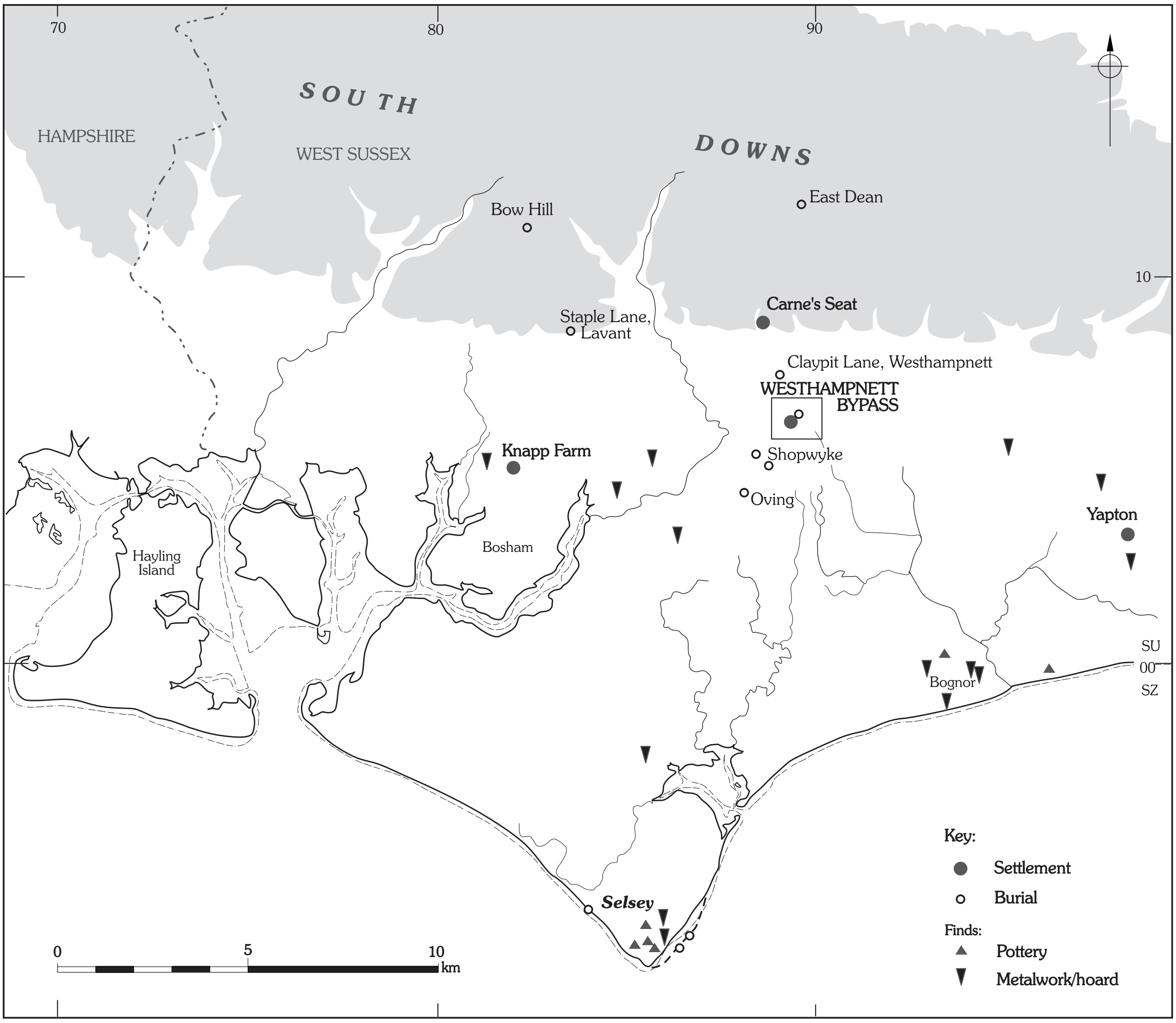


Figure 61 Selected Bronze Age sites in the area

compounds seen on sites on Dartmoor, some of which are thought to have been cattle compounds (Fleming 1988). At the Middle Bronze Age settlement at Varley Halls, Brighton, it was suggested that one ditch might have held a palisade (Greig 1997), and at Itford Hill one of the compounds (II) does not appear to have contained buildings (Burstow and Holleyman 1957). What has been interpreted as a palisade trench was also found in a funerary context at the Middle Bronze Age Steyning Round Hill barrow cemetery, West Sussex (Burstow 1958; Russell 1996a, 18). At Westhampnett most of the pits and hollows contain a similar mixture of finds suggestive of domestic activity. The quantities of burnt materials in 40202 and 40275 might suggest that they were associated with cooking, and hollow 40291 contained a saddle quern. Otherwise there are few indications as to what special purposes the compound might have served if it was not for settlement.

The enigmatic evidence for Middle Bronze Age settlement in Area 4 currently stands alone but the trackway from Area 5 suggests that other settlements remain to be identified. At nearby Ounces Barn, Boxgrove, an assemblage of lithics, a small group of pottery and what may be loomweights are all thought to be Middle Bronze Age although no contemporary features were identified (Bedwin and Place 1995, 61, 91).

The Bronze Age seems to have witnessed an expansion in activity in the area. Early Bronze Age domestic activity is found in Area 4, and pottery and lithics probably of this date are also found in Area 5, while some of the lithics from Area 2 are of this date. Lastly, there is the penannular burial enclosure in Area 3. In the Middle Bronze Age domestic activity is found in Area 4 while in Area 5 there is a trackway, a gully and pottery residual in later features. The ring ditch in Area 2 is perhaps most likely to be of Middle Bronze Age date.

Fragmentary evidence suggesting Middle–Late Bronze Age activity, probably settlement, was found in Areas 1, 6 and 8.

On the basis of the evidence presently available, it was not until the Late Bronze Age that settlements became more numerous. A number of settlements, or more properly pit groups containing domestic material, have been identified in recent years. Examples include Langstone Harbour in Hampshire (Allen and Gardiner 2000), Knapp Farm, Bosham (Gardiner and Hamilton 1997), Rustington (Rudling 1990; Rudling and Gilkes 2000), and several sites on Selsey Bill (Seager Thomas 1998) and Yapton (Aldsworth 1983b; Rudling 1987). To this may be added the burnt mound at Potlands Farm, Patching (Stevens 1997). Whether the absolute scale of this increase is genuine, or simply the pattern of discovery remains to be seen. What is clear is that the large-scale settlement and farming on the Coastal Plain was a not a Mid–Late Iron Age development as was thought previously (Bedwin 1983a, 38).

Reviewing the evidence for the Bronze Age on the West Sussex Coastal Plain 20 years ago, Bedwin was confronted with evidence that had not altered much from that reviewed by Grinsell in 1931 and which consisted 'almost entirely of chance finds, in which metalwork predominates over pottery, except perhaps for the Beaker period' (1983a, 34). On the basis of this limited evidence he tentatively suggested that the Early Bronze Age saw the limited beginnings of permanent settlement, which increased in the Middle Bronze Age, and declined in the Late Bronze Age. Some of the changes discerned then may now be seen to reflect the changing patterns in the deposition of metalwork rather than changes in settlement. In addition, an increasing amount of evidence has been identified subsequently. This includes activity on the lower slopes of the Downs, for example Late Neolithic–Early Bronze Age and Late Bronze Age at Lavant Reservoir (Kenny 1993b) and a possible 'henge', or perhaps large multi-ditched barrow also at Lavant (Turner 1997, 20–1). Bedwin also recognised that in respect of sites like the Middle and Late Bronze Age enclosure of Highdown, located on the chalk north of Worthing, it would be 'difficult to envisage an important Bronze Age settlement here [on chalk] if the surrounding area of the Coastal Plain were uninhabited' (Bedwin 1983a, 34). The establishment of farming, farms and permanent residence on the Coastal Plain can be seen as a part of an increasingly structured landscape. Despite this general parallel with the Downs, it is evident that the agricultural practices on the Coastal Plain were specific to the soils found there, as were the organisation of that landscape and location of monuments within it. It is no coincidence that this includes evidence of cultivation of the broad bean (*Vicia faba* var. *minor*) on the heavier rich soils. The diversity of cereal and leguminous crops suggests established farming communities, not wholly dissimilar to those seen on the downs (*cf.* Hinton 1984), but lacking the extensive field systems.

6. Iron Age Activity (Areas 2–4 and 5)

Vaughan Birbeck and A.P. Fitzpatrick

The Iron Age evidence was found in Areas 1, 2, 3, 4 and 5, of which Areas 2 and 5 were the most important (Fig. 62). Area 2 produced important evidence in the form of a Late Iron Age religious site comprising at least two shrines, a range of pyre sites and related features and 161 cremation burials, and was reported on in Volume 2 (1997). The small amount of evidence from Area 1 may be related to the activities at Area 2. An extensive unenclosed settlement which is cautiously dated to the Middle Iron Age was sampled in Area 5, and the slight evidence for contemporary activity in Area 4 may in turn be associated with this settlement.

Iron Age Settlement (Area 5), by Vaughan Birbeck

The excavation of Area 5 revealed a density of features matched only at the Late Iron Age religious site in Area 2. Most of the features were postholes and pits, although a few linear features and a well were also present (Fig. 63) (Pl. 20). As described below, approximately one-third of the features were excavated but only about half of these were datable. In many of those the dating evidence was sufficient only to assign features to a broad Middle Iron Age date range. Inevitably, therefore, the picture these features provide of the changing nature of the activity in Area 5 is incomplete. There is a scatter of pottery of Late Bronze Age/Early Iron Age date which appears to be residual in the features in which it was found and which suggests activity, presumably settlement, in the vicinity.

Evaluation in advance of gravel extraction in the Shopwyke quarry immediately to the south of the Area 5 by Chichester and District Archaeological Unit in 1991 and 1992 also revealed evidence for Iron Age settlement (Fig. 64). Where more closely datable, the Iron Age pottery was 'Saucepan pottery' of Middle Iron Age date. A substantial ditch (64), up to two metres deep, was thought to be defensive and to enclose an Iron Age settlement (Browse and Kenny 1991; Kenny 1992). No trace of this ditch was seen in Area 5. As a result of these discoveries the area was designated as an Archaeologically Sensitive Area and excluded from the area for which planning permission for gravel

Plate 20 Excavation of Area 5a from the north-east. The later Iron Age gully 50211 runs across the site in the centre ground

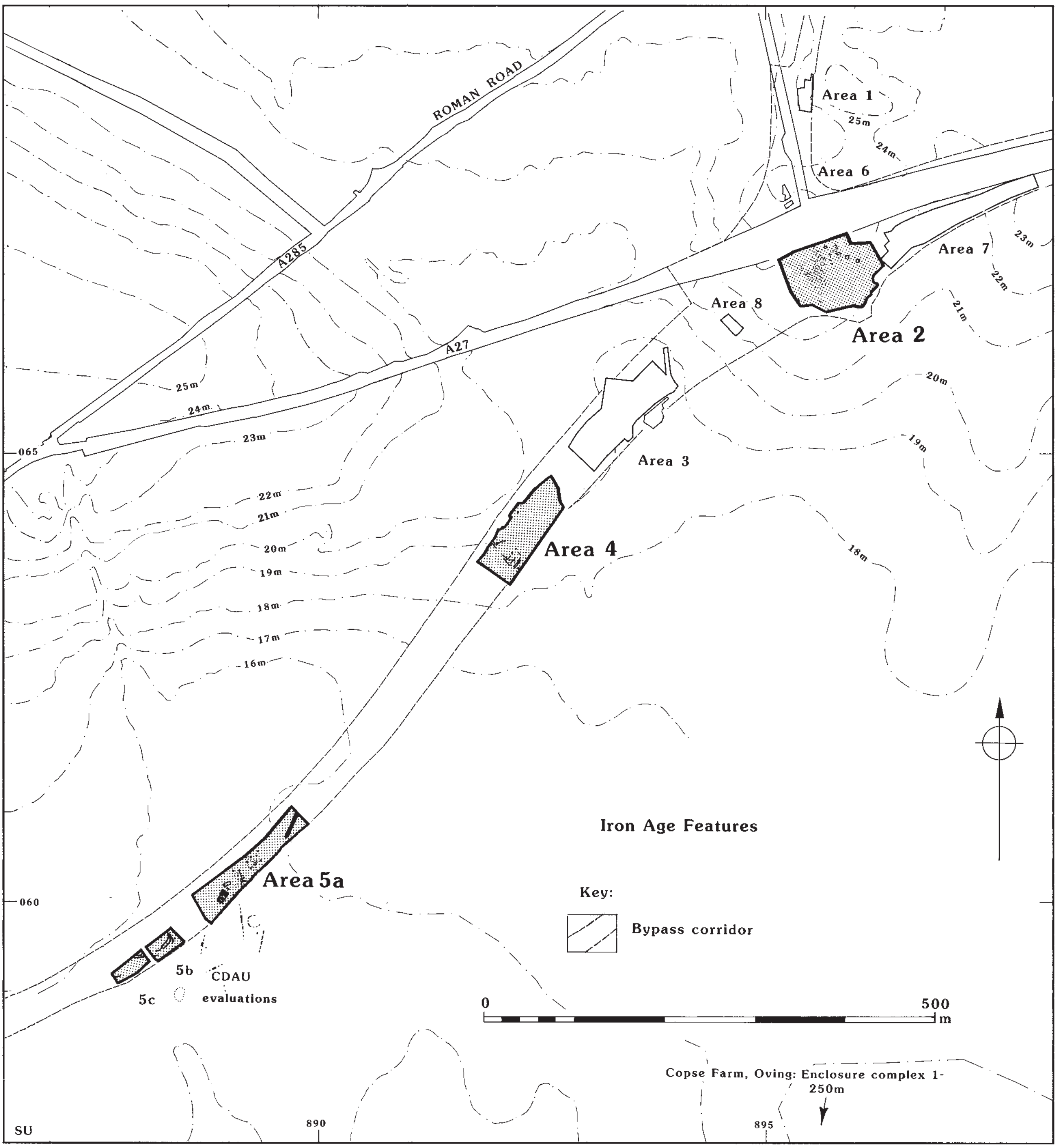


Figure 62 Excavation areas with features of Iron Age date

extraction was granted. Further evidence for Iron Age settlement in the form of postholes, ditches and gullies, again thought to be of Middle Iron Age date, was found 300 m to the south of this ditch (trenches 21–5; Browse and Kenny 1991; Kenny 1994).

Classification of Features

The most numerous features in Area 5 were small cut features, varying in size from 0.07 m to 1.5 m in diameter (Pl. 21). Of the 878 such features recorded, 274 were excavated (*c.* 31.5%). An attempt has been made to classify these into postholes or pits. In the case of the unexcavated features this was done on the basis of size and shape in plan. All features with a mean diameter of 0.1 m or less were classified as stakeholes and those with a mean diameter of more than 0.1 m but less than 0.45 m were classified as postholes. All features with a mean diameter greater than 0.7 m were classified as pits, unless they clearly contained evidence of a different function, e.g. a definite central post pipe. For simplicity, a single hollow (51344) has been included

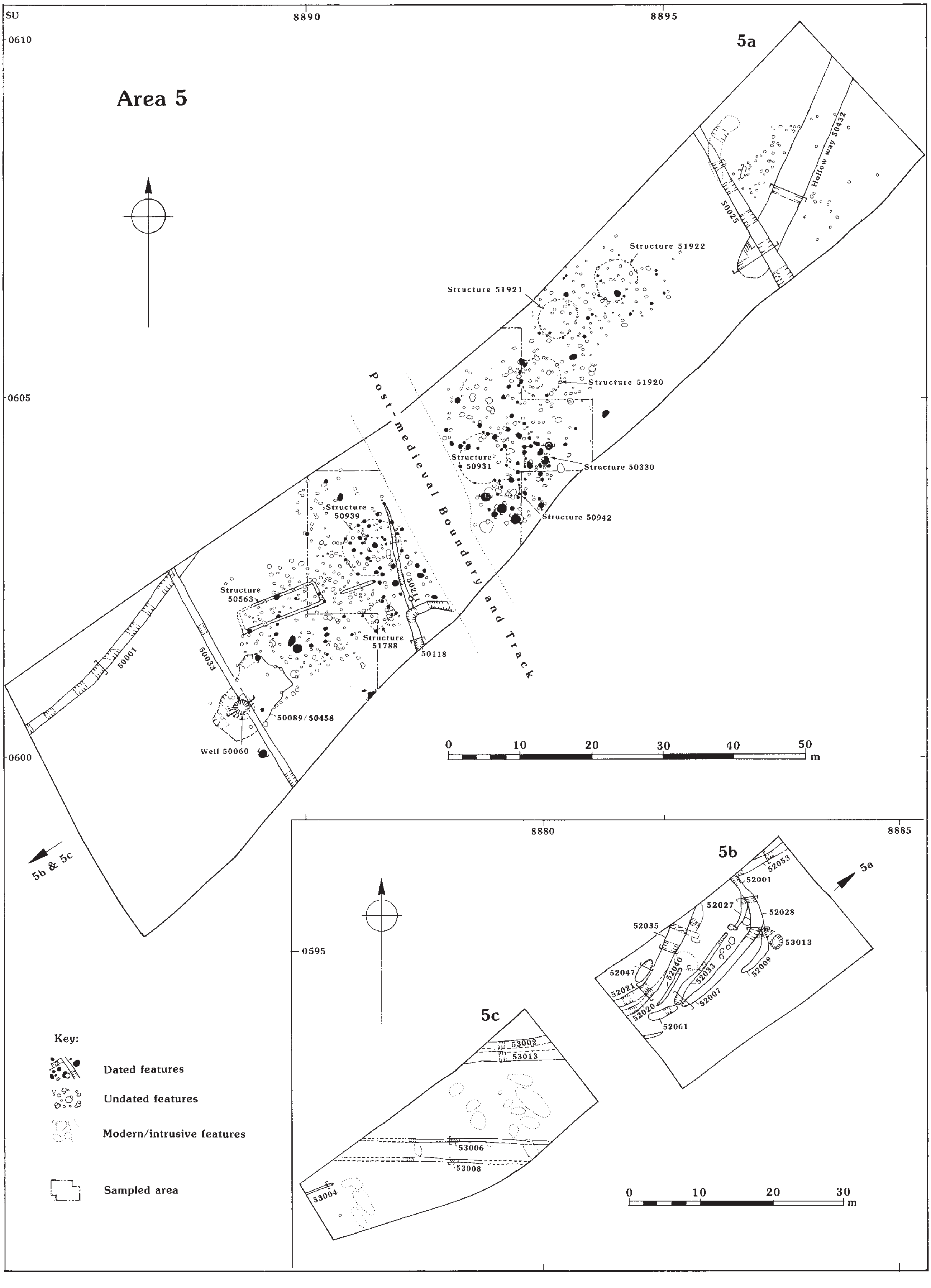


Figure 63 Area 5: all features plan

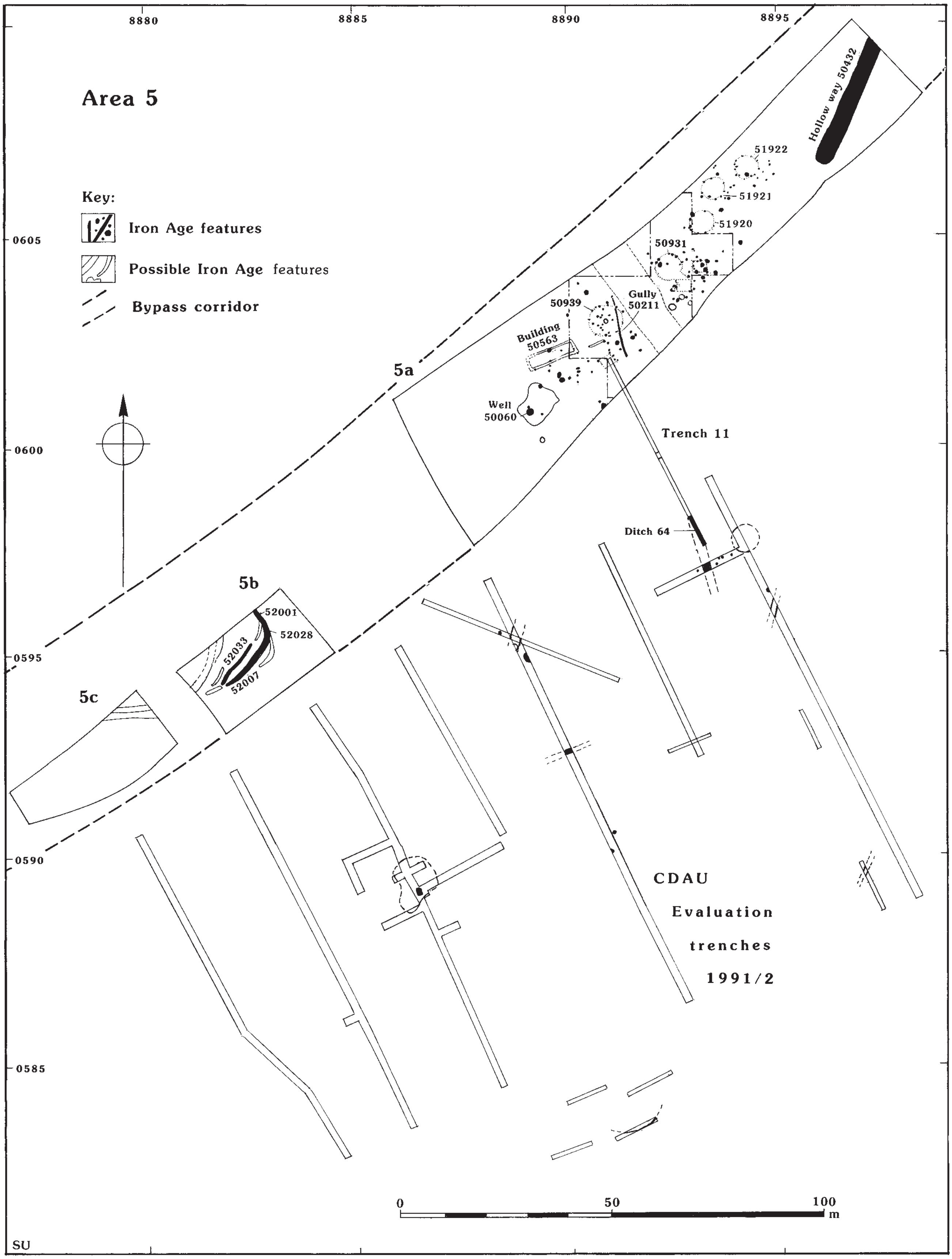


Figure 64 Area 5 and Chichester and District Archaeology Unit evaluation trenches: Iron Age features

Plate 21 Excavation of later Iron Age gully 50211 in Area 5a looking south

amongst the pits. Those features with a mean diameter of less than 0.7 m but greater than 0.45 m were examined for evidence of use (i.e. post pipes, location within a possible structure etc.). However, the majority could be interpreted only as either pits or postholes. The features were classified into 51 pits, 637 postholes, 3 stakeholes and 187 features that could be either pits or postholes. In addition there was one well (50060).

Pits

Of the 51 pits recorded in Area 5a, 32 were excavated (*c.* 62%) and datable material was recovered from 27 of them (Fig. 65). Material firmly datable to the Early/Middle Iron Age was recovered from two (50085 and 50522), and two were dated to the Middle/Late Iron Age (50161 and 50358), while a further 18 could only be assigned a general Iron Age date, probably Middle Iron Age. Five were dated to the Romano-British period (50240, 50346, 50360, 50361 and 50441). No dating material was recovered from the remaining 24 pits, although one, pit 51582, was determined as Iron Age date or earlier by its stratigraphic relationship with Iron Age pit 50252.

In Area 5b a further 11 pits were recorded and although all were half-sectioned, only one, pit 52047, contained any datable finds, which were Romano-British.

The form of the excavated pits varied widely, most being shallow scoops with gently to moderately sloping sides and concave bases, although the deepest pits had vertical or near vertical sides and roughly flat bases. Most were fairly shallow, seldom exceeding 0.7 m in depth. These differences in form are possibly related to differences in function. However, as very little material was recovered from these features, most appearing to have been filled as the result of natural silting rather than a deliberate backfilling, their functions and dating remain uncertain.

Postholes

Of the 637 postholes recorded in Area 5a, 164 were excavated (*c.* 25.5%). Datable material was recovered from 56 postholes, of which 52 had a general Iron Age date range, two were more closely datable to the earlier part of the Middle Iron Age (51032 and 50054), one was dated to the Middle/Late Iron Age (50492) and

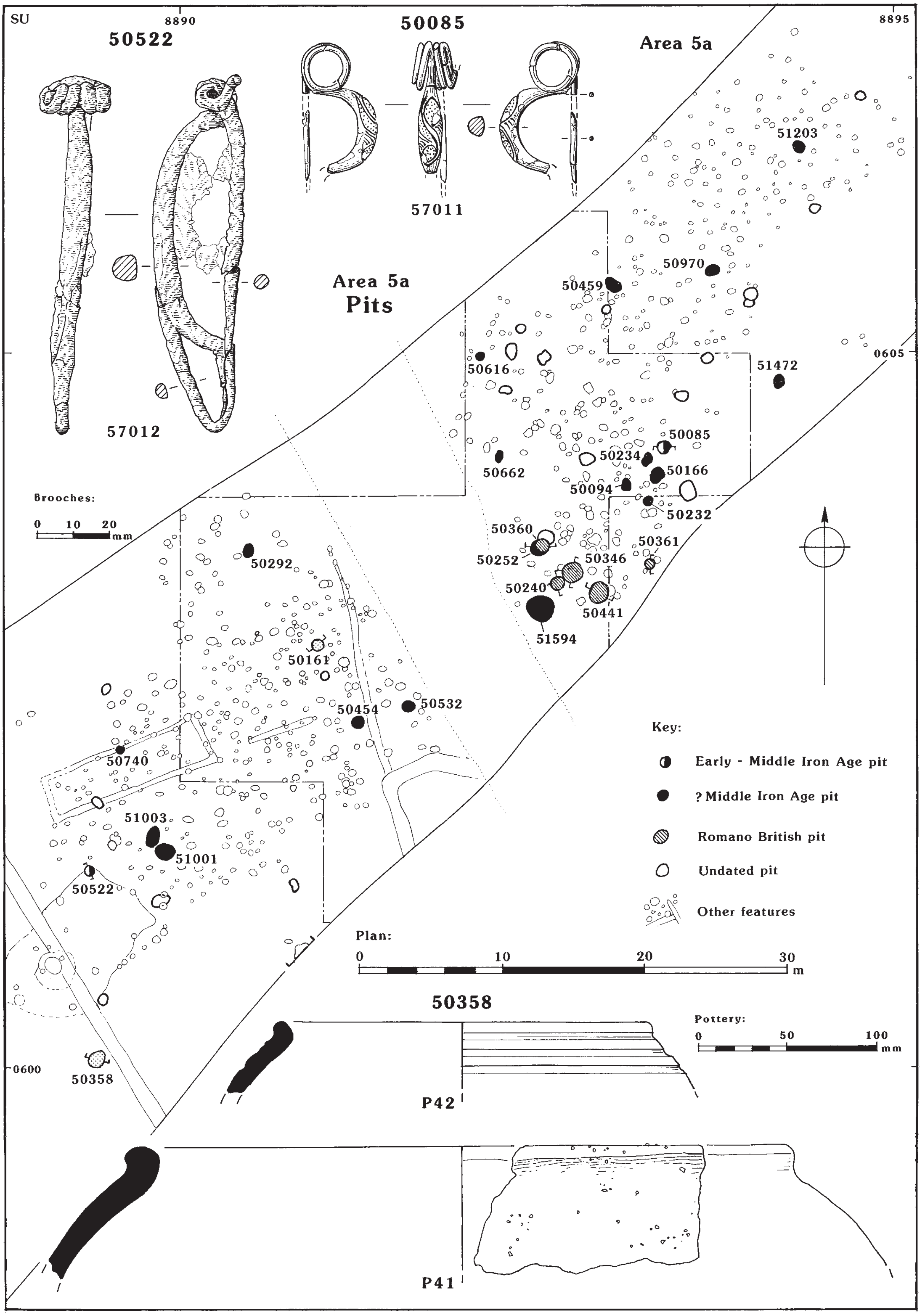


Figure 65 Area 5a: Iron Age pits and associated finds

one to the Romano-British period (50566). The remaining 108 excavated postholes were undated, giving a total of 581 undated or unexcavated postholes.

A further 187 features that could be either pits or postholes were also recorded; 78 of these were excavated (*c.* 42%) and datable material was recovered from 56 of them. Of these 49 had a general Iron Age date, one was datable to the earlier part of the Middle Iron Age (50288), one to the Middle/Late Iron Age (50200), and five to the Romano-British period (50047, 50205, 50279, 50328 and 50500). The remaining 131 features were undated or unexcavated.

No timbers survived in position but in some cases it was possible to distinguish a distinct packing, usually of flint nodules, around a central pipe that represented the position of the post. Occasionally, where the post appears to have been burnt *in situ*, this distinction was particularly clear and the shape of the timber could be discerned. However, in most cases any posts appear to have been removed leaving little trace of their original positions and dimensions.

Post-built Structures

It was not possible to excavate most of the 824 postholes and pits/postholes, and only about one-third of the excavated postholes could be dated. Truncation by ploughing may have removed many shallower postholes and stakeholes and certainly appears to have truncated those which had survived. The digging of pits during the Iron Age and Romano-British periods of occupation may also have destroyed a number of earlier postholes. Any assessment of the plans of possible structures at the site must take these factors into account.

The density of the postholes in the central area in Area 5a, the comparatively small percentage of features excavated (less than 30% of postholes and pits/postholes) and the relative scarcity of finds recovered, mean that a degree of uncertainty must surround the validity of structures or groupings suggested. This is particularly so where not all the elements were excavated and consequently depth and form cannot be compared, or where there is little or no dating evidence to either corroborate or disprove the contemporaneity of the various elements.

The majority of the postholes cannot be related to structures and it is possible that many posts were erected for temporary use, perhaps as individual timbers. Others could have been used in pairs as the framing for the doorways of comparatively slight circular stake-built structures, such as those excavated at Danebury, Hampshire (Cunliffe 1984). Unfortunately plough damage will have destroyed any such shallow stake-built elements.

Other post-built structures have been recognised on many better preserved Iron Age sites in the form of two post 'drying racks', four-post structures, and circular buildings, all of which are common on settlement sites of this period. It was considered that attempts to discern two-post structures among the dense clusters of features recorded in Area 5 would be futile, but attempts were made to isolate rectangular and circular structures.

Circular post-built structures

Circular houses of individually bedded timber posts are well known on Iron Age sites and might be expected to occur here. The density of the postholes made it very difficult to discern individual structures, and no convincing houses were recognised during excavation. During the analysis stage the 1:50 site plans were again examined for possible circular groupings of postholes. It was assumed that such a circular structure would display a degree of regularity and symmetry about an axis between the door or porch and a post setting at the back of the building (Guilbert 1982) and that the elements of the structure would be of approximately similar dimensions. A computer program produced a number of possible circular structures and large numbers of arcs of postholes. However, when these were then examined in conjunction with the posthole sections or profiles and the context records, disparities in size and depth, along with a lack of regularity and symmetry led to the majority of these being rejected.

This situation is not uncommon on densely occupied sites, for example Danebury (Cunliffe 1984, 60; Cunliffe and Poole 1991, 45) or Hengistbury Head, Dorset (Cunliffe 1987, 80). Five possible circular structures are detailed below, only one of which was thoroughly examined by excavation, and the uncertainties of interpretation are evident.

Rectangular post-built structures

Rectangular post-built structures have been recognised on many Iron Age sites in southern England. A wide variety of functions has been suggested for these structures including granaries, watch towers, houses and excarnation platforms (e.g. Bersu 1940; Wainwright 1968; Ellison and Drewett 1971; Cunliffe 1984, 87).

One four-post structure was clearly discerned during excavation owing to the presence of large quantities of charcoal and other burnt material within the fills of the postholes. Other possible groupings were identified from the 1:50 site plans, and then examined in conjunction with the posthole sections or profiles and the context records. Where these demonstrated that the postholes were of a similar size and shape, and had fairly similar fills, and the proposed structure had reasonably right-angled corners, the structure was accepted as probably genuine.

Many possible rectilinear structures of four, five and six posts were postulated during post-excavation analysis, but only three were datable and satisfied the above criteria. These are detailed below, as is one undated example.

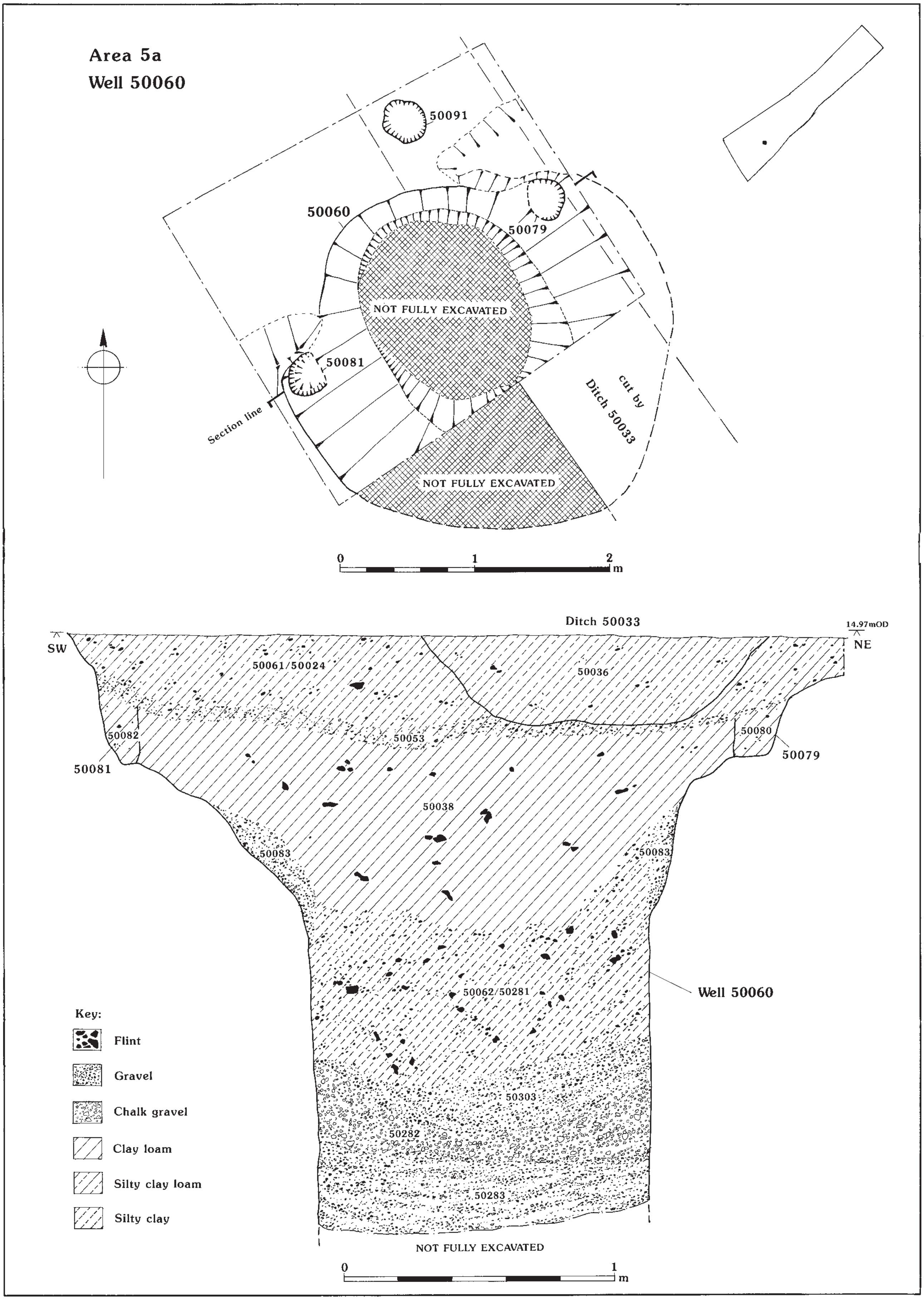


Figure 66 Area 5a: plan and section of Iron Age well 50060

Early/Middle Iron Age

The earliest activity is represented by well 50060 and associated feature 50089/50458. A small number of other features, gully 50211, pits 50085 and 50522, postholes 50054 and 51032, and pit/posthole 50288 also contained material which can be dated to the Early/Middle Iron Age. The most economical interpretation of this evidence is that the settlement was established during the period of transition from one ceramic style to another, with the well perhaps being the earliest feature.

Well and associated features

The well (50060) was at the approximate centre of a large amorphous feature 50089/50458 (below), *c.* 30 m from the south-western end of Area 5a (Fig. 64). Its upper fills were partly cut by ditch 50033, of Romano-British or later date (Fig. 66). The sides of the well sloped inwards at an angle of *c.* 45°, to a depth of approximately 1 m, then narrowed from a sub-circular shape *c.* 2.8 m in diameter to an oval, 1.4 m by 1.15 m, with vertical sides. The well was excavated to a depth of 2.2 m, at which point further excavation was abandoned for health and safety reasons. An attempt was made to discover the full depth of the well by augering, but this was hampered by the loose gravelly nature of the lower fills. The present water table is *c.* 4 m below ground level; the level during the prehistoric period, however, is not known.

The funnel-shaped top of this feature was probably the result of erosion or the partial collapse of the loose gravel sides. Indeed the lower excavated fills (50283, 50282 and 50303) consisted almost entirely of redeposited gravels. The only datable material recovered from these fills were two sherds of undiagnostic flint-gritted pottery which could be dated only as later prehistoric. Above the redeposited gravels was a thick layer of yellowish-brown silty clay (50062/50281) from which 21 sherds of flint- and grog-tempered pottery were recovered. These included fragments of a long necked bowl (Fig. 67, P34), dated to the Early/Middle Iron Age and a single sherd of Late Bronze Age/Early Iron Age pottery, which was presumably residual. Overlying this deposit was a thick layer of brownish-yellow clay loam (50038) from which 43 sherds of coarse later prehistoric pottery were recovered. Sealing layer 50038 was a thin, firmly compacted layer of gravel in a clay matrix (50053), possibly representing a deliberate 'capping' of the disused/silted-up well. Of the 11 sherds of pottery recovered from this layer, nine were of a very fine burnished ware dating to the Middle Iron Age, including another necked bowl (Fig. 67, P35), and the remaining two of coarse flint-tempered pottery of Late Bronze Age/Early Iron Age date, probably residual. The uppermost fill of the well (50061/50024) comprised a dark yellowish-brown silty clay loam from which eight sherds of late prehistoric pottery, including a storage jar (Fig. 67, P45) were recovered together with a copper alloy brooch dating to the 5th/4th centuries BC (ON 57004) (Fig. 67).

The truncated remains of two postholes (50079 and 50081) were recorded in opposite sides of the eroded upper edges of the well (Fig. 66), possibly representing some kind of well head. The positions of any matching postholes to the south were either unexcavated or destroyed by the later ditch 50033, but the juxtaposition could be fortuitous.

Around the well, and cut by it, there was a large amorphous, possibly sub-rectangular, feature (50089/50458) (Fig. 63). This was approximately 12 m long and 6.5 m wide with a very irregular profile

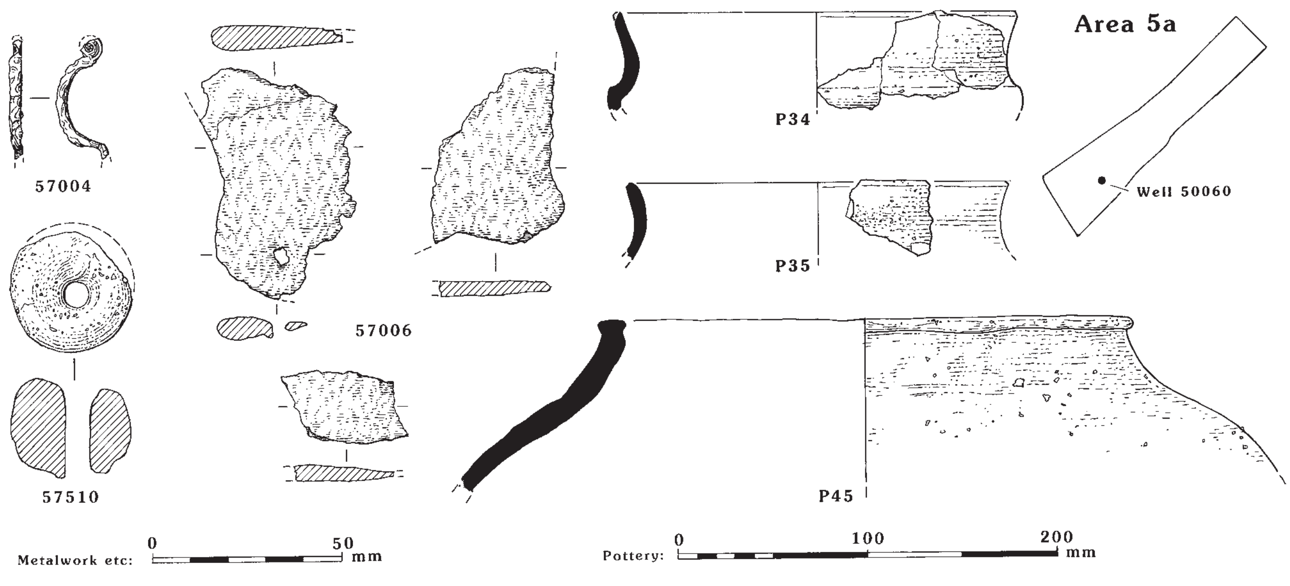


Figure 67 Area 5a finds from Iron Age well 50060

varying in depth from 0.1–0.36 m. Its fills (50090, 50467 and 51618) consisted of mid yellowish-brown silty clay loams, probably re-deposited brickearth. They yielded only sparse dating evidence – four sherds of coarse flint-tempered pottery of Late Bronze Age date and four sherds of finer flint-tempered pottery dated to the Early-Middle Iron Age. Four other postholes, that appeared to be cut by this feature, contained no datable artefacts. Feature 50089/50458 was also cut by ditch 50033 and by 12 smaller features. Eleven of these were undated, but the twelfth, pit 50522, contained an iron brooch of earlier 3rd century BC date (ON 57012) (Fig. 65).

The irregular form and shallowness of feature 50089/50458 suggest that it may have been a natural depression. However, as four postholes appeared to be cut by it, it must be assumed to be artificial. It is noteworthy that well 50060 was roughly in the centre of this feature. It could be that this represents an area of wear that formed an irregular depression around the well while it was in use and which became filled with re-deposited brickearth and topsoil as the result of natural silting or trample. This could have been formed by livestock being watered next to the well and creating a muddy depression, similar to those that form around modern cattle troughs. It is possible that a fence, represented by a row of postholes (Fig. 65), marked the south-eastern side of the hollow.

Middle Iron Age

As the dating evidence for the well comes from its upper fills, it is possible that it was dug in the Early Iron Age and was contemporary with the scatter of earlier pottery found in what are thought to be later features on the site. The bulk of activity in the area excavated appears, however, to be of Middle Iron Age date.

Linear features

Hollow way

A very large linear feature (50432), *c.* 4.2 m wide and up to 0.4 m deep, and aligned north-east to south-west at the north-eastern end of Area 5a, is assumed to be a hollow way or sunken road (Figs 63 and 68). Although it was very difficult to distinguish its upper fill (50117) from the natural brickearth into which it was cut, the feature was traced for 32 m, from its terminal immediately west of Romano-British ditch 50025 to the north-eastern limit of excavation beyond which it continued. Of the 41 sherds of pottery recovered from the upper fill, 40 were of Iron Age date, the single sherd of Romano-British greyware probably deriving from ditch 50025. Below the upper fill, presumably the result of natural silting, was a dense layer of flint nodules (with an average diameter of *c.* 0.1 m) in a reddish-brown silty clay matrix (50431), extending for *c.* 2.4 m across the fairly flat base but not extending up the gently sloping sides, presumably the remains of a metalled surface. This layer produced 53 sherds of flint-gritted Iron Age pottery, including two rim sherds.

Ditches

In Area 5b a number of ditches were recorded on a roughly similar curvilinear alignment, two of which (52033 and 52001/52007/52028) produced datable material (Fig. 64). Ditch 52033, which was 12.5 m long, with an average width of 1.2 m, depth of 0.3 m and an irregular U-shaped profile, was dated to the general Iron Age date range. A single sherd of flint-gritted pottery was recovered from ditch 52001/52007/52028, the upper fills of which were cut by a Romano-British ditch (52053). Ditch 52001 ran south-east from the edge of the excavated area, turning south for *c.* 4 m (as ditch 52028), where it truncated ditch 52027 (Fig. 63), then south-west (as ditch 52007).

Circular structures

As explained above, only one (50939) of the five possible circular structures considered below was thoroughly investigated by excavation. Of the remaining four, only two postholes were excavated in 50931, only one posthole in 51920, and no postholes were excavated in either 51921 or 51922. The last three possible structures lay to the north-east of the more thoroughly investigated zone in the centre of Area 5a. It is likely that the post-medieval boundary, ditch and trackway destroyed other circular structures within the central zone.

The size of the structures, particularly 51920 and 51922, is small in comparison to many more thoroughly examined examples elsewhere but they fall within the range of sizes known at Danebury, though there the buildings are stake built (Cunliffe 1984, 54–81; Cunliffe and Poole 1991, 39–104). Even where they were excavated, the structures remain poorly dated and have therefore been assigned only a general Iron Age date.

Circular structure 50939: c. 8 m in diameter – 9 posts (Fig. 69; Table 43)

No dating evidence was recovered from any of the seven excavated elements of this structure and no stratigraphic relationships with datable features were observed. The two slightly larger postholes in the south-east of the structure (50220 and 50224) are assumed to be the doorframe. The use of larger posts is to be expected, either for strength or display or because they had been replaced (Reynolds 1982; 1993). The variations in diameter and depth within the other elements may represent original differences as well as differential plough damage and uneven machining during the stripping of topsoil.

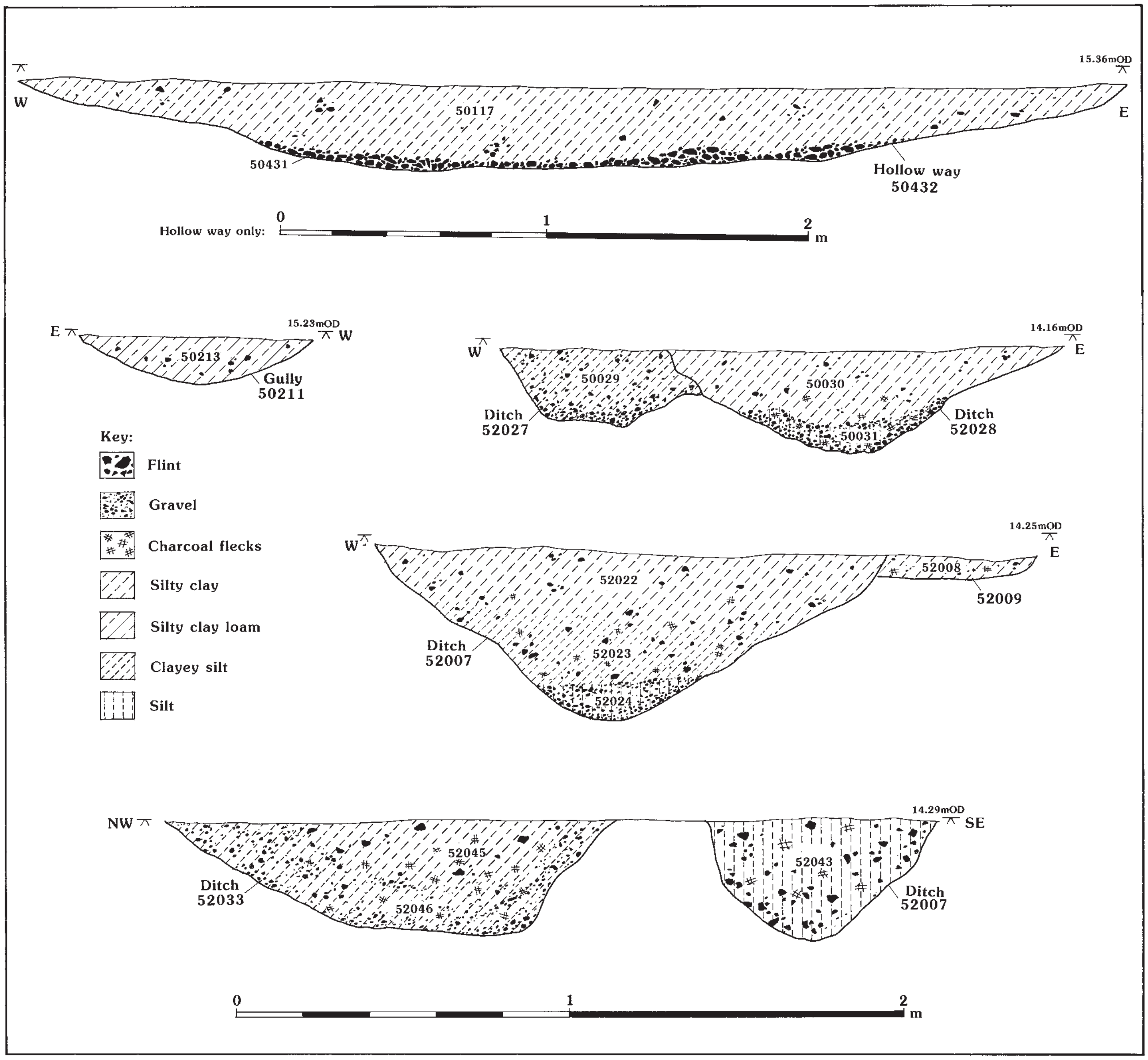


Figure 68 Area 5a: sections of hollow way, ditches and gully

Circular structure 50931: c. 7 m in diameter – 9 posts (Fig. 70; Table 44)

No datable material was recovered from the two excavated elements, and no stratigraphic relationships were observed with datable features, including rectangular structure 50942.

Possible circular structure 51920: c. 6 m in diameter – 7 posts (Fig. 71; Table 45)

Only one element of this possible structure was partially excavated (50437) and no finds were recovered from it. It was, however, cut by two other features (50435 and 50439), and seven sherds of Iron Age pottery were recovered from the fill of 50435. The proposed structure is roughly symmetrical about a north–south axis. The seven elements are all of comparable sizes, but as their depths and profiles cannot be compared, the structure's identification must be regarded as tentative.

Possible circular structure 51921: c. 5.5 m in diameter – 9 posts (Fig. 72; Table 46)

This possible structure was only recognised during the analysis stage. Again, none of the elements were excavated. The two smallest postholes, 50988 and 51053, along with 50996 and 51055, possibly form a small south-east facing porch. Although it may be doubted whether such a small building would have a porch, some small buildings in Sussex do; Lavant Reservoir, West Sussex (Building 10) (Kenny 1993b, fig. 10), and Hollingbury Camp, East Sussex (Holmes 1984, 35, fig. 3).

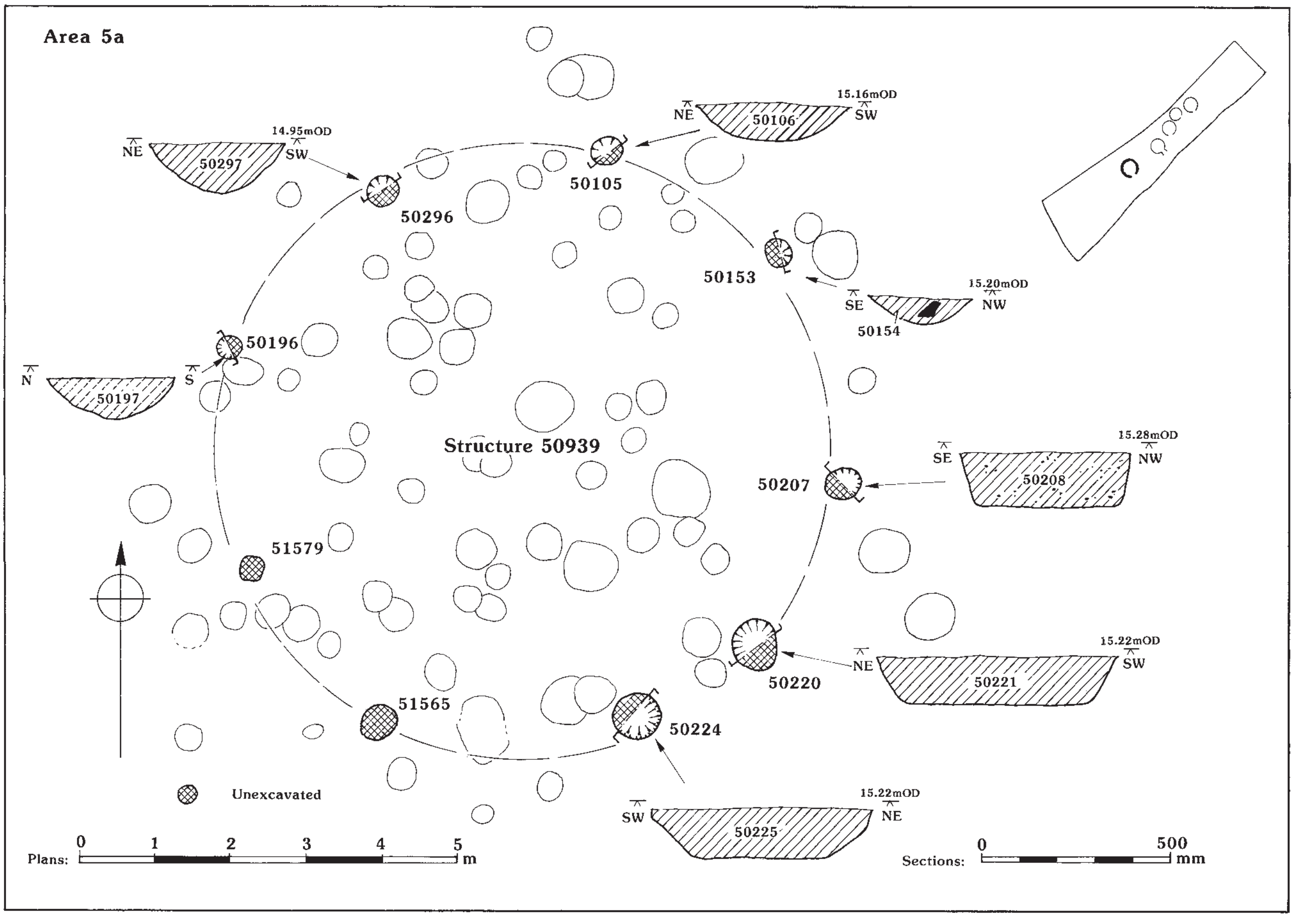


Figure 69 Area 5a: plan of Iron Age circular structure 50939

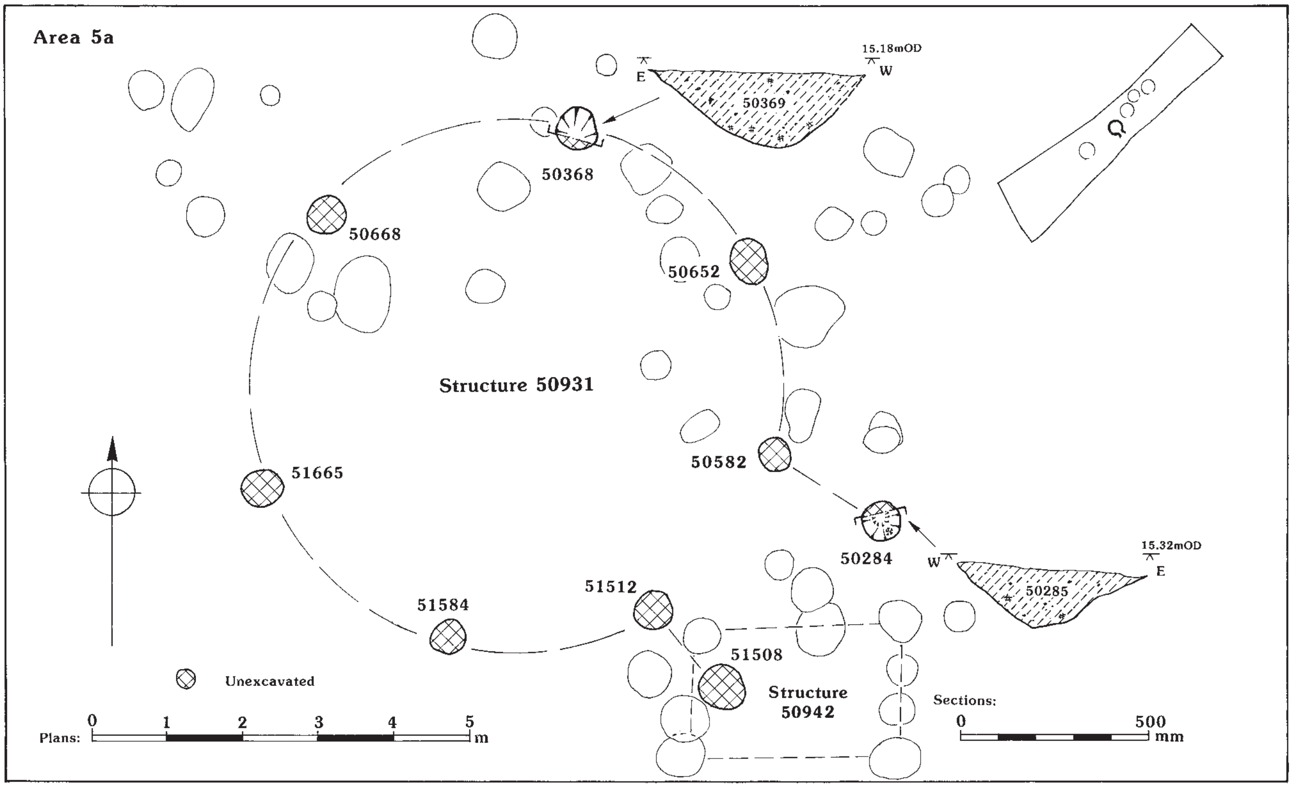


Figure 70 Area 5a: plan of Iron Age circular structure 50931 and four-post structure 50942

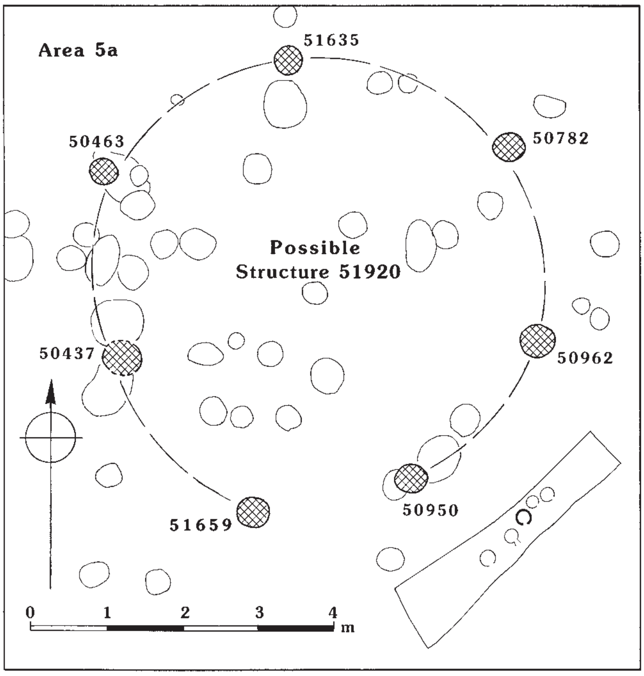


Figure 71 Area 5a: plan of possible Iron Age circular structure 51920

Possible circular structure 51922: c. 6 m in diameter – 11 posts (Fig. 73; Table 47)

As with 51921, this possible structure was not recognised during excavation and none of its eleven elements was excavated, although during cleaning three sherds of Iron Age flint-gritted pottery were recovered from the surface of 50798 and one from the surface of 50818. The postholes showed significant variations in size, and the possible porch appears very large, but the proposed structure does have a measure of symmetry, with the different sized elements appearing to 'mirror' one another about a north-west to south-east axis. Again no comparison could be made between the depths and profiles of the postholes so the identification of the structure is tentative.

Rectangular structures

Rectangular structure 50330: c.2.7 m × 3.3 m (Fig. 74; Table 48)

This structure was recognised during excavation because of the large quantities of charcoal in the postholes (Pl. 22). At least some of the other postholes and pits/postholes shown in Figure 74 may represent different phases or builds of the same structure. Large quantities of charcoal, and charred grain, peas and beans were recovered from posthole 50103 (sample 59004) and may derive from the burning of this structure (Pl. 23). Fragments of fired clay were recovered from postholes 50103 and 50164, some with wattle marks (Table 55). Iron Age pottery was recovered from postholes 50103, 50164 and 51919, along with Late Bronze Age/Early Iron Age material

Table 43 Area 5a, circular structure 50939

Feature	*Diameter*	*Depth*
50296 (fill 50297)	0.35 m	0.13 m
50105 (fill 50106)	0.40 m	0.10 m
50196 (fill 50197)	0.34 m	0.11 m
50153 (fill 50154)	0.27 m	0.08 m
51579 (fill 51578)	0.35 m	unexcavated
51565 (fill 51564)	0.47 m	unexcavated
50207 (fill 50208)	0.44 m	0.14 m
50220 (fill 50221)	0.64 m	0.13 m
50224 (fill 50225)	0.55 m	0.13 m

Table 44 Area 5a, circular structure 50931

Feature	*Diameter*	*Depth*
50284 (fill 50285)	0.51 m	0.18 m
50368 (fill 50369)	0.52 m	0.19 m
50582 (fill 50583)	0.44 m	unexcavated
50652 (fill 50653)	0.60 m	unexcavated
50668 (fill 50669)	0.50 m	unexcavated
51508 (fill 51509)	0.64 m	unexcavated
51512 (fill 51513)	0.45 m	unexcavated
51584 (fill 51585)	0.45 m	unexcavated
51665 (fill 51666)	0.50 m	unexcavated

Table 45 Area 5a, possible circular structure 51920

Feature	*Diameter*	*Depth*
50437 (fill 50438)	0.5 m	0.25 m approx.
50463 (fill 50464)	0.4 m	unexcavated
50782 (fill 50783)	0.4 m	unexcavated
50950 (fill 50951)	0.4 m	unexcavated
50962 (fill 50963)	0.48 m	unexcavated
51635 (fill 51636)	0.4 m	unexcavated
51659 (fill 51660)	0.45 m	unexcavated

Table 46 Area 5a, possible circular structure 51921

Feature	*Diameter*	*Depth*	*Comment*
50754 (fill 50755)	0.45 m	unexcavated	
50756 (fill 50757)	0.45 m	unexcavated	
50766 (fill 50767)	0.35 m	unexcavated	
50776 (fill 50777)	0.3 m	unexcavated	
50988 (fill 50989)	0.25 m	unexcavated	(?porch)
50996 (fill 50997)	0.3 m	unexcavated	
51053 (fill 51054)	0.25 m	unexcavated	(?porch)
51055 (fill 51056)	0.35 m	unexcavated	
51145 (fill 51146)	0.3 m	unexcavated	

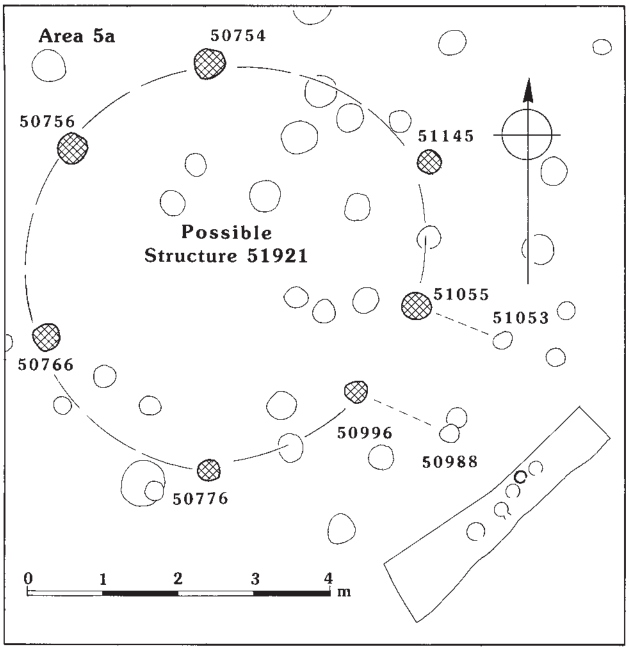


Figure 72 Area 5a: plan of possible Iron Age circular structure 51921

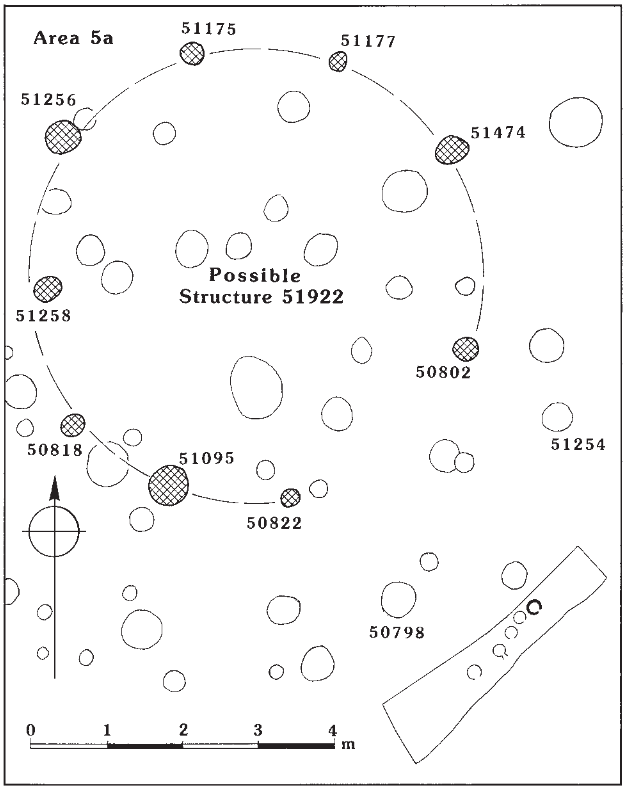


Figure 73 Area 5a: plan of possible Iron Age circular structure 51922

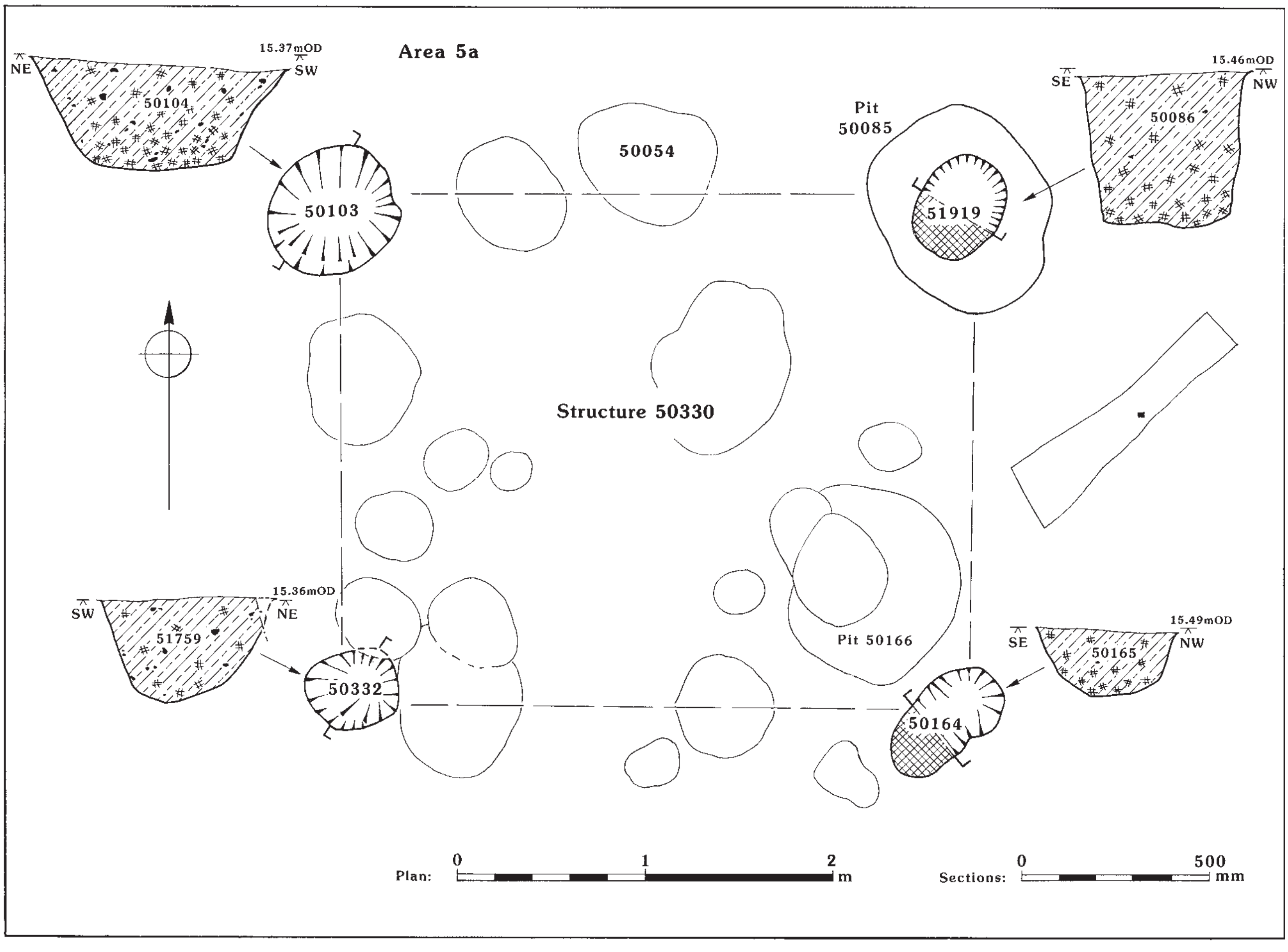


Figure 74 Area 5a: plan of Iron Age rectangular structure 50330

which is presumed to be residual. Posthole 51919 was cut into an earlier pit (50085) from which a La Tène IA brooch (ON 57011) was recovered. The softer nature of the pit fill was probably responsible for the greater depth of posthole 51919, which was *c.* 0.4m deep, deeper than those elements of the structure that were cut into the natural brickearth.

Rectangular structure 51788: c. 2.7 m × 3.7 m
(Fig. 75; Table 49)
All four elements which form this structure were of very similar size and shape. Iron Age flint-gritted pottery was recovered from postholes 50564 and 50570.

Rectangular structure 50942: 2.5 m × 2 m, 4 posts
(Fig. 76; Table 50)
This structure was not recognised during excavation and only one posthole (50338) was excavated. This contained three sherds of Iron Age flint-gritted pottery. No stratigraphic relationship was observed with circular structure 50931, the porch of which it overlapped (Fig. 70).

Rectangular building 50563, and Trench 50542
(Fig. 77)
A rectangular building (50563), measuring 11.6 m by 3.3 m, and comprising four contiguous foundation trenches, was identified *c.* 40 m from the south-western end of Area 5a (Fig. 77), aligned approximately north-east to south-west. The remains of the trenches were very shallow (no more than 0.07 m), and were presumably much truncated by ploughing. There was no evidence as to whether they held beams, though associated trench 50542 may have had posts set within it. There was no trace of a north-west corner and it is uncertain whether there had been an entrance at that point, or whether the trench there had been destroyed completely by ploughing. The width of the trenches varied between 0.4 m-0.5 m, and all had a similar profile – slightly concave sides and a flat base. It is possible, but cannot be demonstrated, that a number of the postholes within the building were associated with it.

A single foundation trench (50542) on the same alignment was noted *c.* 2.5 m to the east (Fig. 77). It was 5.1 m long with an average width of 0.45 m and depth of 0.02 m. Although no physical or stratigraphic relationships could be discerned with building 50563 and no closely datable material was recovered from either, their similarity of alignment and form suggests that they could be elements of two associated and perhaps related structures, or even of a single structure.

Of the several features with stratigraphic relationships with building 50563 all appeared to cut it apart from the undated posthole 51035, although in some cases the relationships were unclear. Of the features that cut the structure, five contained datable material. Posthole 50558 contained four sherds of Iron Age flint-gritted pottery, while posthole 50559 contained one sherd of pottery datable only to the later prehistoric period. Of the two features classed as either pits/postholes that cut the structure (50732 and 51041), feature 50732 contained two sherds of Iron Age flint-gritted pottery, while feature 51041 contained two undiagnostic flint-gritted sherds which could only be dated to the later prehistoric period. The single pit (50740) that cut this structure produced a single piece of worked flint, four pieces of burnt flint and two sherds of Iron Age flint-tempered pottery.

Table 47 Area 5a, possible circular structure 51922

Feature	*Diameter*	*Depth*	*Comment*
50798 (fill 50799)	0.4 m	unexcavated	(?porch)
50802 (fill 50803)	0.3 m	unexcavated	
50818 (fill 50819)	0.28 m	unexcavated	
50822 (fill 50823)	0.35 m	unexcavated	
51095 (fill 51096)	0.5 m	unexcavated	
51175 (fill 51176)	0.3 m	unexcavated	
51177 (fill 51178)	0.29 m	unexcavated	
51254 (fill 51255)	0.35 m	unexcavated	(?porch)
51256 (fill 51257)	0.4 m	unexcavated	
51258 (fill 51259)	0.3 m	unexcavated	
51474 (fill 51475)	0.35 m	unexcavated	

Table 48 Area 5a, rectangular structure 50330

Feature	*Diameter*	*Depth*
50103 (fill 50104)	0.48 m	0.28 m
51919 (fill 50086)	0.4 m	0.39 m
50164 (fill 50165)	0.4 m	0.24 m
50332 (fill 51759)	0.46 m	0.26 m

Table 49 Area 5a, rectangular structure 51788

Feature	*Diameter*	*Depth*
50476 (fill 50477)	0.54 m	0.22 m
50490 (fill 50491)	0.53 m	0.17 m
50564 (fill 50565)	0.55 m	0.21 m
50570 (fill 50571)	0.55 m	0.15 m

Table 50 Area 5a, rectangular structure 50942

Feature	*Diameter*	*Depth*
50338 (fill 50339)	0.54 m	0.36 m
50513 (fill 50514)	0.55 m	unexcavated
51484 (fill 51485)	0.45 m	unexcavated
51510 (fill 51511)	0.50 m	unexcavated

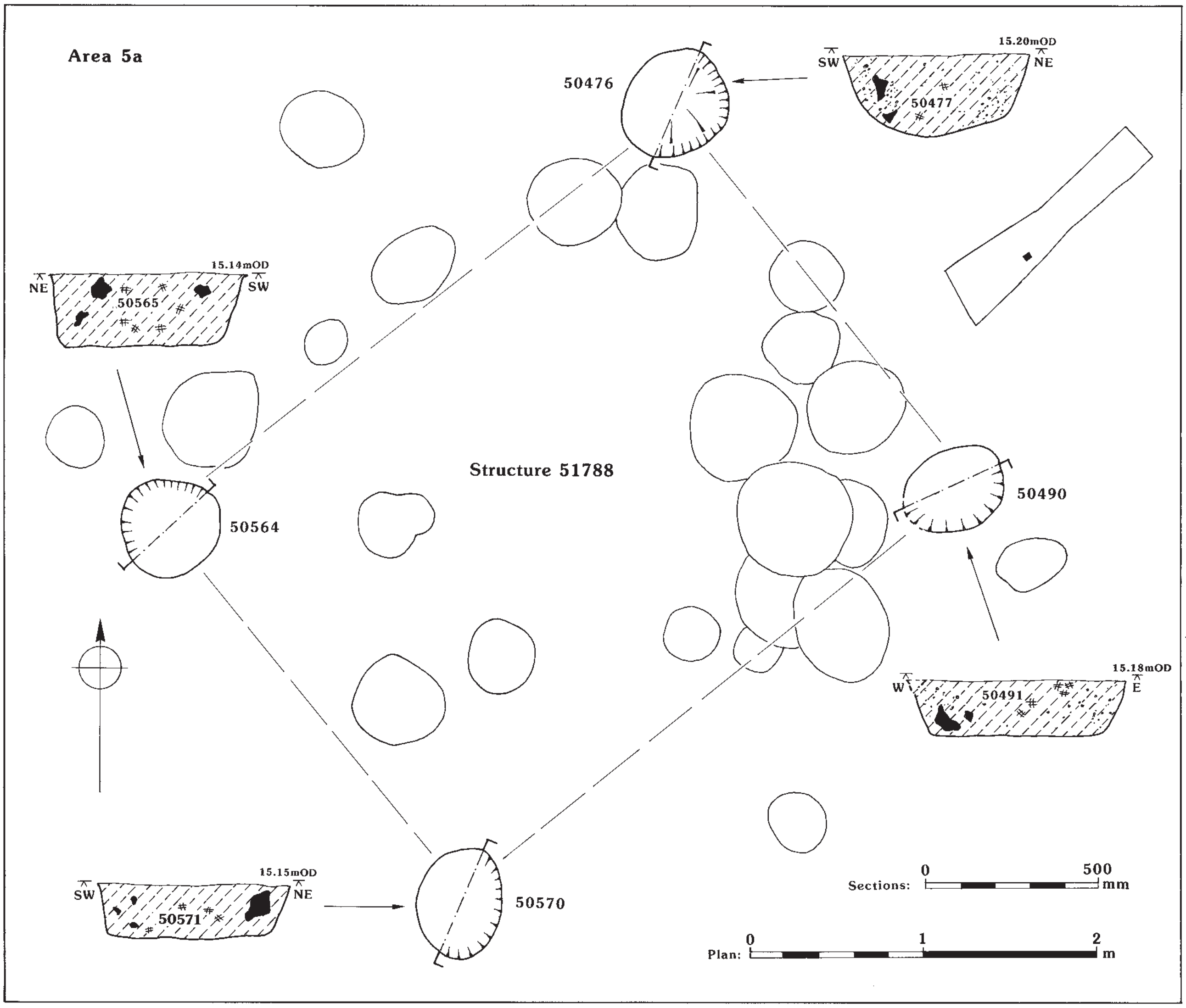


Figure 75 Area 5a: plan of Iron Age rectangular structure 51788

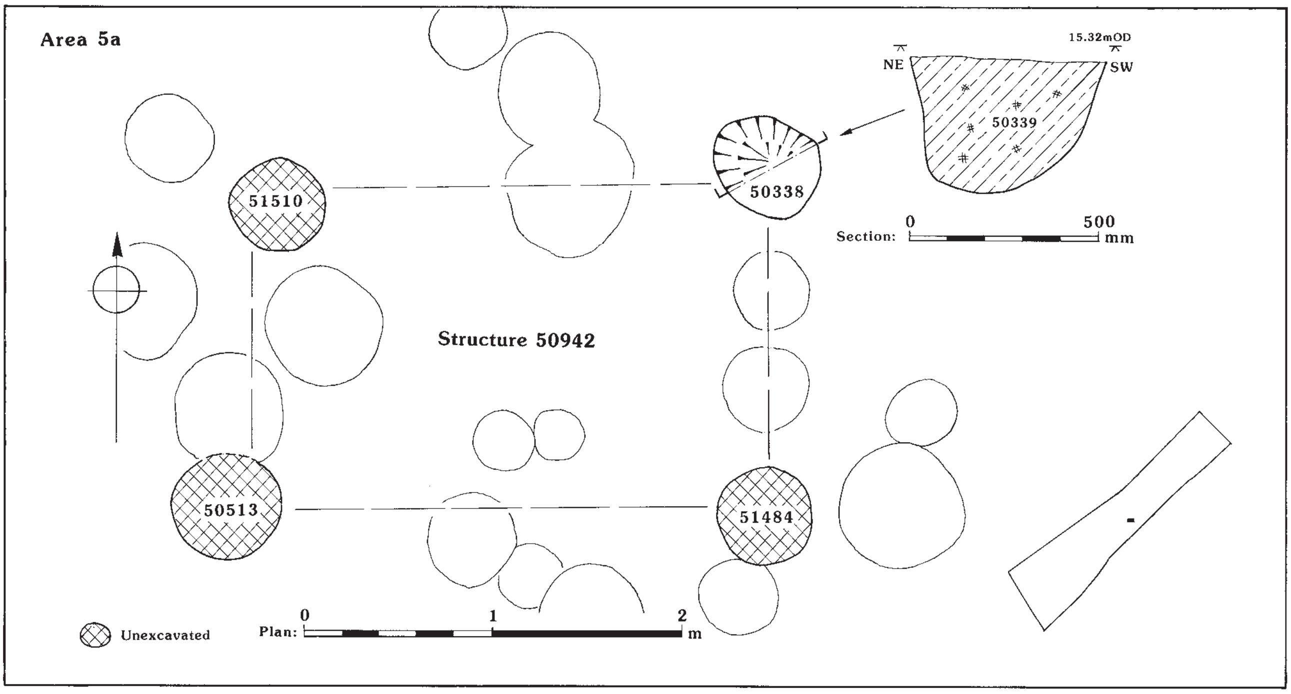


Figure 76 Area 5a: plan of Iron Age rectangular structure 50942

Plate 22 Iron Age rectangular structure 50330 in Area 5a, one posthole of which contained carbonised beans, looking south-east. Scales 2m

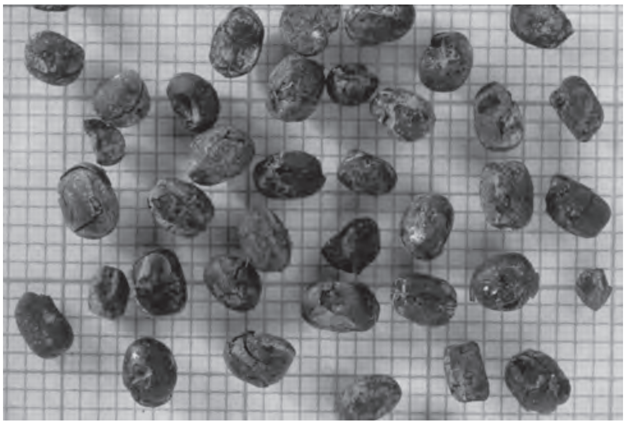


Plate 23 Carbonised beans from posthole 50103 in Iron Age rectangular structure 50330 in Area 5a. Background in mm

Trench 50542 was cut by two undated postholes (51561 and 51439). Three postholes (50540, 51541 and 51543) appeared to be sealed below its fill, but could have been contemporary with it, suggesting that they may have been part of the structure. Posthole 50540 coincided exactly with the eastern end of the trench and was the only posthole to contain any datable material – some 42 sherds of Iron Age flint-gritted pottery, probably from a single vessel, along with a large quantity of burnt flint (11,165 g), fired clay (possibly daub) and charcoal.

It is possible that the unexcavated postholes 51569, 51670 and 51678 *c.* 3 m to the north were associated, forming a rectangular structure measuring *c.* 5 m by 3 m. The posthole elements of this postulated structure were all between 0.3–0.4 m in diameter, but unfortunately no comparisons between the depth and profile could be made. The only finds recovered from any element of this possible structure were those from the fill of posthole 50540 (see above) which could only be dated generally to the Iron Age.

Hollow 51344 (Fig. 78)
Hollow 51344 contained evidence of high temperature ironworking in the vicinity of the site. It lay *c.* 10 m south-west of Romano-British ditch 50118, and extended beyond the south-eastern limit of excavation so its full extent and shape in plan is unknown. It was a shallow scoop with a maximum depth of 0.1 m, possibly sub-rectangular in shape, the exposed part measuring 1.8 m by 1.6 m and with gently sloping sides and a fairly flat base (Fig. 78). Quantities of iron slag were recovered from the single fill (51345), the largest piece of which, weighing 981 g, is a smithing hearth bottom. Very small quantities of flake hammerscale were also recovered (Fig. 82). The four sherds of flint-tempered pottery and the single sherd of grog-tempered pottery that were recovered could only be dated generally to the Iron Age, although the grog-tempered pottery was possibly Late Iron Age.

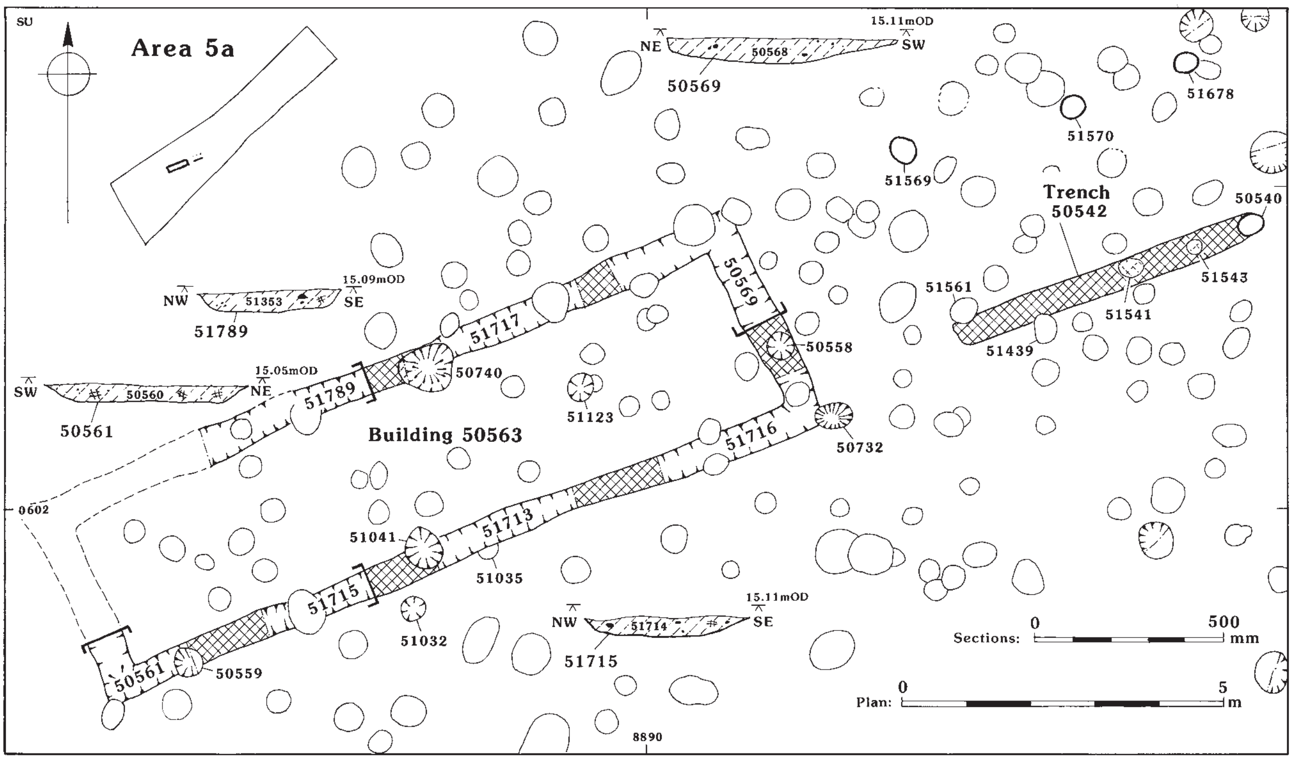


Figure 77 Area 5a: plan and sections of Iron Age building 50563 and trench 50542

The hollow may be associated with pit/posthole 51342, an irregular shallow feature 0.75 m long, 0.35 m wide and 0.04 m deep, immediately (0.1 m) to the north-west. The only material recovered from this was a single sherd of Iron Age flint-gritted pottery, but both severely truncated features contained very similar mid-dark greyish-brown silty clay loam fills with frequent charcoal flecks (51345 and 51343 respectively).

Pits

Most of the pits in Area 5 could only be dated broadly to the Iron Age, but two were more closely datable to the Middle Iron Age.

Pit 50085 was roughly circular, *c.* 1 m in diameter and 0.4 m deep with steep straight sides and a slightly concave base (Fig. 78). Its single fill (50355) contained seven sherds of pottery datable only to the Middle-Late Iron Age, but a closer dating was provided by a copper alloy brooch (ON 57011) of the La Tène IA type (Fig. 65). The brooch is dated to between the middle of the 5th century and the early 4th century BC. The pit was cut by a posthole (51919), part of rectangular structure 50330 (Fig. 74).

Pit 50522 cut through the fill of the amorphous hollow 50089/50458 and was sub-rectangular in shape being 0.57 m long, 0.5 m wide and 0.26 m deep, with steep irregular sides and a concave base (Fig. 78). Although no pottery was found, it was dated to the Middle Iron Age by an iron brooch (object 57012) (Fig. 65) recovered from near the base of the single fill (50521). The brooch is of La Tène ICa type and is dated to *c.* 300–250 BC. The only other finds were three small pieces of burnt flint. This pit appears to have been filled as the result of natural silting and its function is unclear.

Middle–Late Iron Age

Two of the pits in Area 5a and two of the 112 datable postholes contained pottery dated towards the end of the Middle Iron Age (Fig. 65). Pit 50161 was roughly circular, *c.* 0.72 m in diameter and 0.24 m deep with steep straight sides and a flat base (Fig. 78). The greyish-brown clay fill (50170) produced seven sherds of flint-tempered pottery, including a rim sherd from a small bead-rimmed jar, datable to the 1st century BC or AD, and a single piece of burnt flint.

Pit 50358 (Fig. 65), which was *c.* 7 m to the south-east of well 50060 and over 15 m from the area of intense Iron Age activity, was approximately oval, with steep irregular sides that narrowed towards a flat base (Fig. 78). It was 1.17 m long, 0.95 m wide and 0.78 m deep with a single fill (50359) of mid greyish-brown silty clay loam. Large quantities of burnt flint (1,734 g) and charcoal were noted within the fill, and 25 sherds of flint-tempered pottery, including sherds from a large, thick-walled, bead-rimmed storage jar and a smaller bead-rimmed jar, datable to the 1st century BC or AD, were recovered. A small fragment of a 'plate *tuyère*' (a component of a furnace or hearth through which air is forced), whose 'liverish' red colouration indicates the high-temperature working of copper alloys, was also found. Although not *in situ*, the *tuyère* implies that the

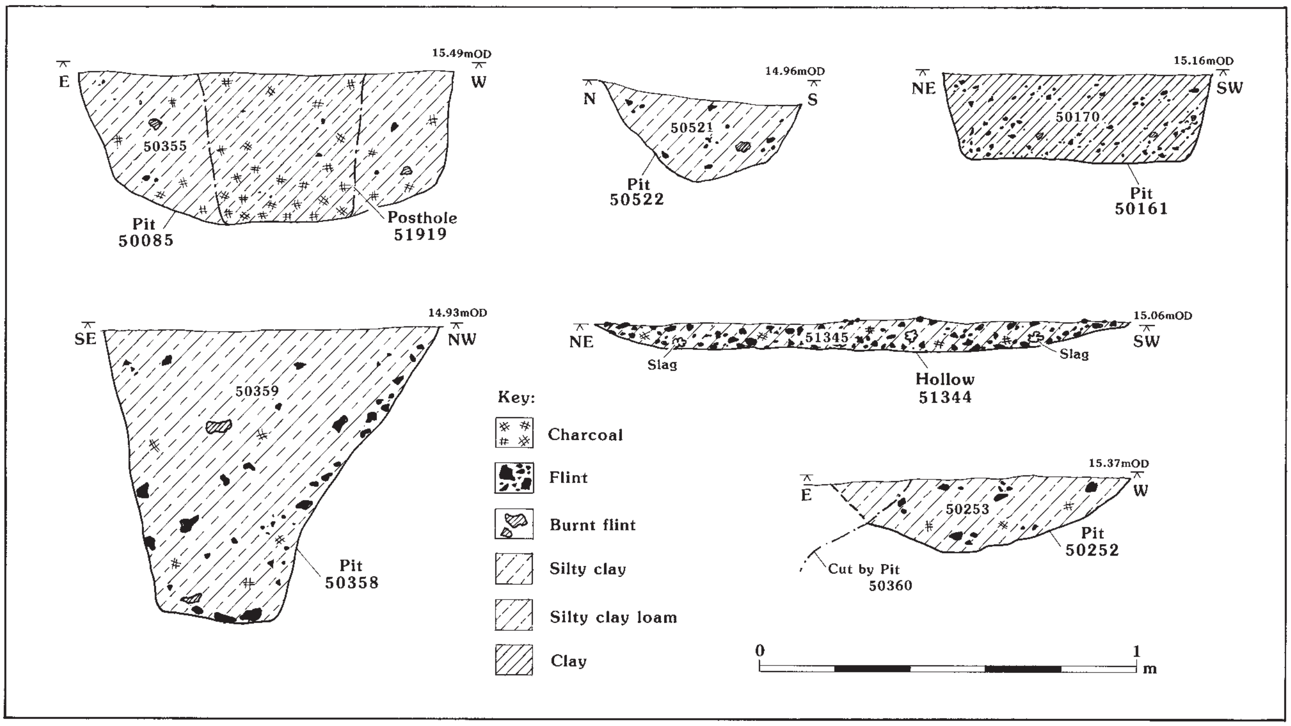


Figure 78 Area 5a: sections of Iron Age pits and hollow

working of copper alloys took place nearby. As described above (p. 158), ironworking debris was found in hollow 51344, *c.* 15 m to the north-east.

Gully

Located in the central section of Area 5a was a shallow gully (50211) with a fairly uniform shallow U-shaped profile, on average 0.18 m deep and 0.6 m wide (Fig. 68), and aligned approximately north–south. At its southern end it was truncated by a Romano-British ditch (50118) (Fig. 63), from where it extended northwards for 14.9 m, narrowing considerably *c.* 3 m from its northern end to a width of 0.15 m, at which point it was truncated by posthole 50311. The most readily datable material recovered from the gully was 35 sherds of pottery, probably all derived from the same vessel, dating to the 1st century BC (Fig. 81; P38). As this was the only linear feature of Iron Age date in Area 5a, and it contained a vessel paralleled in the assemblage from Area 2, it may have been one of the latest of the Iron Age features on the site. Some pottery in the Romano-British ditch 50118 is likely to derive from 50211 (Fig. 81; P40, P44).

Undated Features

Of the 878 small cut features recorded in Area 5a, 738 remain undated. Of those that could be dated, *c.* 85.7% were of general Iron Age date, thought to be Middle Iron Age, *c.* 3.6% Early–Middle Iron Age and *c.* 2.9% of Middle–Late Iron Age date. It is likely that the remaining small features were dated in similar proportions. Ten of the 11 pits recorded in Area 5b were undated.

Ditch 52020 in Areas 5b was undated although it was cut by the Romano-British ditch 52021/52035. In Area 5c, ditches 53002 and 53013 were also undated, but are assumed to be continuations of ditches 52020 and 52021/52035 (Fig. 63).

Metalwork, by R. Montague

Brooches

The three brooches, two of copper alloy and one of iron, are all of La Tène I form. ON 57004, from an upper fill (50061) of well 50060, is a copper alloy brooch, L. 31 mm, of La Tène 1Bx type and is, unsurprisingly, in very poor condition (Fig. 67). The bow alone survives, together with a very small part of the spring, which appears to have an iron pin running through it. The section of the bow is unknown, as the object is very corroded. It compares well in profile and general thickness with the La Tène IBx type of brooches identified by Hull and Hawkes (1987), especially those from Barrington, Cambridgeshire (nos 2933–4), Cold Kitchen Hill, Wiltshire (no. 2891), and Iwerne, Dorset (no. 2909) (although the attribution of one of the Barrington examples and of the Cold Kitchen Hill example as 1Bx type brooches is itself conjectural) (*op. cit.*, 87–91, pl. 27). The date range for this type of brooch is described by Hull and Hawkes as

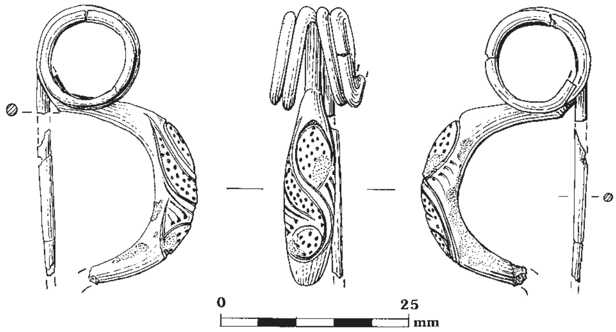


Figure 79 Area 5a: Iron Age brooch 57011

'a range of dates from the late 5th century on, to the early 4th or at latest perhaps to its middle' (*op. cit.*, 87).

ON 57011, from pit 50085, is a fine example of a copper alloy La Tène IA type brooch, L. 36 mm (Figs 65; 79). The spring, with four coils, is broken, although it seems almost certainly to have had an external chord. The foot is missing. It has a highly arched and slightly swelling bow, decorated with an 'S' shaped incised motif, infilled and surrounded by punched, irregularly spaced dots and a few lines. A bronze brooch from Blaise Castle hillfort, North Somerset (Hull and Hawkes 1987, 83, 8163, pl. 23, 8163), closely parallels it. Hull and Hawkes date the La Tène IA brooches from the middle 5th century to the early 4th century BC (*op. cit.*, 73, 78).

ON 57012, an iron brooch of La Tène ICa type, was recovered from pit 50522, L. 99 mm (Fig. 65). It is a large, complete brooch, with four coils with an iron axial rod, and an external chord. The end of the foot is slightly expanded into a 'diamond' shape before thinning out again, and is hard against the bow, but does not appear to be forged to it or attached by a collar or other fixture. It appears to be well paralleled by two brooches: a somewhat smaller iron brooch from Cold Kitchen Hill, where the end of the foot is slightly expanded before thinning again at the terminal, and with a similar low bow and triangular shaped foot, similarly set hard against the bow (*op. cit.*, 120, no. 3098, pl. 34, 3098); and a larger but similarly shaped iron brooch with four coils and an iron axial rod and an external chord from Swallowcliffe Down (*op. cit.*, 120–1, no. 3100, pl. 34, 3100). The Swallowcliffe Down example has a small disc on the foot, with a thin and pointing snout set hard against the bow. These two brooches in particular are singled out as approaching the La Tène IIAa form by Hull and Hawkes (*op. cit.*, 118–19). The dates given for the type ICa brooches is between *c.* 300 BC and 275–250 BC (*op. cit.*, 112, 118, 135).

Other Objects

An unidentified copper alloy object, ON 57013, perhaps a stud or rivet 16 mm in diameter, was recovered from undated posthole 50830 (Fig. 80).

Decorated object ON 57508 from pit 50094 may be a handle terminal for a small knife or razor (Fig. 80). It is 28 mm long and decorated on three sides with three grooves cut into the shank below the head, with the middle groove only extending round to the fourth side. The terminal is marked by a flattened knop. The other, broken, end flares outwards.

Fragment ON 57509, also from pit 50094 (Fig. 80), is from an iron bar or possibly sheet. It is 30 mm long, 25 mm wide and 3 mm thick. Only one edge is certainly original and has slightly raised flanges on each corner. The fragment was examined by Peter Crew who confirms that it is a piece of forge waste; the flanges are consistent with the piece having been partially cut and then twisted from a larger piece, probably a straight or slightly tapering bar. The fragment is too small to determine if the large piece was a currency bar or some other object. The corrosion products include some charred plant material, including one piece of pith (the central portion of woody stem) and a possible barley grain (identified by Jacqui Watson and Dominique de Moulins).

Three fragments of iron sheet (ON 57006) presumably once associated, but of uncertain form, came from an upper fill (50061) of well 50060 (Fig. 66). One fragment has a perforation, presumably for attachment.

Slag and Other Metalworking Debris, by David Starley

The entire assemblage examined totalled *c.* 1.1 kg with small additional quantities of fired clay/burnt daub which were concentrated in the same area as the slag (Fig. 82, Table 51). All slag was examined visually, classified and weighed. One fragment was examined by X-ray fluorescence (XRF) analysis. The majority of the material is from contexts of Iron Age date and the small quantity of fuel ash slag from a single Romano-British feature (50047) may well be redeposited.

Material diagnostic of the high-temperature working of iron was found as smithing hearth bottoms. These are recognisable by their characteristic plano-convex form, having a rough underside and a smoother, vitrified upper surface often hollowed as a result of downwards pressure from the air blast of the *tuyère* (a component of a furnace or hearth through which air is forced to increase the temperature). Compositionally, hearth bottoms are largely fayalitic (iron silicate) and result from high-temperature reactions between the iron, iron scale and silica from either the sand used as flux or from the hearth lining.

In addition to bulk slags, iron smithing also produces micro-slags of two types. Flake hammerscale consists of fishscale-like fragments of the oxide/silicate skin of the iron dislodged during working. Spheroidal hammerscale results from the solidification of small droplets of liquid slag expelled during working,

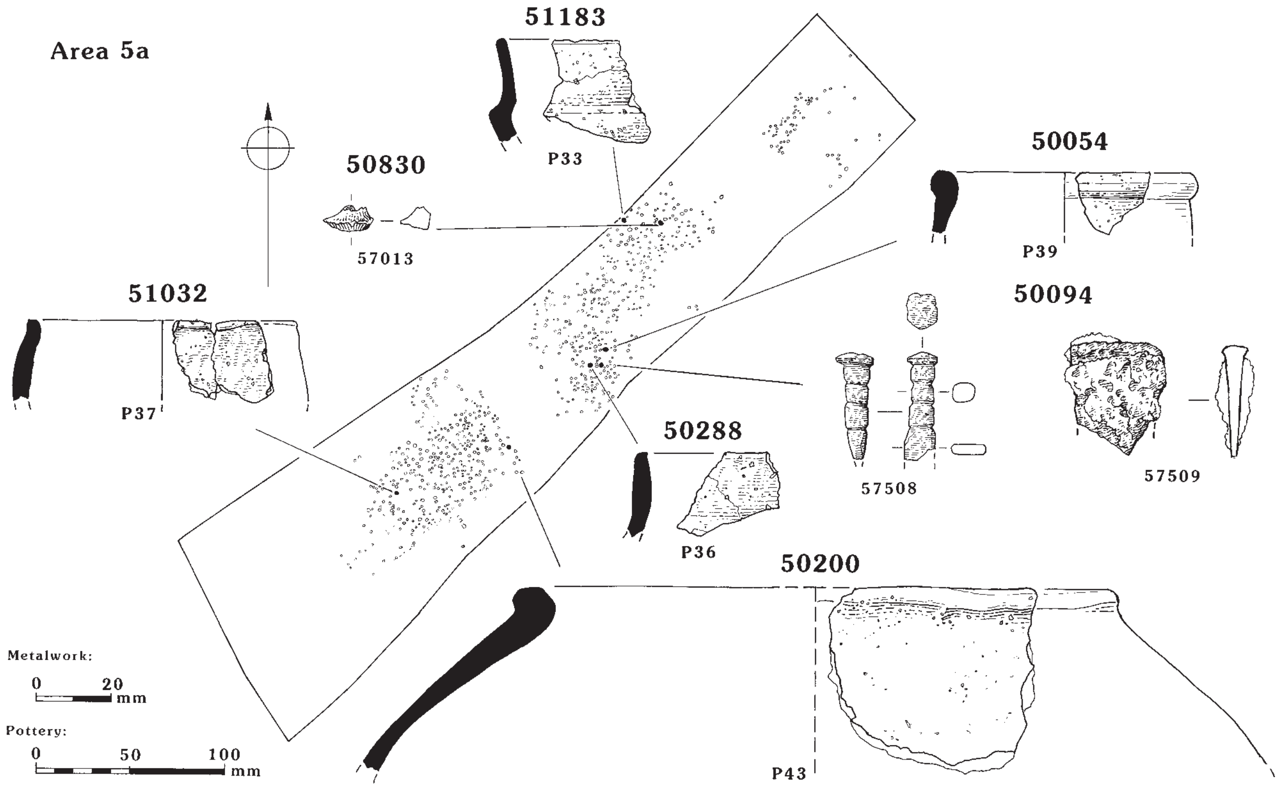


Figure 80 Area 5a: Iron Age finds from pits and postholes

Table 51 Area 5, summary of metalworking debris

Feature	*Date*	*Weight (g)*	*Interpretation*	*Comments*
50045	Undated	11	cinder	
50054	Iron Age	14	vitrified hearth lining	black glaze
50117	Iron Age	36	smithing hearth bottom	very small (45 × 40 × 20 mm)
50169	Iron Age	6	fuel ash slag	
50231	Iron Age	3	undiagnostic ironworking slag	
50358	Late Iron Age	23	plate *tuyère* fragment	'liverish' red colouration. XRF analysis revealed traces of copper on vitrified surface
51344	Iron Age	981	smithing hearth bottom	stacked, double (110 × 90 × 70 mm)
51344	Iron Age	40	undiagnostic ironworking slag	
51344	Iron Age	<1	flake hammerscale	
50047	Romano-British	12	fuel ash slag	
Total		**1127**		

particularly when two components are being fire welded together or when a slag-rich bloom of iron is first worked into a billet or bar. Hammerscale is considered important in interpreting a site not only because it is highly diagnostic of smithing but, since it is often allowed to build up in the immediate vicinity of the smithing hearth and anvil, it may give a more precise location of the activity than the bulk slags which may be disposed of elsewhere. During visual examination of the slags, small quantities of flake hammerscale were identified in the soil attached to unwashed slag from hollow 51344. This is noted in Table 51 although the amount present was too small to justify quantification. The piece of forge waste (ON 57509) (Fig. 80, ON 57509) may be associated with this activity.

A small proportion of the assemblage was identified as undiagnostic ironworking slag. This material is of largely fayalitic (iron silicate) composition, is relatively dense, having low to medium vesicularity, and of amorphous form. However, as similar material can originate from either iron smithing (hot working) or iron smelting (extraction of metal from ore) it cannot help to distinguish the nature of the ironworking activity on site.

The fragment of vitrified hearth/furnace lining might derive from structures built either for iron smelting, iron smithing or non-ferrous alloy melting/working. The material forms as a result of a high-temperature reaction between the clay lining of the hearth/furnace and the alkali fuel ashes or fayalitic slag. The material shows a compositional gradient from unmodified clay on one surface to a black glassy material on the other. An associated material, classed as cinder, comprises a porous, hard and brittle slag. It was formed as a result of high temperature reactions between the alkali fuel ashes and either fragments of clay that had spalled away from the hearth/furnace lining or another source of silica, such as the sand used as a flux during smithing.

A *tuyère* may exist in a number of forms and materials, of which the best known is a pre-fired, pierced, clay 'block *tuyère*'. However, the fragment from pit 50358 is of a type referred to as a 'plate *tuyère*'. This is simply a clay patch applied around the air inlet on the inside of the hearth or furnace, at the point that the heat is most intense and the clay lining is most rapidly attacked. The fabric of these resembles vitrified hearth lining, with a gradient from fired clay to vitrified/cindery mass, but the smooth edges of the air hole are visible.

Semi-quantitative X-ray fluorescence analysis of the vitrified surface of the plate *tuyère* fragment confirmed the presence of iron and manganese as contaminants or as part of the fabric, along with calcium and potassium. More importantly, a weak response was also given for copper, which would have been the element responsible for the 'liverish' red colouration, and an indicator of the high-temperature working of copper alloys on the site.

Small amounts of material were classified as fuel ash slag, a very lightweight, light coloured (grey-brown), highly porous material which can result from the reaction between alkaline fuel ash and silicates from soil, sand or clay at elevated temperatures. The reaction is shared by many pyrotechnological processes and the slag is not diagnostic. However, it would seem likely that much of the fuel ash slag is the product of fiercely heated daub, for which other, less thoroughly fired, fragments have been identified as burnt daub. No metalworking debris diagnostic of iron smelting was found.

Conclusions

The metalworking slag assemblage is very small and this limits the extent of any interpretation that can be placed upon it. Many of the slags were of undiagnostic type, but a few were sufficiently characteristic to be certain that they derived from two processes: the smithing (i.e. hot working) of iron, and the heating in some form of hearth or furnace of copper alloys. It is not possible to be more specific about the composition of any alloys. It is of course possible that a single hearth was used for both activities. However, examination of the finds distribution shows that the *tuyère* fragment was found at some distance from the main concentration of metalworking debris (Fig. 82). It must be emphasised that such small quantities of material could derive from the briefest occurrence of such crafts.

The Pottery, by Lorraine Mepham

Iron Age pottery recovered from stratified contexts within Area 5 totalled 1039 sherds (9573g). Unstratified material is not considered further here though material from the surface of unexcavated features has been noted above.

Methods

The methods adopted for the analysis of this assemblage are as set out for the early prehistoric pottery (p. 103). Fabric types were defined on the basis of the range and size of macroscopic inclusions; 18 types were thus defined, using a binocular microscope (×20 magnification). These 18 fabric types fall into three broad fabric groups, based on the dominant inclusion type: Group F (flint-tempered/flint-gritted fabrics); Group G (grog-tempered fabrics); and Group Q (sandy fabrics). Fabrics were alpha-numerically coded within the overall system for all Westhampnett sites, combining the fabric group letter with a chronologically significant number (1–99 for prehistoric fabrics). Overall fabric totals for Area 5 are given in Table 52. Type series were created for rim and base sherds, which were related to vessel form where possible, and for decorative motifs. Full details of pottery by context can be found in the archive.

Fabrics

For the purposes of discussion, the fabrics are discussed within the broad fabric groupings based on dominant inclusion type, as described above. In the fabric descriptions that follow, and throughout this report, the following terms are used to define the frequency of inclusions: rare (1–3%); sparse (3–10%); moderate (10–20%); common (20–30%).

There is no reason to suggest anything other than local manufacture for any of the fabrics described here, although the non-distinctive nature and corresponding wide availability of the inclusion types represented means that any attempt to pinpoint sources is unfeasible, particularly given the complex geological sequence in the immediate vicinity of Westhampnett (Chapter 2 above). Suitable potting clays would have been accessible locally, where the Woolwich and Reading beds outcrop. Clays from the Gault and Wealden deposits would have been available slightly further away, to the north of the Downs.

Table 52 Area 5, Iron Age pottery fabric totals

Fabric type	*No. of sherds*	*Weight (g)*	*% of total*
Flint-tempered/flint-gritted fabrics			
F1	105	669	
F2	283	1390	
F3	366	2005	
F4	112	2591	
F9	25	216	
F10	9	63	
Total	900	6934	72.4
Grog-tempered fabrics			
G2	1	2	
G3	8	62	
G4	13	36	
G5	2	7	
Total	24	107	1.1
Sandy fabrics			
Q5	15	91	
Q6	18	160	
Q9	82	2281	
Total	115	2532	26.5
Overall Total	**1039**	**9573g**	

Flint-gritted and flint-tempered fabrics

Six fabric types were defined, and are described below. The term 'flint-tempered' is used here to mean fabrics to which flint has been deliberately added as a filler, while 'flint-gritted' refers to fabrics in which flint is a naturally occurring inclusion. With the exception of F10, in which the flint is so fine and sparse as to appear accidental, all these fabrics may be considered 'flint-tempered'.

F1 Soft, moderately fine, slightly micaceous matrix; sparse, very poorly sorted, subangular flint <4 mm; rare iron oxides <1 mm; handmade; irregularly fired.

F2 Soft, moderately coarse, slightly micaceous matrix; moderate, fairly well-sorted, subangular flint <1.5 mm; rare iron oxides <2 mm; handmade; generally unoxidised but with some patchy oxidisation.

F3 Soft, moderately fine, micaceous matrix; sparse to moderate, poorly sorted, subangular flint <2 mm; rare carbonaceous material <2 mm; sparse iron oxides <2 mm; handmade; surfaces often roughly wiped; irregularly fired.

F4 Soft, moderately fine, slightly micaceous matrix; moderate to common, fairly poorly sorted, subangular flint <2 mm; sparse iron oxides <1 mm; handmade; irregularly fired, but generally unoxidised with oxidised surfaces.

F9 Soft, moderately fine, slightly micaceous matrix; sparse, very poorly sorted, subangular flint <5 mm; sparse to moderate carbonaceous material <5 mm; handmade; irregularly fired.

F10 Soft, moderately fine, slightly micaceous matrix with a smooth or powdery feel; sparse, well-sorted, subangular flint <1 mm; sparse carbonaceous material <1 mm; rare iron oxides <1 mm; handmade; unoxidised with oxidised margins.

The flint-tempered/flint-gritted group of fabrics constitutes just over two-thirds of the Iron Age assemblage from Area 5 by weight. With the exception of fabrics F1 and F9, all of these fabrics have also been identified within the Late Iron Age cemetery assemblage from Area 2 (Vol. 2, 119). It does not follow, however, that a direct chronological correlation may be made between the fabrics from the two sites. While the cemetery assemblage is relatively tightly dated within the 1st century BC by both the vessel forms and the metalwork present, it is clear that the assemblage from Area 5 covers a much wider date range, with the flint-tempered fabrics in particular having a long currency. Correlation of fabrics and forms from Area 5 (Table 53) indicates that fabrics F2 and F3 occur in forms of Early-Middle Iron Age type (long-necked bowls: Fig. 80, P33, P36; Fig. 67, P34; P35), Middle Iron Age type ('saucepan' pots: Fig. 80, P39) and Middle–Late Iron Age type (bead-rimmed and 'proto-bead'-rimmed jars: Fig. 80, P37; Fig. 81, P40; large, everted rim storage jars: Fig. 81, P44; shouldered bowls: Fig. 81, P38). Fabric F10 occurs only in Early–Middle Iron Age forms on Area 5 (long-necked bowls), while fabric F4 is confined to Middle-Late Iron Age forms on Area 5 (bead-rimmed jars in a range of sizes: Fig. 65, P41, P42; Fig. 80, P43). It will be argued below that the chronological span of the Area 5 assemblage could in fact have little overlap with that of Area 2, being largely confined to the Middle Iron Age.

Independent dating evidence, in the form of brooches, confirms a Middle Iron Age presence on the site (p. 159), and allows the dating of at least two occurrences of fabric F2 to the 5th/4th century BC (top fill of well 50060, and posthole 50085). Macroscopically, there is no basis for distinction between the examples of the various fabric types identified from Area 2 and Area 5 in terms of the size and sorting of the flint inclusions. It may be noted though, that vessels from Area 2 appear to show an overall higher investment of labour in terms of surface finishing. Given the relatively poor condition of the assemblage from Area 5, with the relative paucity of diagnostic material, the majority of the flint-tempered sherds cannot be closely dated within this wide timespan. A similarly long currency for flint-tempered fabrics was observed at nearby Copse Farm, Oving, where both 'saucepan' pottery and 'Aylesford-Swarling' copies occurred in the same fabrics (Hamilton 1985, fabrics 1 and 2).

In an attempt to resolve this problem at least partially, a limited programme of petrological analysis was undertaken. Samples were taken of flint-tempered fabrics F2 and F4 and compared with samples of the same fabrics from Area 2. While the flint inclusions are sufficiently non-distinctive to make sourcing unviable, it was hoped that comparison of the clay matrices between the two areas might confirm whether the

Table 53 Area 5, Iron Age vessel forms by fabric

	F1	*F2*	*F3*	*F4*	*F10*	*Q6*	*Q9*	*Total*
Long-necked bowl	–	3	1	–	2	–	–	6
Saucepan pot	–	1	–	–	–	–	–	1
Shouldered bowl	–	1	–	–	–	–	–	1
Bead-rim jar	1	2	1	2	–	–	–	6
Large storage jar	–	–	1	3	–	–	1	5
Cordoned jar	–	–	–	–	–	1	–	1
Total	**1**	**7**	**3**	**5**	**2**	**1**	**1**	**20**

same, or different, clay sources, were exploited in the two respective areas. The sample of fabric F2 from Area 5 came from a context dated by a La Tène IBx brooch to the late 5th/early to mid 4th century BC (top fill of well 50060), and the sample of fabric F4 from a bead-rimmed jar from the fill of Romano-British ditch 50033. Dr David Williams (University of Southampton), whose full report is held in archive, carried out the petrological analysis. His conclusions were that the two samples from Area 5 could be distinguished microscopically from the Area 2 samples. The sample of fabric F2 from the well 50060, although showing general similarities with the sample from Area 2, appears somewhat coarser. The sample of F4 from ditch 50033, however, is particularly distinctive in thin section as it has a very clean, fine-grained clay matrix not seen in the other Westhampnett samples submitted.

Grog-tempered fabrics

Four grog-tempered fabrics were defined, as follows:

G2 Hard, moderately fine matrix with a slightly soapy feel; sparse, poorly sorted grog <1 mm; moderate, fairly well-sorted subrounded quartz <0.5 mm; possibly wheelmade; unoxidised.

G3 Hard, fine silty matrix with a very soapy feel; moderate, poorly sorted grog <1 mm; handmade; oxidised with unoxidised exterior.

G4 Soft, moderately coarse-textured matrix; moderate, fairly well-sorted grog <1 mm; sparse, fairly well-sorted quartz <0.5 mm; rare iron oxides <1.5 mm; handmade; unoxidised with oxidised surfaces.

G5 Soft, moderately fine, slightly micaceous matrix with a slightly soapy feel; moderate, well-sorted grog <0.5 mm; moderate carbonaceous material <2 mm; rare iron oxides <0.5 mm; handmade; unoxidised with oxidised margins.

Grog-tempered fabrics are not common amongst the Iron Age assemblage, making up just over 1% of the whole assemblage by weight. There is one correlation in this group of fabrics with the Late Iron Age cemetery assemblage from Area 2: fabric G5 occurs on both sites. While a Late Iron Age date may seem most likely for all of these grog-tempered fabrics, there is no diagnostic material to confirm such a date and grog-tempering is suggested to occur in Middle Iron Age forms at neighbouring sites (Hamilton 1986, 43).

Sandy fabrics

Three sandy fabrics were defined, ranging from moderately coarse to moderately fine.

Q5 Hard, moderately fine matrix; common, poorly sorted, subrounded quartz <0.5 mm; handmade; unoxidised with oxidised margins.

Q6 Hard, moderately fine matrix; common, fairly well-sorted, subrounded quartz <0.5 mm; rare subangular flint <1 mm; handmade; unoxidised dark grey/black.

Q9 Hard, moderately coarse matrix; common, fairly well-sorted, subrounded quartz <0.5 mm; sparse, poorly sorted subangular flint <5 mm; rare subrounded flint <5 mm; rare carbonaceous material <2 mm; rare iron oxides <1 mm; handmade; unoxidised, sometimes with oxidised margins.

The group of sandy fabrics makes up just over one-quarter of the Iron Age assemblage by weight. There is some correlation with the Late Iron Age cemetery assemblage from Area 2 in the form of fabric Q5. Diagnostic sherds are scarce, and only two rims in sandy fabrics could be assigned to vessel form: one large storage jar of Early–Middle Iron Age type, in fabric Q9 (Fig. 67, P45), and a cordoned jar rim in fabric Q6, a Late Iron Age form well paralleled in the Area 2 cemetery (Fig. 81, P46). All fabrics are handmade.

Vessel Forms

A detailed analysis of the vessel forms present was hampered by the scarcity of diagnostic material. Only 20 rim sherds that were attributable to type were recovered, and from these seven vessel forms were defined.

1. Large storage jar with upright neck and flattened rim. Single example, handmade in flint-tempered fabric (Fig. 67, P45).
2. Long-necked bowl with sharply pronounced shoulder and simple flaring rim. Handmade in flint-gritted fabrics (Fig. 80, P33, P36; Fig. 67, P34, P35).
3. Possible saucepan pot, straight-sided with thickened, beaded rim, grooved below rim. Handmade in flint-gritted fabric (Fig. 80, P39).
4. Shouldered bowl with pronounced body wall angle and simple everted rim. One example has shallow-

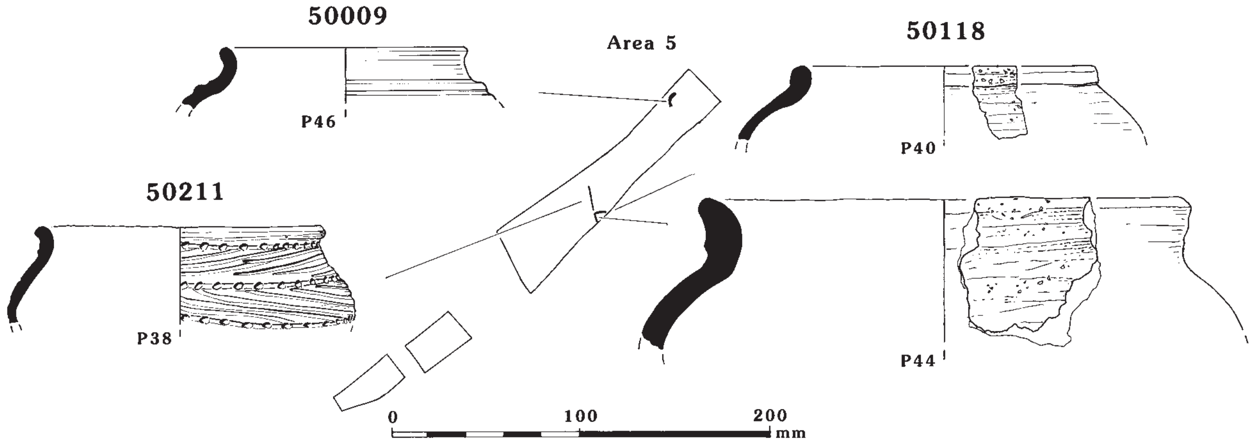


Figure 81 Area 5a: Iron Age pottery from later linear features

tooled decoration on the shoulder. Handmade in moderately coarse flint-gritted fabrics (Fig. 81, P38).

5. Small or medium-sized bead rim jar or bowl with ovoid or rounded body profile. Handmade in flint-gritted fabrics (Fig. 80, P37; Fig. 81, P40; Fig. 65, P42).
6. Large, thick-walled storage jar, with beaded or simple upright or slightly everted rim. Handmade in coarse, flint-tempered and sandy fabrics (Fig. 65, P41; Fig. 80, P43; Fig. 81, P44).
7. High-shouldered jar or bowl, necked and cordoned, with simple everted rim. Single example, handmade in sandy fabric (Fig. 81, P46).

This small range of vessel forms includes types that fall within a broad date range of Early to Late Iron Age. The earliest element comprises the long-necked bowls with pronounced shoulders and flared rims (Type 2). This is a type well documented among Early–Middle Iron Age assemblages within the Park Brow–Caesar's Camp group of south-east England as defined by Cunliffe (1991a, fig. A:8). This group has a date range from the 6th to the 4th century (*ibid.*, 72) and the bowls from Westhampnett, paralleled for example at the type site, Park Brow (Hawley 1927) and at Chalton, Hampshire (Cunliffe 1976, 37–45, fig. 31) would appear to fall within the latter part of this range. The high-shouldered jar with a simple everted rim (Type 1) is contemporary but other coarseware components of this group, which on other sites consist of round-shouldered jars with occasional finger impressions on rims and shoulders (*ibid.*) have not been definitively identified on Area 5. This may be because it is difficult to distinguish between these vessels and similar forms associated with 'saucepan' pottery (Cunliffe 1991a, fig. A:14, 5).

The 'saucepan' pot (Type 3) and the shouldered bowl (Type 4) represent a slightly later ceramic development, part of a tradition found over a wide area of southern Britain with a marked degree of uniformity from the 4th century BC to perhaps as late as the 1st century BC. Typical of this tradition is a growing refinement of clay preparation, and a corresponding standardisation of vessel form and size. Westhampnett falls within the area covered by the 'Caburn-Cissbury style' (Cunliffe 1991a, fig. A:14) although, as Hamilton has pointed out (1985, 225), several sites in West Sussex have produced 'saucepan' pots which appear to have closer affinities with the 'St Catherine's Hill–Worthy Down style' (Cunliffe 1991a; fig. A:15). The 'saucepan' pot material from the nearby site of Copse Farm, Oving (enclosure B), including both 'saucepans' and bowls with shoulder decoration, would seem to fall within the latter group (Hamilton 1985, 225, fig. 5–7), as would the Westhampnett bowls, with very similar tooled decoration (Fig. 81, P38). Material from Carne's Seat, Goodwood, 3 km to the north, and The Trundle could also fall within this style though it also shares characteristics with the more easterly Caburn–Cissbury style (Hamilton 1986, 43). It is interesting to note here, however, the presence within the Late Iron Age cemetery in Area 2 of shouldered bowls with tooled decoration in an assemblage which has a fairly restricted date range within the 1st century BC; the most complete example from Area 5 (Fig. 81, P38) can be very closely paralleled here (Vol. 2, fig. 75, grave 20148, ON 27095). As this vessel comes from the only linear feature of Iron Age date in Area 5 (50211), it may be one of the latest Iron Age features on the site.

The vessels of Types 5 (bead-rimmed jars and bowls) and 6 (large storage jars) could potentially span the Middle to Late Iron Age. The bead-rimmed forms certainly occur within the Area 2 cemetery assemblage, but equally would not be out of place within the 'saucepan' pot continuum, finding parallels within assemblages such as Torberry and Chalton site 15 (Cunliffe 1976, figs 19–20 and 34–8). At Torberry, Cunliffe suggested that the larger bead-rimmed storage jars (comparable to Type 6) might be diagnostic of a slightly later phase in the saucepan pot continuum (*ibid.*, 24). The cordoned vessel (Type 6) is therefore the only form that can be definitively assigned to the Late Iron Age.

Table 54 Area 5, Iron Age pottery from Iron Age features (by number/weight in grams)

Feature	*F1*	*F2*	*F3*	*F4*	*F9*	*F10*	*G2*	*G5*	*Q5*	*Q6*	*Q9*
Well 50060	5/58	56/430	19/156	2/42	2/40	2/28					76/2235
Circular str. 51922		3/5									
Rect. str. 50030	3/13	1/2	4/43		1/10						
Rect. str. 50542		41/142									
Rect. str. 50942			1/25		2/19						
Rect. str 51788	3/11		6/20	3/27							
Hollow way 50432	6/20	12/33	25/78							2/4	
Hollow 50458	4/99	3/10									1/9
Ditch 52001		1/4									
Ditch 52033			2/6								
50054		2/18	1/3						1/2		
50073		3/5									
50085		4/8	7/36								
50091	7/38	3/25									
50094	3/20	11/20	11/102						1/1		
50096		2/5									
50115		1/2									
50133		2/3	4/4								
50135		4/4									
50137	1/4	1/6									
50145	1/15										
50149		2/12									
50159		1/2									
50161	7/43		1/3								
50166	6/14		4/7			1/1					
50168			2/10								
50171					1/12						
50182	1/2	1/1									
50186		2/1									
50188			1/1								
50192			3/4								
50194	1/7	2/5									
50200		2/6		11/536							
50230			2/13		1/3						
50232		1/3									
50234		4/5									1/7
50242		1/2									1/9
50250				1/8							
50252		1/2									
50254						1/2					
50259	1/4										
50276			1/5								
50288	1/5	1/2	2/24								
50292	6/12										
50298			1/6								
50307				2/12							
50311		1/7	1/5			1/1					
50333					1/3						
50356			1/2								
50358		2/13	2/9	21/548							
50370	1/3										
50372		3/14									
50376		1/3									
50403		1/5									
50427						1/8					
50433		2/19									
50435	3/26	1/2	2/6		1/7						
50446											
50448			2/3								
50450	1/6										
50454			1/4								

Table 54 ***(cont'd)***

Feature	*F1*	*F2*	*F3*	*F4*	*F9*	*F10*	*G2*	*G5*	*Q5*	*Q6*	*Q9*
50459	1/7										1/6
50480									1/3		
50484			1/3								
50492				6/83							
50498		3/16									
50502		2/19									
50517			2/3								
50532			3/5								
50534		1/3									
50558		3/6	1/3								
50559	1/1										
50584		1/3		1/8							
50616		1/4									
50648		2/2									
50654		1/3									
50660		2/1									
50662		1/32									
50666			3/14								
50670			5/26								
50714				1/4							
50732			2/5								
50740			2/6								
50770			1/1								
50772		1/4									
50810	1/3										
50818			1/3								
50921	1/1										
50923										1/1	
50927			1/6								
50950			2/16								
50970			1/6								
50984		2/2									
50992		1/2	1/3								
51001	1/4	1/5	10/30								
51003		2/4	2/9								
51023			13/95								
51032			44/300								
51041			2/4								
51067		1/1									
51089		1/1									
51123		1/3									
51151		1/3									
51153		5/5									
51155		3/2									
51183			21/128								
51203	1/3	6/27									
51205		1/3		1/2							
51290								1/5			
51303			1/5								
51307			1/3								
51309		2/6									
51311				10/248							
51339		1/14									
51342			1/23								
51344	2/8			2/6			1/2				
51373	1/5		1/4								
51393											
51452			5/22								
51460		3/8									
51472		2/7									
51476		1/1									

Table 54 ***(cont'd)***

Feature	*F1*	*F2*	*F3*	*F4*	*F9*	*F10*	*G2*	*G5*	*Q5*	*Q6*	*Q9*
51478	1/2										
51482			1/3			1/6					
51486		1/3									
51494			1/4								
51520			3/15								
51610			1/1		1/3						
51755		1/3									
Gully 50211		37/236	14/84			1/5					
Total	70/434	271/1257	253/1405	61/1524	10/97	8/51	1/2	1/5	3/6	3/5	80/2266

A similar overlap between the 'saucepan' pot tradition of the Middle Iron Age and types characteristic of the Late Iron Age has been observed at several sites in the area, most notably at Copse Farm (Hamilton 1985), but also at North Bersted, 7 km to the south (Morris 1978) and Carne's Seat (Hamilton 1986). Other local sites are mentioned in the discussion of the Late Iron Age cemetery vessels from Area 2 (Vol. 2, 130–3). In nearly all of these sites, however, the Late Iron Age elements include 'Aylesford-Swarling' types, found in abundance in the Area 2 cemetery but notably lacking from the Area 5 assemblage. The significance of this is discussed further below.

Distribution on Site

Within Area 5, pottery was recovered from one or two ditches and gullies, a hollow way, a beam-built building, and a well, but largely from the multitude of postholes and pits (Table 54). There is little vertical stratigraphy, except in the case of the well, so the possibilities of constructing any sort of ceramic sequence for the site on the basis of stratigraphic information is extremely limited. The emphasis has therefore been on identifying any discernible patterning within the horizontal distribution of pottery. As mentioned above, diagnostic material is extremely scanty, and the apparently long currency of the flint-tempered fabrics in particular means that few features can be dated closely within the general Iron Age date range of the site. Pottery from the few features that did produce datable material is discussed below.

Well 50060

The well produced a relatively large group of pottery, which derived from a series of contexts within the upper fills (the well was not completely excavated; Fig. 66). With the exception of sherds of what appears to be a single vessel in fabric Q9, all the pottery consists of flint-tempered/flint-gritted fabrics. The vertical stratigraphy within the well offered almost the sole opportunity to view any indication of ceramic development through time. The lowest excavated context (50283) contained only two small body sherds in fabric F3. Higher in the sequence, context 50062 produced sherds in fabrics F1 and F2, including the rim from a long-necked bowl (Fig. 67, P34). Overlying contexts contained a wider range of fabrics: F1–F4 and F9 from Context 50038, and F2, F3 and Q9 from 50053, the latter context including the rim from a long-necked bowl (Fig. 67, P35). Uppermost layers (50061/50024) contained flint-tempered/flint-gritted sherds (F1, F2, F3, F9 and F10), including another long-necked bowl, as well as a single large storage jar (Fig. 67, P45). A copper alloy brooch dated to the 5th/4th century BC also came from 50061.

Posthole 50054

The four sherds from this feature included a rim from a probable 'saucepan' pot in fabric F2 (Fig. 80, P39).

Pit 50161

This feature produced seven sherds in fabric F1, including the rim from a small bead-rimmed jar, and one sherd in fabric F3.

Pit/posthole 50200

Apart from two sherds in Fabric F2, all sherds from this feature were in fabric F4 and all probably derive from the same vessel, a large, thick-walled, bead-rimmed storage jar (Fig. 80, P43), very similar to the vessels from pits 50358 and 50492 (see below).

Gully 50211

This feature produced a total of 53 sherds, 14 in fabric F3, two in Fabric F10 and the remainder in fabric F2, the latter probably all deriving from the same vessel, a biconical bowl with tooled decoration on the shoulder (Fig. 81, P38). The chronological implications of this vessel form and its context are discussed above.

Pit/posthole 50288

This feature produced four sherds, including the rim from a long-necked bowl in fabric F3.

Pit 50358
All sherds from this pit were in the flint-tempered fabrics F2, F3 and F4, including sherds from a large, thick-walled, bead-rimmed storage jar in fabric F4 (Fig. 65, P41), and a smaller bead-rimmed jar in the same fabric (Fig. 65, P42).

Posthole 50492
Sherds from this feature, all in fabric F4, again probably all represent the same vessel, a large storage jar similar in form to those recovered from pit/posthole 50200 and pit 50358. No definite joining sherds were identified between any of these features. While this feature is relatively close to posthole 50200 (*c.* 7.5 m), and the sherds from the two features could conceivably belong to the same vessel, pit 50358 is located nearly 30m to the south-west.

Posthole 51032
All sherds from this feature are in fabric F3, including the rim from a jar or bowl with upright rim (Fig. 80, P37).

Discussion

Presenting a coherent and meaningful consideration of a relatively small assemblage with a potentially wide timespan (1039 sherds potentially covering up to six centuries) is not easy, particularly given the generally poor condition of the assemblage and the paucity of diagnostic material, not to mention the lack of vertical stratigraphy. The whole assemblage appears to have resulted from fairly sporadic, low-level activity on a relatively low-status site, such as might be expected on the limits of a small farmstead. There is, however, sufficient evidence, both from other sites within the Westhampnett complex, and other sites in the area, for this assemblage to be placed at least within its local context, and the framework exists to enable some discussion at a regional level.

The assemblage from Area 5, then, has a ceramic sequence that runs from the Early–Middle Iron Age through to the Late Iron Age and beyond. The earliest element comprises the long-necked, shouldered bowls in flint-tempered fabrics and the large, high-shouldered jar with a simple everted rim which fall within Cunliffe's Park Brow–Caesar's Camp group, dated between the 6th and 4th centuries BC (1991a, 72 and fig. A:8).

The use of flint-tempered fabrics continues into the Middle Iron Age with the appearance of 'saucepan' pottery, a tradition which is dated from the 4th to the 1st century BC in southern England (*ibid.*, 80–81). This part of the assemblage is contemporary with the earliest part of the ceramic sequence at the nearby site at Copse Farm, Oving, which was dated there to the late 2nd/early 1st century BC (Hamilton 1985) and with the Phase 3 assemblage at North Bersted (Bedwin and Pitts 1978, 336–9). Saucepan pottery is also present at the nearby sites of Carne's Seat, Goodwood (Hamilton 1986, 43), Copse Farm, Oving enclosure E (Bedwin and Holgate 1985, 236), and The Trundle (Curwen 1929; 1931).

Shouldered and rounded jars/bowls, which accompany 'saucepan' pots on other sites, are also present, although the direct parallel of one such vessel with shallow-tooled decoration on the shoulder with vessels from the Late Iron Age cemetery in Area 2 may be noted. In this period Westhampnett, in common with other sites in West Sussex, including Copse Farm, has more affinities with the ceramic developments of the 'St Catherine's Hill–Worthy Down style' to the west, in Hampshire (Cunliffe 1991a, fig. A:15), than with assemblages further to the east.

A Late Iron Age aspect of the assemblage is less easy to pin down. Only one vessel form, the cordoned jar, can be definitively dated to this period, although some of the forms from the 'saucepan' pot tradition (the shouldered and rounded jars/bowls) have a potential lifespan extending into the 1st century BC. As noted above, bead-rimmed and cordoned jars and bowls are frequent within the assemblage from the cemetery in Area 2, which is relatively tightly dated to the period 100–40 BC, with a preferred range of 90–50 BC, but there is no conclusive evidence to suggest that the two assemblages are in fact contemporary. Fabric types are broadly comparable (although apparently distinctive microscopically), but this is not significant given the demonstrably long currency for flint-tempered fabrics on Area 5 and at Copse Farm. The Copse Farm assemblage, in fact, appears to correlate more closely with the assemblage from Area 2 than with Area 5, containing as it does a significant proportion of 'Aylesford-Swarling' type wheelthrown vessels and imitations thereof (Hamilton 1985, 225), forms which are apparently absent from Area 5.

The relative scarcity of grog-tempered fabrics on Area 5, so common within the cemetery assemblage, may also be chronologically significant here, although it may be dangerous to rely too heavily on comparisons with the cemetery assemblage for dating purposes. The very different nature of the latter assemblage to other apparently contemporary domestic assemblages in the area, such as Copse Farm and North Bersted, has been discussed (Vol. 2, 132–3), including the emphasis on grog-tempered fabrics, which are scarce on all the comparative sites. It is clear that the cemetery vessels were carefully selected, if not specifically manufactured for burial, and that grog-tempered fabrics may have been favoured for their particular properties, i.e. their suitability for the forming of the elegant, high-shouldered jars and bowls which dominate the cemetery assemblage, and the relative ease with which they may be burnished and decorated to a high-quality finish.

On balance, however, the absence of 'Aylesford–Swarling' type vessels seems likely to be chronological, suggesting that activity at the settlement ceased in or before the 1st century BC, recommencing within the Romano-British period.

List of illustrated vessels

P33 Flaring-necked bowl, fabric F2. PRN 1019, context 51184, posthole 51183. Fig. 80.
P34 Flaring-necked bowl, fabric F2. PRN 734, context 50062, well 50060. Fig. 67.
P35 Flaring-necked bowl, fabric F2. PRN 719, context 50053, well 50060. Fig. 67.
P36 Rim from jar or bowl, fabric F3. PRN 867, context 50289, pit/posthole 50288. Fig. 80.
P37 Rim from jar or bowl, fabric F3. PRN 1010, context 51033, posthole 51032. Fig. 80.
P38 Shouldered bowl, fabric F2; shallow-tooled decoration on shoulder. PRN 833, context 50213, gully 50211. Fig. 81.
P39 Rim from ?'saucepan' pot, fabric F2. PRN 723, context 50055, posthole 50054. Fig. 80
P40 Bead-rimmed jar or bowl, fabric F2. PRN 819, context 50181, Romano-British ditch 50118 (which cut Iron Age gully 50211). Fig. 81.
P41 Large, bead-rimmed jar, fabric F4. PRN 913, context 50359, pit 50358. Fig. 65.
P42 Bead-rimmed jar with tooling below rim, fabric F4. PRN 912, context 50359, pit 50358. Fig. 65.
P43 Large, bead-rimmed jar, fabric F4. PRN 962, context 50545, pit/posthole 50200. Fig. 80.
P44 Large, everted rim jar, fabric F3. PRN 877, context 50318, Romano-British ditch 50118 (which cut Iron Age gully 50211). Fig. 81.
P45 Large, bead-rimmed jar, fabric Q9. PRN 666, context 50024, well 50060. Fig. 65.
P46 Cordoned jar, fabric Q6. PRN 641, context 50012, post-medieval ditch 50009. Fig. 81.

Fired Clay, by H.F. Beamish

A moderate quantity of fired clay (81 fragments; 548 g) was recovered (Table 55). It consists mainly of small featureless fragments, probably of structural origin either from standing structures or from hearth or pit linings. It is likely (p. 162) that some of the small quantity of fuel ash slag is actually fiercely heated daub. Two fragments of fired clay have surfaces and three have one or two possible wattle marks. In addition, one complete ceramic spindlewhorl in a coarse, flint-gritted fabric was recovered from an upper fill of the well 50060 (ON 57510, Fig. 67).

Apart from the spindlewhorl, the fired clay derived from eighteen separate features, all pits or postholes. Twelve of these features clustered in the centre of Area 5a (Fig. 82), a pattern also observed for the Romano-British features containing fired clay, in which the material may be redeposited, and this coincides with the low density concentration of metalworking debris. Only two of the postholes (50103 and 50164) were part of a recognisable structure, both from rectangular structure 50330. Quantities of fired clay within each feature were small; only one (posthole 50540, at the east end of trench 50542, associated with building 50563) produced more than 100 g.

Illustrated object (Fig. 67)

1. ON 57510, context 50062. Spherical spindlewhorl; flint-gritted with iron oxides.

Table 55 Area 5, fired clay from features of Iron Age date

Feature	*Description*	*No.*	*Weight (g)*	*Comments*
50054	posthole	1	13	
50060	well	1	24	spindlewhorl
50085	posthole	8	51	
50091	posthole	1	1	
50103	posthole	1	3	rectangular structure 50330
50164	posthole	13	36	2 wattle marks, rectangular structure 50330
50166	posthole	8	44	1 surface
50168	posthole	1	2	
50194	posthole	1	7	
50200	pit/posthole	10	47	
50230	posthole	3	26	
50252	pit	5	52	
50358	pit	1	23	
50427	posthole	2	3	
50540	posthole	13	111	posthole at east end of trench 50542
50660	pit/posthole	1	64	1 surface
50662	posthole	4	8	1 wattle mark
50670	pit/posthole	2	10	
51023	pit/posthole	2	2	
51089	pit/posthole	3	21	2 wattle marks
Total		**81**	**548**	

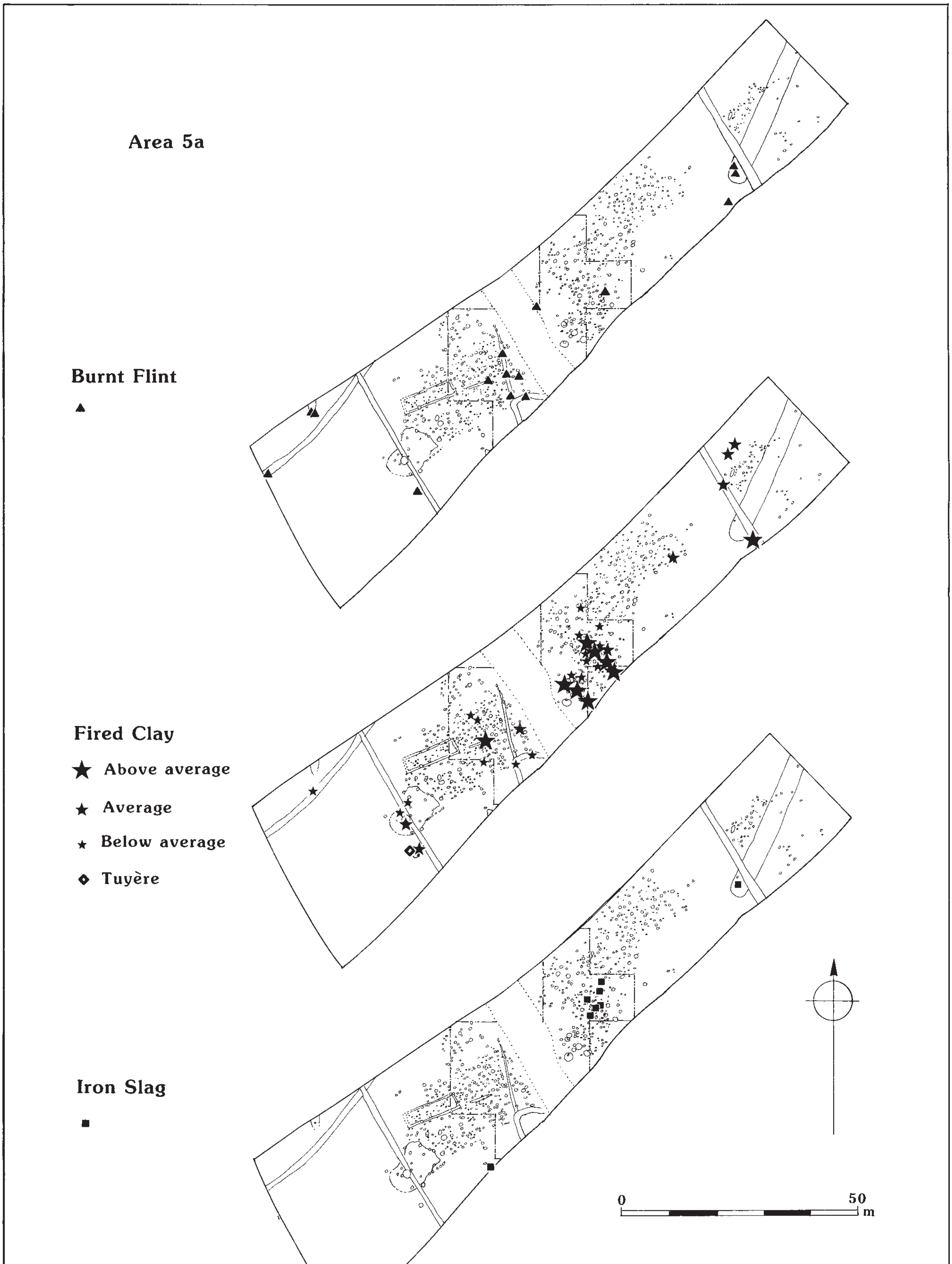


Figure 82 Area 5a: distributions of burnt flint, fired clay and iron slag

Worked Stone, by H.F. Beamish

Querns

Fourteen fragments of quern were recovered, all of a Greensand comparable to examples of Lodsworth stone from the quarry, some 17 km north of Westhampnett (Peacock 1987). There are no complete stones; fragments are in general small and few could be identified to type. Two unidentified fragments came from pits 50358 and 51003, but all the other fragments, including two definitely from rotary querns and one possibly from a saddle quern, were found during initial cleaning of the site. As the vast majority of the datable contexts in Area 5a are Iron Age, the unstratified fragments have been ascribed to the Iron Age but it should be noted that two fragments were found in Romano-British ditch 50001. These could be redeposited, but the Lodsworth quarries continued to be worked during the Romano-British period.

Bead

A single barrel-shaped bead (ON 57010, not illustrated), 11 mm in diameter, manufactured of calcareous material possibly from a fossil, and centrally perforated, was recovered from the lowest excavated fill of the Iron Age well 50060 (context 50283). It is possible that fossil material was selected in deliberate imitation of imported Mediterranean coral.

Burnt Flint, by H.F. Beamish

Burnt flint was recovered from 66 Iron Age features, amounting to a total of 627 pieces (20,333 g). No obvious concentrations were observed (Fig. 82) and only four features (gully 50211, pit 50358, hollow way 50432 and posthole 50540) contained more than 250 g. Posthole 50540 contained the largest quantity at 11,165 g, the others each producing between 1000 g and 2000 g.

Charred Plant Remains, by Pat Hinton

Samples from the well, a slight gully and some postholes included only a few probable emmer, spelt and indeterminate wheat species, with an occasional weed. Although these provide some information about available crops and associated weeds, they probably merely reflect the constant presence of burned material in the area (Table 56). However, four postholes (50041, 50056, 50103 and 50536) and one pit (50094) were particularly rewarding with their large quantities of cereals, chaff, and other seeds. The composition of the samples from these five postholes seems to indicate that quantities of harvested food plants, both cereals and beans (Pl. 23), were stored in the structures these postholes represent (although only posthole 50103 formed part of any recognisable structure: four-post structure 50330; Fig. 74, Pl. 22). These features cannot be dated more closely than to the Middle Iron Age.

Although many of the cereal grains are in a fair state of preservation there are also large numbers of fragmentary and distorted grains and for these the totals have been estimated (see p. 14). Better-preserved grains are recorded by their probable identification and confirmed by some securely identified glume bases, but there are also very many damaged glume bases which, like some of the grains, can only be identified as either emmer or spelt. It is apparent, however, that the dominant cereal is spelt.

A few grains have been compared to *Triticum* cf. *aestivum* s.l (free-threshing wheat) because of their short rounded form and steep radicle depression but these are probably present only as a small proportion. Hulled barley occurs as a minor component, but there is considerable variation between samples. Oats are present in larger numbers than in earlier periods. Among the floret bases in the posthole samples, at least one can be safely identified as *Avena sativa* (cultivated oat) by its characteristic abscisssion scar. *A. fatua* floret bases show that wild oats were also present and must be counted among the weeds. Another crop plant, now represented in larger numbers, is *Vicia faba* (broad or field bean).

The charred remains of the various cereals, the beans and the weed seeds are of course mingled in the samples but it might be presumed that originally cereals and beans would have been stored as separate deposits.

The composition of the samples suggests that emmer and spelt ('glumed wheats') were stored as spikelets. The absence of straw fragments or heavier culm nodes suggests either that the wheats were cut just below the ears at harvesting or that initial processing took place elsewhere, when the straw was removed for other purposes. The cereals would therefore have been awaiting later treatments such as the pounding of the ears to release the grains from the husks. It is at this stage that gentle heat might be used to make the chaff brittle, with consequent risk of fire. Alternatively the charred cereals might be fully prepared grain, with the winnowed waste chaff, tail grain and weeds becoming incorporated in the deposits since the fire, after dispersal from a 'cleanings' store, perhaps nearby. Larger waste items, in this case flower heads of *Tripleurospermum inodorum* (scentless mayweed) and a possible *Centaurea* sp. (knapweed) receptacle or calyx, are of a size to match some grains. These might well be retained in the coarser sieves and would normally be disposed of in the final stages of fine sieving.

The beans also appear to have been prepared and stored ready for use, for consumption or sowing. There is no trace of the pods and stems, which are quite

Table 56 Area 5, charred plant remains from features of Iron Age date

Feature type	*Well*	*Well*	*Gully*	*Pit*	*Pit*	*P'hole*	*P'hole*	*P'hole*	*P'hole*
Feature	*50060*	*50060*	*50211*	*50094*	*50540*	*50041*	*50056*	*50103*	*50356*
Sample no.	*59009*	*59018*	*59019*	*59003*	*59020*	*59001*	*59002*	*59004*	*59016*
Sample volume	*10*	*10*	*10*	*10*	*10*	*10*	*10*	*15*	*10*
Cultivated									
Triticum cf. *dicoccum* – emmer									
grains	–	–	–	2	–	53	–	30	–
glume bases	–	3	1	15	–	182	6	137	3
Triticum dicocccum/spelta – emmer/spelt									
grains	–	2	–	8	–	518*	12	42	56
glume bases	1	–	1	358	–	118	23	995	25
Triticum cf. *spelta* – spelt									
grains	1	–	–	1430*	–	1030*	55	1938*	59*
glume bases	–	–	1	1110*	–	468	68	1160*	17
T. spelta/aestivum – spelt/bread wheat – grains	–	–	–	44	–	–	–	4	–
Triticum cf *aestivum* s.l. – bread wheat – grains	–	–	–	–	–	34	–	4	–
Triticum sp. – indeterminate wheat									
grains and fragments	–	1	3	240*	3	736*	40	1253*	81*
awn frags.	–	–	–	60*	–	–	2	10	40*
Hordeum vulgare L. – hulled barley									
grains	–	–	–	8(1)	–	250*	1	17(1)	–
rachis frags.	–	–	–	11(3)	–	–	–	5	–
Avena sativa – cultivated oats – floret base	–	–	–	–	–	1	–	–	–
A. fatua – wild oats – floret bases	–	–	–	2	–	2	–	1	–
Avena sp. – indeterminate oats									
grains	–	–	–	14	–	40*	1	7(4)	–
awn fragments	–	–	–	35		10	–	11	–
Cerealia indet. – indeterminate cereals – grains and fragments	2	40	30	3250*	10	736*	86*	152*	208*
Vicia faba L. var *minor* – broad/field beans	–	–	–	180*	8	28	335*	28*	16
Arable, waste and grassland									
Chenopodium album L. – fat hen	–	–	1	5	–	4	4(1)	11	–
Chenopodium rubrum/polyspermum – red/many-seeded goosefoot	1	–	–	–	–	–	1(1)	2	–
Stellaria media/neglecta – chickweed	–	–	–	–	1	3	3	1	–
Polygonum maculosa Gray – red shank	–	–	–	–	–	–	1	2	–
P. lapathifolia (L.) Gray – pale persicaria	–	–	–	–	–	1	1	–	–
Fallopia convolvulus (L.) A. Love – black bindweed	–	–	–	–	–	1(1)	–	–	–
Rumex cf. *crispus* – curled dock	–	–	–	1(1)	–	2	14	–	–
Rumex sp. – dock	–	–	–	3	–	2	4	–	–
Malva sylvestris L. – common mallow	–	–	–	–	–	–	–	3	–
Raphanus raphanistrum L. – wild radish – pod section	–	–	–	1	–	–	1	–	–
Vicia hirsuta/tetrasperma – hairy/smooth tare	–	–	–	–	–	3	2	2	–
Vicia tetrasperma (L.) Schreber – smooth tare	–	–	–	18(6)	–	2	13	15	1
Vicia/Lathyrus sp. – vetch/vetchling	–	–	–	1	–	4	34	4	–
Medicago lupulina L. – black medick	–	–	–	–	–	1	–	–	–
Lamium sp. – dead-nettle	–	–	–	–	–	1	–	–	–
Galium aparine L. – cleavers	–	–	–	–	–	–	–	1	–
Tripleurospermum inodorum (L.) Schulz-Bip – scentless mayweed	–	–	–	96	–	54	8	225	26
T. inodorum – capitula	–	–	–	1	–	–	–	1	–
cf. *Festuca* sp. – fescue	–	–	–	1(2)	–	3	1	–	–
Bromus cf. *secalinus* – rye brome	–	–	–	583*	–	765*	102*	682*	21
Anisantha sterilis (L.) Nevski – barren brome	–	–	–	2	–	–	–	–	–
Poaceae indet. inc. cf *Poa* sp. – indeterminate small-seeded grasses	–	–	1	2	–	4	1	–	2
Woodland, margins and clearings									
Pteridium aquilinum (L.) Kuhn – bracken – pinnules	–	–	–	8	–	–	–	–	–
Cor*ylus avellana* L. – hazel – nutshell frags	–	1	2	–	–	–	1	2	1
Starch masses	–	–	–	5	–	–	–	1	–

substantial and should have survived if the remaining parts of the plants had not been removed, probably for use as animal feed.

The weed seeds did not permit a simple interpretation of the sites of the fields in which the cereal and beans would have been grown, presumably separately. The most noticeable feature is the presence of *Tripleurospermum inodorum* (scentless mayweed) and it is tempting to link them with the large numbers of beans found. On the other hand these samples also include the largest amounts of spelt, and its common associate *Bromus secalinus* (rye brome).

The weeds include both spring and autumn germinating species but it is difficult to sort them into groups with distinguishing soil preferences as most have no specific requirements beyond an open, more or less neutral free-draining type of soil. Four seeds in these samples which have not been seen at the earlier Westhampnett sites are scentless mayweed, *Silene* cf. *alba* (white campion), *Malva sylvestris* (common mallow) and *Raphanus raphanistrum* (wild radish). Of these the first three are more common in light calcareous loams; scentless mayweed accompanies the large Late Bronze Age barley deposits at the downland site of Black Patch (Drewett 1982). Wild radish is known to have been a troublesome weed in lighter types of soil but can also grow on heavier clays.

Light soils would seem appropriate for most of the cereals, although spelt is tolerant of a wider range of conditions and bread wheat will grow on heavier soils. Beans are a useful crop on heavy clay soils which would not be suitable for other purposes, but they will grow satisfactorily on most types of soil unless particularly light and sandy. As their value as soil regenerators was presumably recognised, it is likely they were sown in rotation with other crops, most likely on the fertile soils of the coastal plain.

Another addition to the list of wild flora is *Pteridium aquilinum* (bracken) represented by eight fragments of leaf in pit 50094. This fern is a coloniser by spores of acidic soils and can spread rapidly by rhizomes in sandy or well-worked loamy soils, even over calcareous strata when there is sufficient depth of overlying soil. Although it could have been inadvertently included when harvesting close to a field margin, an alternative explanation might be that it was gathered as floor covering, thatching, or for incorporation, with cereal waste, in daub.

The other woodland species, *Corylus avellana* (hazel) appears rarely and indicates woodland, scrub or possibly copse nearby. In this setting it is possible that the nuts may have been part of the food store.

The cereal crops are typical of the Iron Age in southern Britain in general when there was a great increase in spelt, gradually replacing emmer, with occasional bread wheat and hulled barley. From nearer this site, the few cereals found in charcoal samples from Oving included spelt, bread wheat, hulled barley and oats (Hinton 1985). Fragments of Late Iron Age/Roman daub collected during a survey of Chichester Harbour (Cartwright 1984) were particularly densely tempered with spelt grains and chaff, illustrating one of the uses of processing waste. Spelt was the main wheat found in an Iron Age pit at Wickbourne Estate, Littlehampton (Arthur 1954), with hulled barley and some *Secale cereale* (rye), probably as a weed.

Whether beans were grown in greater quantity at this time cannot be said. The infrequent finds of charred beans may be due to the fact that fire is not needed in the early stages of preparation, as for the glumed wheats, and so the destruction by fire of a storehouse is, for us, a fortunate chance.

Charcoal, by Rowena Gale

The fill of posthole 50540 included *Prunus*, Pomoideae, ash and dogwood. Charcoal from two adjacent postholes (50041 and 50056) included oak, *Prunus,* dogwood and Pomoideae (Table 57). Other refuse was also present and, although the origin of the charcoal is uncertain, the high ratio of oak to other species suggests fire debris. The fills of postholes contained a narrower range of species than that identified from the Late Iron Age religious site (Area 2), although oak occurred more frequently and ash less so. The oak heartwood in two samples indicates the use of fairly substantial trees and implies the existence of natural woodland (remnant or otherwise), and/or standards within managed woodland, or perhaps, the secondary use of structural timbers used as fuel.

Table 57 Area 5, charcoal from features of Iron Age date

Feature	*Sample*	*Cornus*	*Corylus*	*Fraxinus*	Pomoideae	*Prunus*	*Quercus*
Posthole 50540	59020	2	–	1	8	22	–
Posthole 50041	59001	–	3	–	–	1	68rh
Posthole 50056	59002	1	–	–	1	1	57sh

Discussion, by A.P. Fitzpatrick

It is important to recognise the limitations of the evidence available. Not all of the Iron Age settlement lay within the route corridor, a swathe through the section of the site that was selected for more intensive sampling proved to have been effectively destroyed by the hedgerow and trackway, and it was not possible to excavate all the features with the available resources. In some regards these factors exacerbate the difficulties of interpretation faced by excavators of sites with many, often undated, postholes.

That notwithstanding, the myriad of postholes in Area 5 does appear to represent a 'typical' Iron Age farm. A small number of circular buildings and four-post-structures can be identified with greater or lesser degrees of confidence.

The Date of the Settlement

These buildings belonged to a settlement that was occupied for what may have been several centuries between the 4th to 1st centuries BC. It is possible that the well was first excavated in the Early Iron Age and was contemporary with the small quantity of earlier pottery found in what are thought to be later features on the site (well 50060, hollow 50089/50458, and rectangular structure 50330). The bulk of activity in the area excavated is poorly dated; most falls within the Middle Iron Age but it is difficult to be more precise within this time span.

The discovery of three La Tène I brooches from a settlement in England is rare (Haselgrove 1997). These brooches are successive in typological terms, and are likely to span two hundred years between approximately 450 and 250 BC, though all three could of course have been in use at the same time, perhaps in the 4th century. By the same token, the absence of later brooch types, particularly La Tène III forms which are relatively much more common finds, and which were found at Copse Farm, Oving (Bedwin and Holgate 1985, 229, fig. 9, 4–5), is notable.

All the buildings at Westhampnett were post-built; there were no circular gullies and this may be of chronological significance. All the circular buildings at the Middle Iron Age site at Lavant Reservoir are post-built (Kenny 1993b) while at the Middle/Late Iron Age sites at North Bersted and Copse Farm, Oving, the circular buildings are defined by gullies (Bedwin and Pitts 1978; Bedwin and Holgate 1985), although what was interpreted as a circular working hollow at Copse Farm could be the heavily truncated remains of a post-built structure

Too much weight should not be put on the evidence from such a small pottery assemblage (only 20 identifiable vessels). It may at least be said that as well as pottery of Middle Iron Age date being present, there is also pottery that spans the transitions from both the Early and Late Iron Age ceramic styles.

While the quantity of Early/Middle Iron Age pottery – Cunliffe's Park Brow–Caesar's Camp group – is small, so too is the quantity of Middle Iron Age pottery – Cunliffe's St Catherine's Hill–Worthy Down style of saucepan pottery. The evidence of the La Tène I brooches might encourage the suspicion that much of the material lies between the 5th and 3rd centuries BC.

However, Middle/Late Iron Age pottery is also certainly present, though no vessels need to be dated after *c.* 50 BC–AD 50. The wheelthrown or wheel-turned Late Iron Age pottery of Aylesford-Swarling type and Southern Atrebatic forms that occur at a number of nearby sites, notably Copse Farm, Oving, is absent. The late Iron Age forms that are present – large storage jars, bead-rimmed jars, and the single cordoned jar or bowl – have all been found with Middle Iron Age saucepan pottery at other sites. It is suggested that the settlement ceased to be occupied by the middle third of the 1st century BC, with use recommencing towards the middle of the 1st century AD.

As it cannot be assumed that occupation was continuous or of constant intensity, it is considered the Iron Age activity cannot practicably be sub-divided or dated more precisely than the general 'Middle Iron Age' label offered here. The relative lack of precision in the calibrated date ranges means that even if suitable contexts and associations had been available, radiocarbon dates were unlikely to resolve the dating more closely.

Despite this, the sheer density of postholes make it likely that the site was occupied for some time. Some of the buildings that are postulated cannot have stood at the same time, for example the sites of round-house 50939 and possible open-fronted structure represented by trench 50542, and of round-house 50931 and four-post structure 50942. Building 50563 is also cut by several later postholes.

The Structure of the Settlement

The destruction caused by the post-medieval boundary and ditch within the centre of the excavated area compounds the difficulties of interpretation. A few general observations about the organisation of the settlement can be made but these are based on the aggregate pattern and not well-defined chronological phasing (Fig. 64).

Although further evidence for Iron Age occupation was identified in evaluation trenches immediately south of the road corridor (above; Fig. 64), there appears to be a clearly defined southern boundary to the settlement. Despite the location of a substantial ditch (64) in that evaluation there is no evidence from Area 5 to suggest that the settlement was enclosed, and the general distribution of postholes suggests that it was essentially linear, running north-east to south-west. Hollow way or trackway 50432 leads to and from the north-eastern end of the site. To the south-west a number of ditches are associated with fields or droveways, a pattern better seen nearby in the cropmark evidence from Copse Farm, Oving (Fig. 90), and some of the other features identified in the evaluation may be associated with them.

No circular post-built structures were identified amongst the postholes that flank the northern side of the hollow way and because of the size of these structures it is likely that, had they been present, they would have been identified. The (undated) postholes seem more likely to represent four- and two-posted structures with agricultural purposes.

It has only been possible to postulate four-post structures within the central area of the settlement whereas round-houses have been postulated along virtually its whole length. At the western end of the settlement lie what is suggested to be a byre (building 50563, see below), a possible open-fronted structure and a well. Pits appear to be evenly distributed across the site. Whether this tentative and synchronous image represents functional zoning within the settlement cannot be established.

Similarly, where they have been postulated, the entrances to round-houses face south-east. None of these possible buildings are large, as is characteristic of Middle Iron Age round-houses. Although some of the possible buildings may appear small (51920, 51921 and 51922), they fall within the size range of buildings known from other settlements, from which there is little evidence as yet to suggest that they may have been ancillary 'out houses' to larger 'houses'. The Middle Iron Age building from North Bersted had a diameter of *c*. 6 m (Bedwin and Pitts 1978, 299–301). The building platforms at The Trundle are undated (RCHM(E) 1995, 22–3).

The linear organisation of the settlement is clearly defined and this either results in it facing the rising sun, or is a consequence of this. The orientation of individual houses in this direction is well known, as is the orientation of the entrances of enclosed settlements and hillfort entrances (Hill 1996, 102–4, fig. 8.8–10; Oswald 1997; Parker Pearson 1996) though the orientation of unenclosed settlements in their entirety has been little considered.

Rectangular building 50563

Rectangular building 50563 and trench 50542 pose the same difficulties of interpretation faced in trying to identify post-built structures amongst the mass of postholes. It is unknown how many, if any, of the numerous postholes that lie within the area defined by the bedding trenches of building 50563 (11.6 × 3.3 m) (Fig. 77) at Westhampnett were contemporary or how many postholes might be associated with trench 50542. Both appear on the basis of a single dated posthole to be of Iron Age date.

Whichever construction technique was employed in building 50563, planks or sleeper beam, rectangular buildings are rare in Iron Age Britain, though they are slightly better known in the Bronze Age. It may be thought that the shape indicates a use different from the seemingly ubiquitous round-house of later prehistory and in this regard the Bronze Age buildings are relevant to the interpretation of building 50563.

A small and heterogeneous collection of rectangular or rectilinear buildings is known from Mid–Late Bronze Age sites in southern England and Wales. These are between 9 and 18 m long with numerous internal divisions, and almost all are post built (Barleycroft Farm, Cambridgeshire (Evans and Knight 1996); Down Farm, Dorset (Barrett *et al*. 1991, 198, 208–11, fig. 5.27, 5.37, 5.43); Easton Lane, Hampshire (Fasham *et al*. 1989, 38–40, 146, fig. 50) Flag Fen, Cambridgeshire (Pryor *et al*. 1986), Lofts Farm, Essex (Brown 1988, 260, 294, fig. 5, 10) and Winnall Allotments, Hampshire (Harrison 1991, 5, fig. 3)). In Wales a series of Mid–Late Bronze Age rectangular buildings are known from Redwick, Gwent, and these seem to have three axial posts (Bell *et al*. 2000, 292–9, fig. 16.9–12). It has been suggested that the buildings at Easton Lane, Lofts Farm, and Redwick, were long-houses in which people and animals were accommodated under a single roof.

Two buildings had the wall posts placed in bedding trenches or gullies. One example is at Poundbury, Dorset, where a smaller building (*c*. 8 m long) had posts set within shallow trenches (Green 1987, 29, fig. 12; 18). The other is at Redwick, Gwent, where in contrast to an adjacent post-built rectangular building (no. 2) at the site, building 1, measuring 11.5 × 4.5 m, had small vertical posts placed in a shallow foundation gully (Bell *et al*. 2000, 292–9, fig. 16.9). It is uncertain if some of the discontinuities in the gully at Redwick are more apparent than real, as the site was recorded rapidly under difficult conditions but, for what it is worth, there appear to be gaps or entrances in or adjacent to the short walls. The well-preserved Middle Bronze Age gully at Redwick is smaller than the building 50563 at Westhampnett, being on average 0.2 m wide and 50–100 mm deep.

Some Iron Age examples of long rectangular buildings are also known or have been claimed. Some are contentious (e.g. Rodwell 1978, 32–4, fig. 3), others less so (e.g. Partridge 1981; Neal *et al*. 1990), but nearly all seem to be Late Iron Age in date. Exceptions to this are what have been claimed to be Late Bronze Age/Early Iron Age post-built long-houses at Crickley Hill, Gloucestershire (Dixon 1976; Bell *et al*. 2000, 130), and it is likely that other such possible buildings have been identified elsewhere as a series of four-post structures. Small rectangular enclosures that may have been soakaways or drip gullies and that may not have surrounded buildings have also been identified at East Carr, Mattersey, Nottinghamshire. Where they can be dated, most of these features are Romano-British in date, though some are cut by a Romano-British field system (Morris and Garton 1998).

Bedwin has noted evidence for a number of possible rectangular buildings in Sussex (1984b, 48). These are at Heathy Brow, East Sussex, where it was suggested that a 6 × 4 m rectangular depression represented a building (Bedwin 1982, 73-88, fig. 28–9), Charleston Brow, East Sussex, where a rectangular area was terraced into the slope and may have had an entrance close to the south-eastern corner (Parson and Curwen 1933, 166, pl. II) and at Park Brow (West Sussex) (Wolseley and Smith 1924, 348), where surface depressions have been identified. These sites may all date to within the 6th–4th centuries BC. Compacted surfaces found at Langford Downs and Whittenham Clumps in the Thames Valley have also been suggested to represent rectangular buildings (Harding 1972, 33).

Perhaps the best examples of rectangular buildings in the Iron Age are known from the Severn Estuary in Gwent at Goldcliff Pill, where eight buildings spanning much of the Iron Age were excavated in the modern intertidal zone (Bell *et al.* 2000, 83–135, 340–2). There is strong evidence to suggest that some of the Goldcliff examples were long-houses, one of which (no. 1) may have been used subsequently as a byre. These buildings, which are rectangular rather than rectilinear, were post-built, with the roof being carried on two axial posts.

As we have seen, the suggestion has been made that some of the buildings on Middle to Late Bronze Age sites in England are long-houses, but they often stood alongside round-houses. In two cases, Barleycroft Farm and Flag Fen, the buildings are large enough to be seen as halls, with Barleycroft Farm measuring 16.5 × 5.5 m. The buildings at the other sites, however, are relatively narrow, being between 2 and 4.5 m wide. The buildings from the wetland site at Redwick are on average *c.* 4 m wide. These have three axial posts, and building 2 has internal partitions running from these posts in the northern half of the building.

The diameters of some of the round-houses at the dryland sites are not significantly greater. These round-houses were built without central posts to support the roof and it may be asked whether axial posts were needed (or wanted) to support a roof in the narrow rectilinear buildings or whether the posts were for internal divisions? On the basis of the good environmental evidence from Middle Iron Age building 1 at Goldcliff and the inferential evidence from contemporary long-houses in continental Europe, it may be suggested that many of the internal divisions were for animal stalls in a byre. Some Middle Iron Age circular buildings at Cat's Water, Fengate, have been suggested as byres on the basis of the high phosphate levels recorded in and around them (Pryor 1984).

It is unknown how many, if any, of the numerous postholes that lie within the area defined by the bedding trenches of building 50563 at Westhampnett were contemporary with it and supported axial posts or internal divisions. However, it may be suggested that its closest affinities were with buildings that may be byres. Trench 50542 shares the same orientation as building 50563. If, as is suggested, trench 50542 formed part of an open-fronted building akin to a modern animal shed, this would complement the tentative interpretation of building 50563 as a byre. The proximity of well 50060 and the area of possible trample, 50089/50458, may be noted. A related hollow with a pit or waterhole is known from an Early Iron Age context at Bancroft, Buckinghamshire (Williams and Zeepvat 1994, 37–9).

Daily Life

The finds from the settlement afford us some insight into the activities of its inhabitants. The charred plant remains appear typical of many Iron Age settlements. Spelt was the dominant cereal with emmer, bread wheat, hulled barley and oats present in smaller quantities. Weeds of cultivation, such as wild oats and particularly scentless mayweed, are found but neither they nor the crops themselves allow the types of field or their soils to be inferred. Nevertheless the weeds of cultivation (Table 56) indicate the cultivation of both lighter calcareous soils, either on the Downs or over the former Waterbeach–Tangmere stream course, and heavier soils such as those over brickearth on the Coastal Plain. Broad or field beans are found frequently enough to suggest that they were a crop on the Coastal Plain itself. The occasional finds of bracken are most likely to have been used for floor covering or thatching.

It is perhaps most likely that the glumed wheats, emmer and spelt, were stored as spikelets, perhaps alongside beans in the four-post structures. The cereals were either harvested just below the ear or with the straw fragments and heavier culm nodes being removed in initial processing that did not take place in the settlement. The beans stored in the four-post structures also appear to have been prepared and stored ready for use, either as food or seed as there are no pods and stems, the latter presumably having been used as fodder. The rotary querns from the Lodsworth quarries that were used to grind the grain at Westhampnett form part of a well-attested pattern of trade and exchange in these goods (Peacock 1987).

The acid brickearth soils have caused the destruction of almost all animal bone – only ten bones were recovered from Area 5 – so little can be said of animal husbandry or diet. If, as suggested, building 50563 was a byre and trench 50542 part of an animal shed, both possibly associated with well 50600, this would indicate that cattle were kept. The limited evidence from other Iron Age sites on the coastal plain (Bedwin and Pitts 1978, 340–3; Vol. 2, table 30) points to cattle having been the most important source of meat, followed by sheep, with pigs being much less frequent. The evidence from the nearby Late Iron Age site at Copse Farm, Oving, suggests that horse may also have been eaten (Bedwin and Holgate 1985, 234).

Craft activities included the smithing of iron, represented by smithing hearth bottoms, flake hammerscale and a piece of forge waste, and the heating in some form of hearth or furnace of copper alloys. The small quantities of material do not suggest

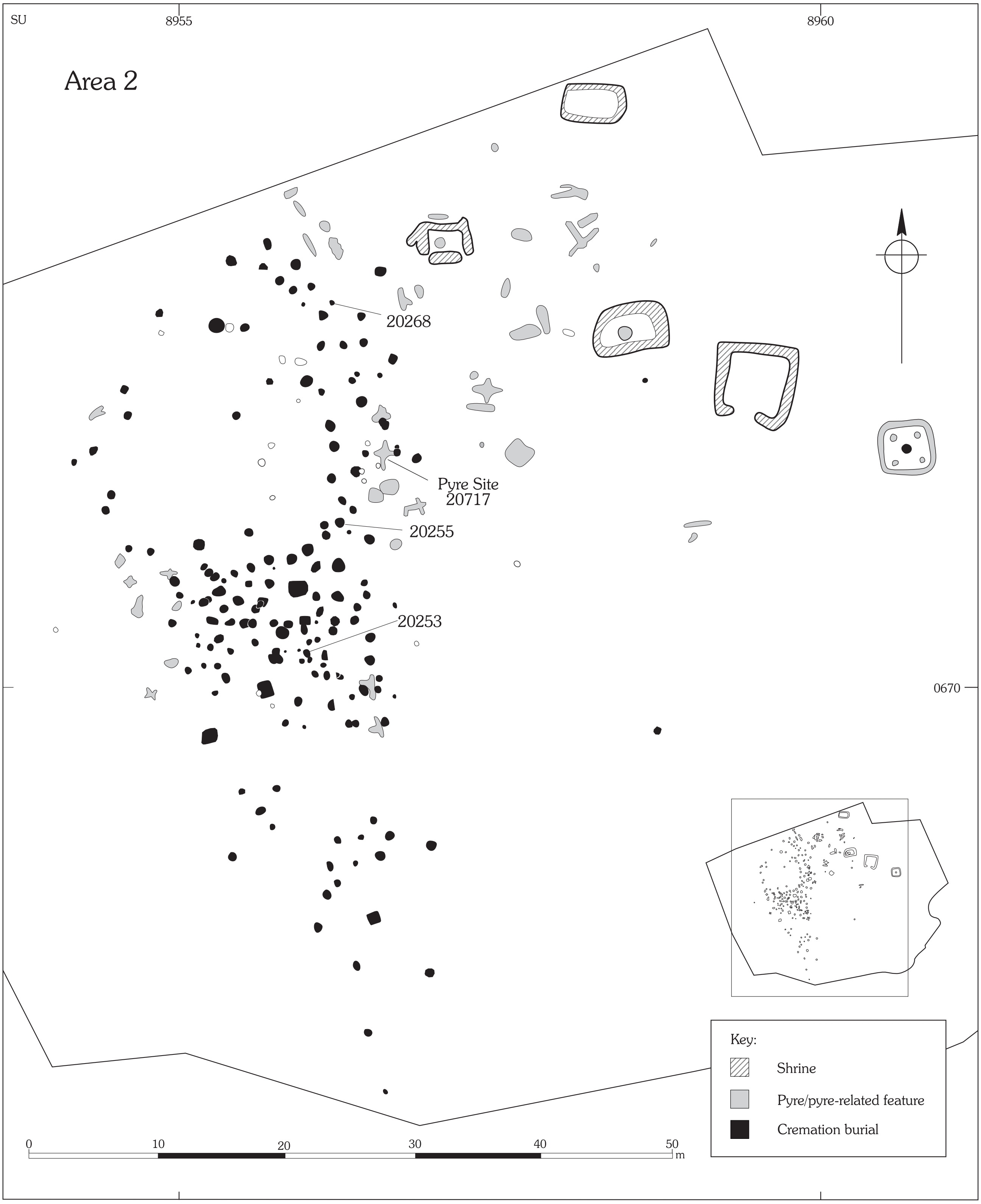


Figure 83 Area 2: plan of Late Iron Age religious site

that these crafts were practised extensively or intensively. A single spindlewhorl is the only evidence for textile working. The metals will have been brought to the site and they, along with the querns, provide what little identifiable evidence there is for exchange; all the pottery may be from local sources.

There are relatively few finds from the settlement, partly because of the lack of large pits, but it must be thought likely that the complete iron brooch (Fig. 65) was deposited deliberately near the base of pit 50522. This pit seems to have filled in naturally, in contrast to the majority of Middle Iron Age pits in Sussex hillforts,

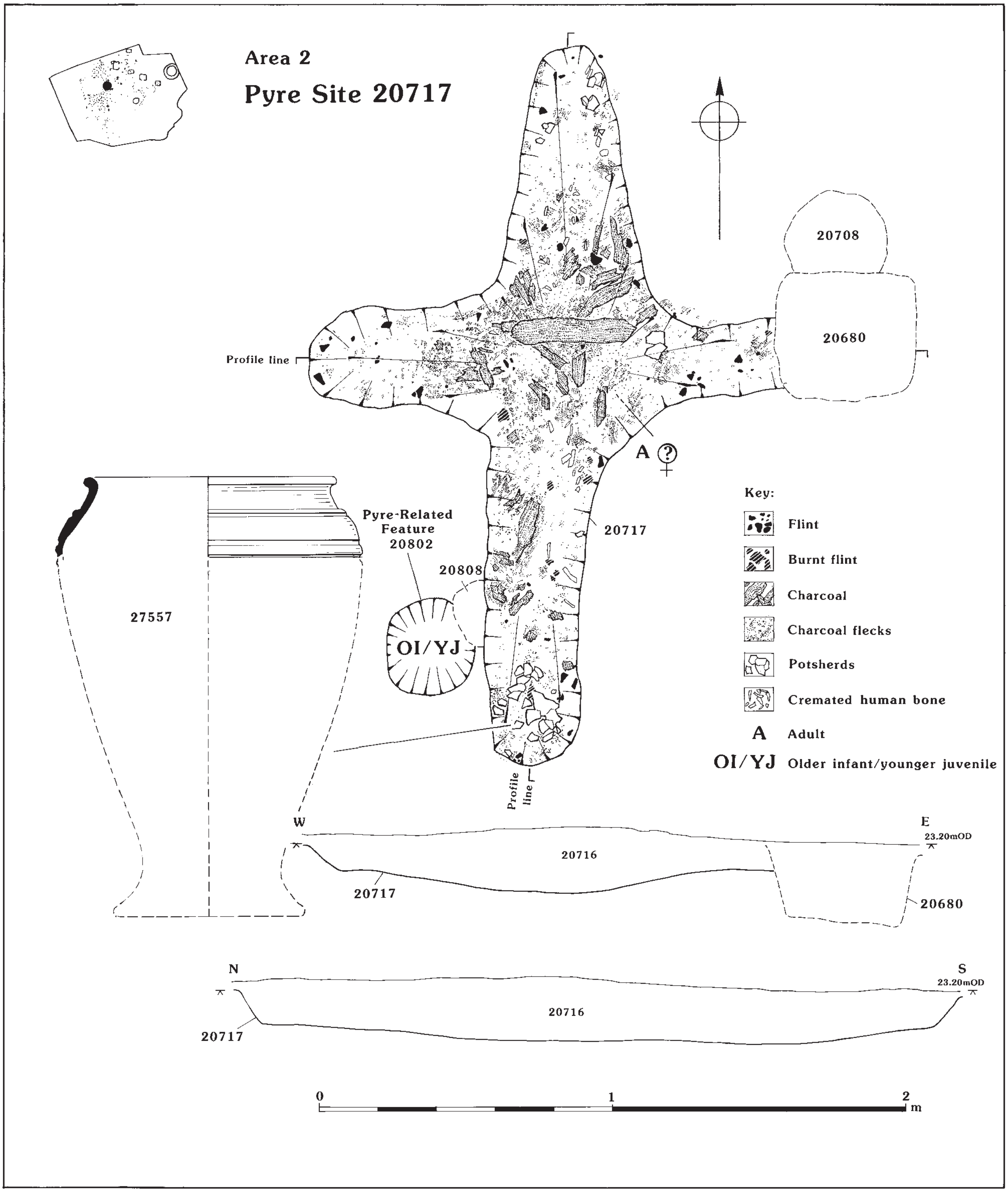


Figure 84 Area 2: plan and section of Late Iron Age pyre site 20717 and associated finds (Vol. 2, fig. 18)

which seem to have been backfilled deliberately (Hamilton 1998, 38). The quern fragments recall the suggestion that at The Trundle hillfort querns were broken deliberately (Hamilton and Manley 1997, 103; Hamilton 1998, 32; *cf*. Downes 1997, 150), but as it is likely that the pieces from Area 5 were from postholes, their use as packing stones should not be discounted.

Late Iron Age Religious Site (Area 2)

Area 2 produced evidence of a Late Iron Age religious site, which so far is unique within England in its size and in the range of associated features (Figs 83–85) (Vol. 2). It was almost entirely excavated revealing at least two, and perhaps four, shrines, a range of pyre sites and related features, and 161 cremation burials. All the soil from the pyre sites, pyre-related features and graves was sieved, allowing the recovery of small, fragmentary evidence which would not have been retrieved by traditional manual excavation.

The spatial organisation of the site was precise, with the burials being grouped around the south-eastern circumference of a circular space (Fig. 83). What may be a smaller circular grouping was identified to the south-east of the main one. Most of the remainder of the circumference of the circle was marked by the X, Y and T-shaped remains of pyre sites, and pyre-related features, some 46 in all, which lay beyond the graves (Fig. 84). To the east of the circular space lay the shrines and the only grave that was marked by a funerary monument. Rows of postholes, some of which occurred within the circular space, may have been associated with the mortuary practices.

The shrines find close parallels in examples from hillforts but no direct evidence was found to indicate which deities were housed in them or for the rituals enacted at them. The pyre sites contained charcoal, usually of oak, remains of the kindling, cremated human and animal bone, and fragments of pyre goods, usually costume fittings or jewellery. The pyres appeared to have been deliberately disturbed after their final use. The category of pyre-related features includes what are probably the bases of pyres, and other features either deliberately excavated to receive material from the pyre or natural hollows which were filled with this material.

The cremation burials were usually unurned although they may originally have been placed in a textile or leather container (Fig. 85). Only a portion of the cremated bone was selected for burial and the remains of pyre goods were found amongst the bones. The small quantity of bone buried provided only restricted evidence for physical anthropology. However, the ages and sexes of the people buried were consistent with most of a community having been buried there, although young children were under-represented. On the basis of the short use of the religious site and the number of burials it appears that the cemetery was used by more than one settlement.

The brooches, the small range of other metalwork and the pottery all suggested a date in La Tène D1, perhaps spanning not more than 40 years between *c.* 100–40 BC, with a preferred date range of *c.* 90–50 BC. The limited evidence from horizontal stratigraphy suggested that there was only one phase and because of this it was possible to suggest some cosmological referents in the organisation of the religious site.

Other Iron Age Evidence (Areas 1, 3 and 4)

Area 1 (Fig. 86)

Two features (10210 and 10207) were revealed in the north-western portion of the area after the colluvial deposit, perhaps of Late Iron Age or Romano-British date, had been removed from a *c.* 2.2 m wide strip by machine. The northern feature (10207) was amorphous, being 3 m wide on the western side of the strip, narrowing to 1.6 m on the eastern side, and 0.35 m deep. It was filled with a single layer (10208) of dark greyish-brown silty clay loam which included a small quantity of worked flint and two sherds of Late Iron Age pottery. To its south was a broad, shallow, but again rather amorphous, feature (10210), which continued under the unexcavated colluvium to the east. As exposed, it was *c.* 4 m long and 0.2 m deep. Its single fill (10211) was a silty clay loam with very occasional flint gravel, and contained burnt flint, struck flint, and eight sherds of Late Iron Age pottery. These features may be related to the activities on Area 2, possibly representing the removal of trees for use in pyres. Although Late Bronze Age pottery occurs in small quantities through the colluvium, the deposit may have developed in a short time as a result of ground disturbance caused by the gathering of timber for pyres at the Late Iron Age and Romano-British cremations burial cemeteries.

Area 4

The Pottery, by Lorraine Mepham

A small quantity of pottery (48 sherds, 229 g) from stratified features within Area 4 was tentatively identified as Middle/Late Iron Age, largely on the basis of fabric type, as diagnostic material was particularly scarce and the sherds in general were small and abraded (mean sherd weight 4.8 g). Five fabric types were defined, four flint-tempered, and one grog-tempered (Table 58). Four of these fabrics occur in greater quantities in Area 5, where they are fully described (see pp. 162–70 above). The remaining fabric (F8) may be described as follows:

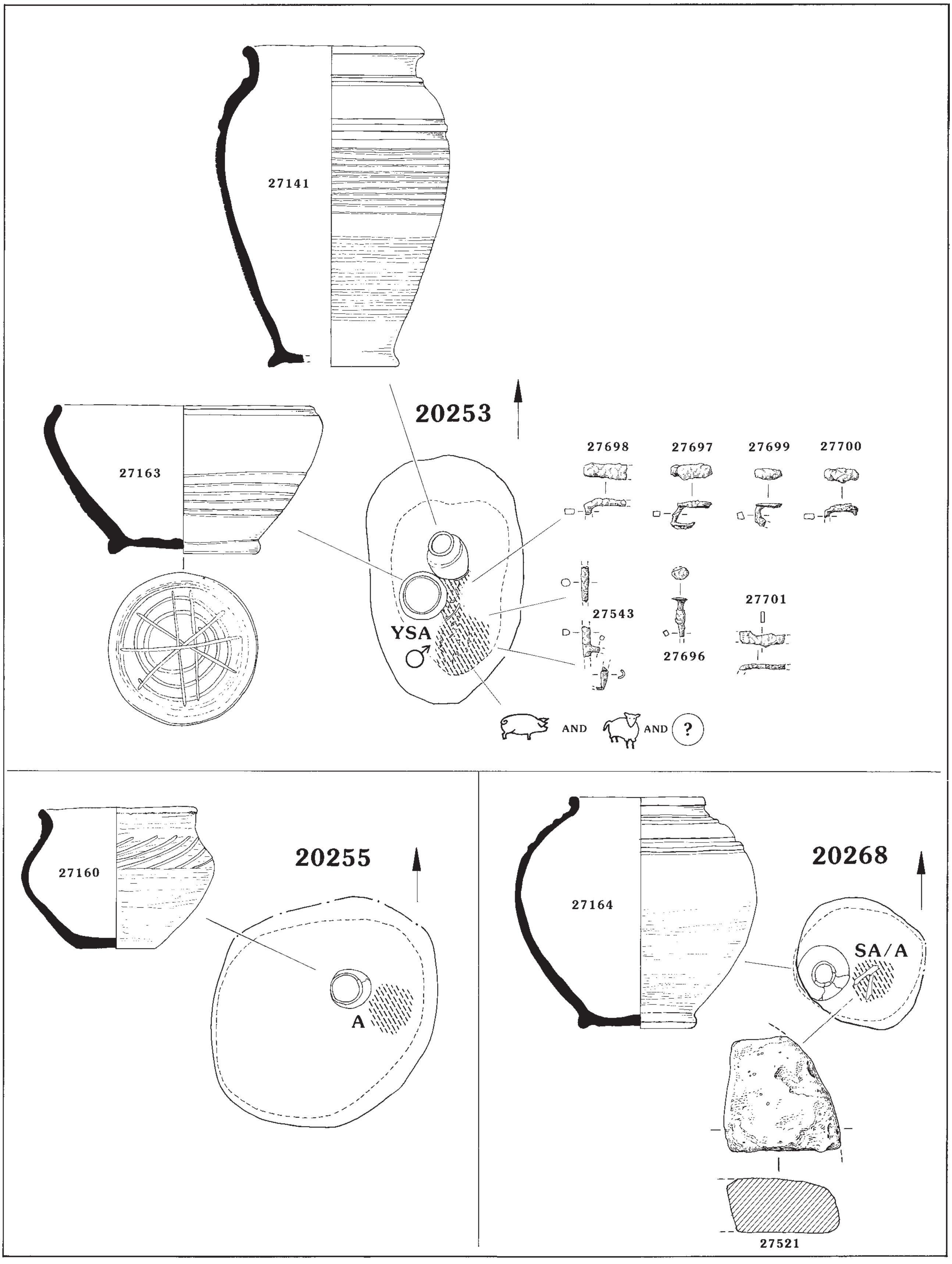


Figure 85 Area 2: plans of, and pyre and grave goods from, Late Iron Age cremation burials 20253, 20255 and 20268 (Vol. 2, fig. 83)

Table 58 Area 4, later prehistoric pottery by fabric and context by number/weight in grams

Feature	*F1*	*F2*	*F3*	*F8*	*G4*	*Total*
Pit 40210	–	3/14	–	–	–	3/14
Gully 40244	–	–	2/8	–	–	2/8
Gully 40250/40363	–	–	2/7	–	–	2/7
Gully 40254	–	9/12	2/1	–	–	11/13
Gully 40265/40337	–	1/4	–	3/24	–	4/28
Gully 40272	–	1/3	–	8/55	–	9/58
Gully 40300/40305	–	1/4	–	–	–	1/4
Nat. feature 40314	1/1	4/15	–	–	–	5/16
Ploughsoil 40326	4/8	–	–	–	–	4/8
Hollow 40367	–	–	2/64	–	–	2/64
Gully 40370	–	–	1/1	–	1/1	2/2
Anglo-Saxon hollow 40344	–	–	2/4	–	–	2/4
Anglo-Saxon hollow 40372	–	–	–	–	1/3	1/3
Total	**5/9**	**19/52**	**11/85**	**11/79**	**2/4**	**48/229**

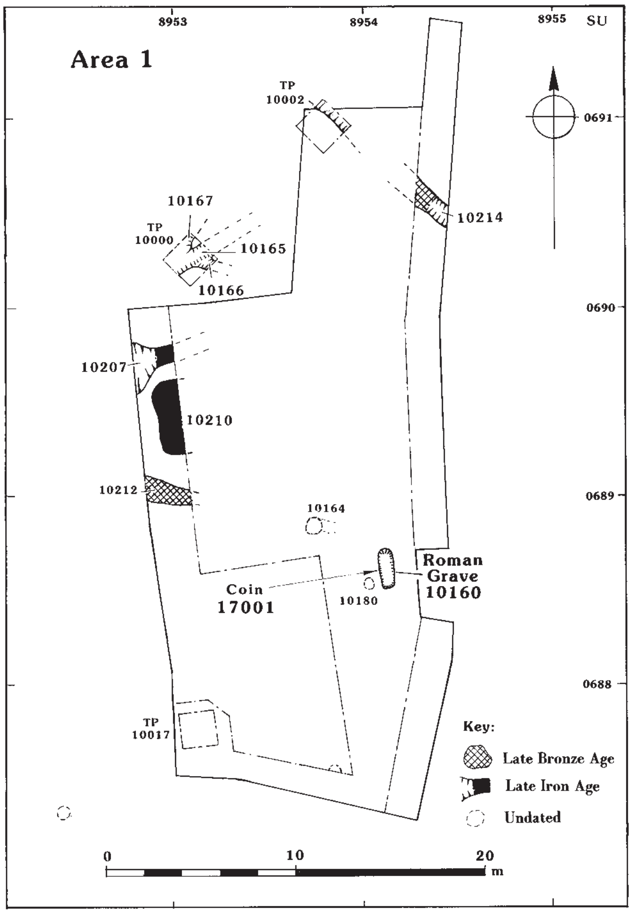


Figure 86 Area 1: features of Bronze Age to Romano-British date

F8 Soft, moderately fine matrix; moderate, poorly sorted, subangular flint (some calcined) <3mm; sparse iron oxides <2 mm; rare subrounded quartz <0.25 mm. Irregular firing, generally unoxidised with patchily oxidised (buff-orange) exterior.

None of the fabrics observed in Area 4 is particularly distinctive, and all have a potentially wide chronological range. The group from Area 5, which includes four of the five fabrics identified here, has been dated to the Middle Iron Age on the basis of vessel forms. The three tiny rim sherds from Area 4, all in fabric F2, could match these vessel forms (Fig. 87, P30–32), particularly the long-necked bowls of the Park Brow–Caesar's Camp style, but an earlier, for example, Late Bronze Age date (e.g. Gardiner and Hamilton 1997) cannot be excluded.

Pottery of this period derived mainly from a series of gullies, including the enclosure in the same part of the site as the Deverel-Rimbury material. The small quantities and poor condition of the sherds would suggest that here they are intrusive into earlier features, which contain a far greater proportion of Middle Bronze Age pottery. Close parallels with the settlement assemblage from Area 5 might indicate that the material from Area 4 ultimately derived from the latter area, perhaps as part of a manuring scatter, and is likely to have been incorporated during this process into earlier features.

Illustrated sherds (Fig. 87)

P30 Rim sherd, fabric F2. PRN 543, context 40307, gully 40305.

P31 Rim sherd, fabric F2. PRN 528, context 40271, gully 40272.

P32 Rim sherd, fabric F2. PRN 546, context 40315, natural feature 40314.

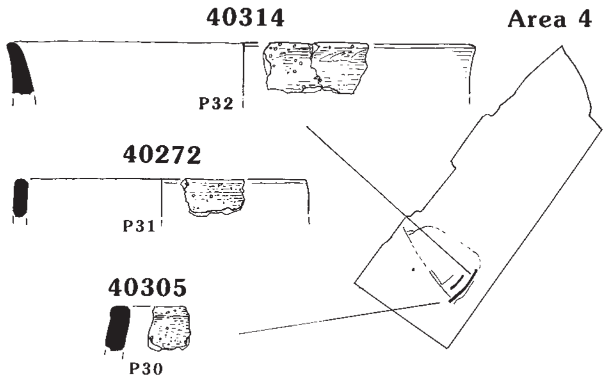


Figure 87 Area 4: Iron Age pottery from Bronze Age and natural features

In addition, four sherds of Middle–Late Iron Age pottery were residual in pit/well 30137 (p.205). Undiagnostic later prehistoric pottery from the enclosure ditch might also be Iron Age (p. 233)

Iron Age Coins from Westhampnett, by A.P. Fitzpatrick

In 1992 a series of Iron Age bronze coins was found and attributed to a 'site on the Westhampnett bypass' (Burnett 1992; Cottam 1999, 1, 14, n. 39; Bean 2000). Enquiries made at the time of the discovery did not confirm the provenance of these finds and none of the excavated sites provides an obvious context for what is likely to have been a hoard. The settlement in Area 5 is too early, while coins were, with a single exception, not part of the funerary rituals in Area 2 and coins are rare finds from Iron Age burials (Vol. 2, 88–9). The distinctive type of the coins and their overall distribution (Cottam 1999, fig. 1) make it entirely possible, however, that the hoard was found during construction works on the bypass after the watching brief was completed, or at Shopwyke quarry during the evaluation.

Iron Age Charcoal, by Rowena Gale

Most of the charcoal from Iron Age features came from the religious site in Area 2, the details of which have already been published (Vol. 2, tables 7–9). Fourteen taxa were identified, but only six were from the settlement in Area 5 (Table 57). The taxa identified must, to a large extent, reflect their economic uses and are, therefore, unlikely to represent the full range of trees and shrubs growing in the area. The image is dominated by the material from the religious site where the charcoal was often abundant and well preserved (Vol. 2, 77–82). Broad oak poles from trunks or branchwood and brushwood were used on the pyres and ash was also important. In isolated instances large quantities of maple, cherry and willow or poplar were identified from pyres or pyre-related deposits. Some willow/poplar, found in cruciform depressions, may have been part of the pyre structure.

Most charcoal from this period can probably be assigned to the use of wood and timber as fuel for hearths, ovens, kilns, cremation pyres etc., subsequently scattered on middens, in pits, postholes, ditches and other available hollows. Sometimes charcoal may have been used to fertilise agricultural land or possibly for ritual purposes. Evidence of the artefactual and ritual uses of wood or charcoal for cremation and burial customs was sought from the Iron Age religious site (Area 2) and this is summarised here because the species present provide information on the species composition and nature of local woodlands.

Environment

Woodland trees included maple, birch, hazel, ash, Pomoideae, *Prunus*, oak and yew. Species characteristic of marginal woodland, woodland glades or more open areas included dogwood, heather, gorse and/or broom, and possibly *Viburnum*. Willow and/or poplar were also present. Although oak heartwood was often evident, a significantly high proportion of the material appeared to have originated from narrow roundwood or fast-grown sapwood. Charcoal from a contemporary settlement in the neighbourhood at Copse Farm, Oving, although sparse, identified oak, hazel, hawthorn and gorse (Bedwin and Holgate 1985), suggesting a comparable woodland flora to that of Westhampnett.

At Westhampnett oak, ash and hazel were abundant, as also was maple. Field maple (the only native maple) grows on neutral or alkaline soils, often in ash and hazel woodland. It is thought to have been relatively slow to recolonise Britain after the Devensian Glacial period and there are no records pre-dating the Neolithic (Godwin 1975). Unable to compete in the closed woodland canopy of the earlier periods, it appears to have become more widespread following land clearances of the 4th millennium BC (Rackham 1990). Indeed, its absence from these earlier phases at Westhampnett suggests that it may have been relatively uncommon here until the Iron Age.

Charcoal from some pyres almost certainly included the trunks or wide branches of cherry trees. The diameters of these were difficult to assess but rough estimates suggested that some charred pieces were in excess of 80 mm and therefore may have been up to 50+% wider when growing. The anatomical structure of cherry and blackthorn can sometimes be differentiated, as in this instance, by extremes of ray width. The relatively large dimensions of the trunks indicated by the charcoal fragments also suggest cherry. Cherry forms a tall woodland tree and grows on alkaline soils or clay horizons overlying chalk.

Dogwood was not identified from periods pre-dating the Iron Age. It is a shrubby species, characteristic of calcareous soils on open or cleared

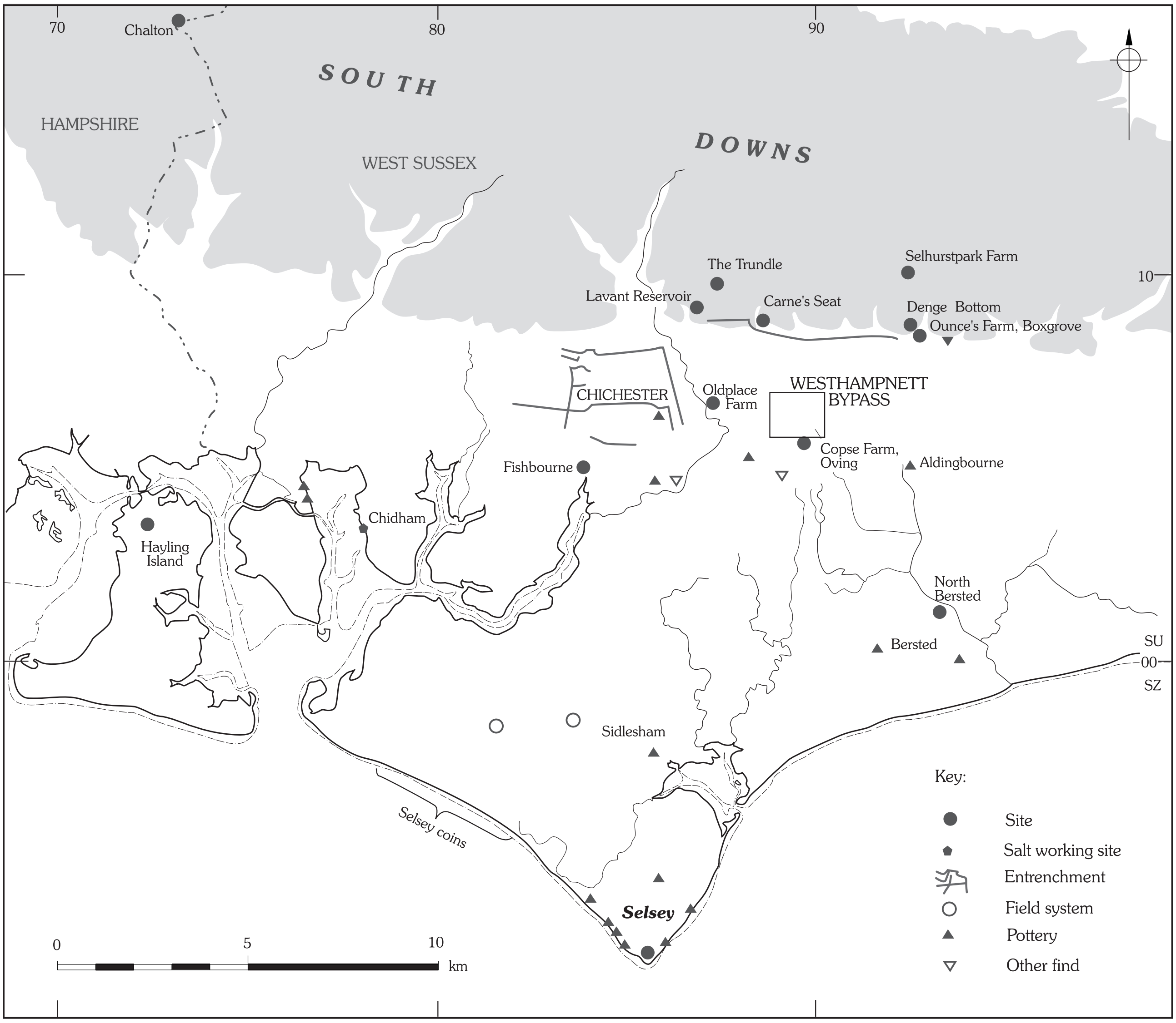


Figure 88 Selected Iron Age sites in the area

land, or in hedges and marginal woodland. The extensive clearance of woodland vegetation in favour of intensive farming may have proved ecologically more suitable by this time.

The fast-grown timber suggests that managed woodlands provided a source of coppiced and/or pollarded wood. Trees such as hazel, oak, ash and maple regenerate rapidly and can produce hefty poles in 20 years or so. But with some species, e.g. cherry and blackthorn, coppicing merely promotes suckering (Rackham 1990). Evidence of coppicing in Britain dates from at least the 4th millennium BC (in Wessex) (Coles and Orme 1982). The practice survived until the 20th century in some rural areas of Britain and provided the main source of fuel, charcoal and small wood requirements. At Westhampnett coppiced or pollarded woodlands may have existed either in small pockets between blocks of agricultural fields on the coastal plain or in clefts or valleys on downland. These may have included standard trees to provide cordwood or larger timber. Heartwood included in charcoal fragments verified the presence of mature or semi-mature oak and ash trees. Areas of natural mixed woodland or woodland pasture (providing acorns for pigs) may have persisted, harbouring useful species such as cherry (for fruit).

Pioneer species, including birch, gorse and/or broom, and heathers may have flourished naturally on poorer soils unsuited to cultivation or recolonised previously cultivated/cleared areas. Streams, ditches or boggier sites would have supported willow. Shrubby and scrubby species such as dogwood and *Viburnum* (both calcicoles), and hawthorn and blackthorn probably grew in open or marginal woodland sites. Spiny species, such as hawthorn and blackthorn, may have been used as hedging or barriers against stock, of a kind that may be inferred from the evidence from many of the surrounding sites.

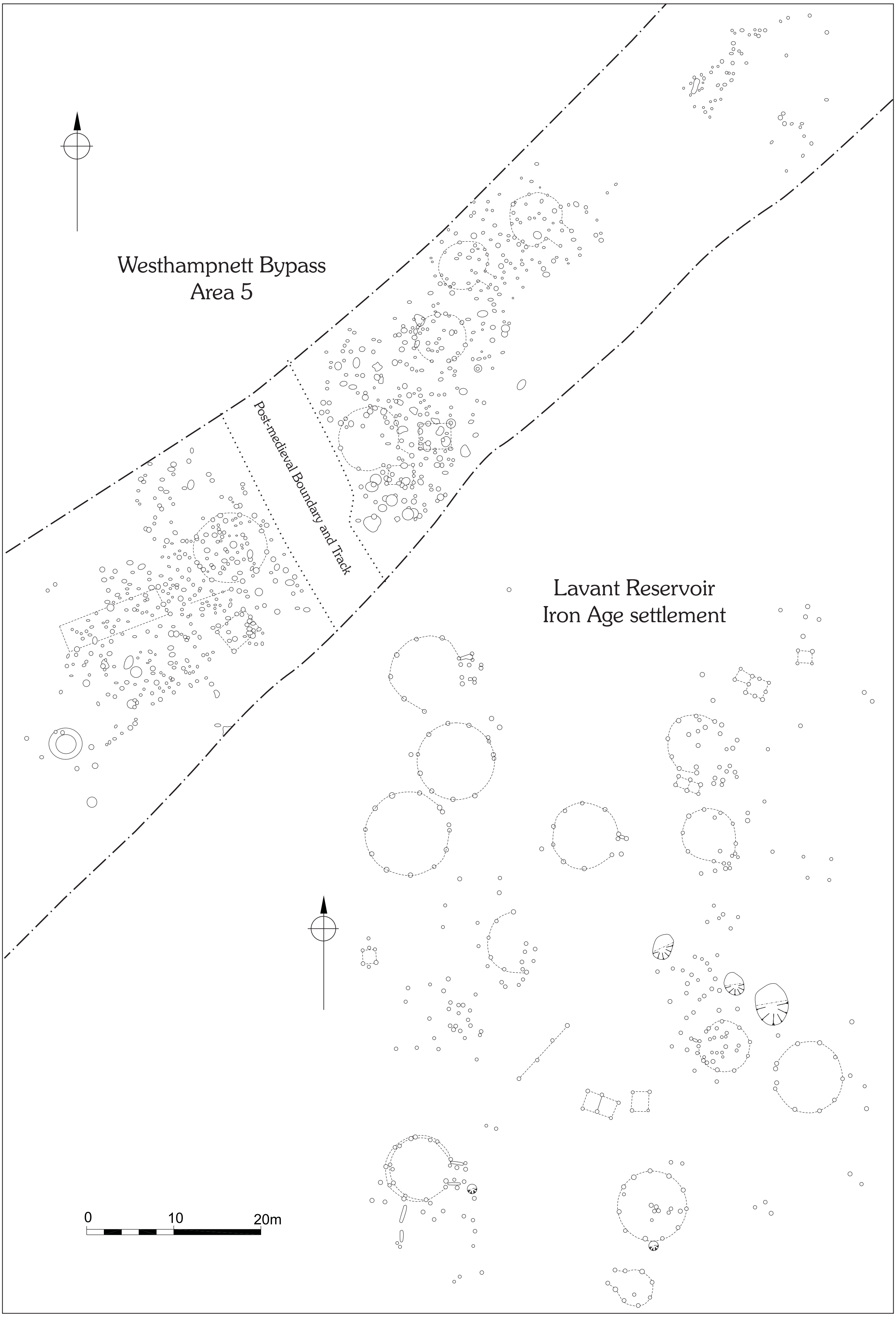


Figure 89 Comparative plans of the Westhampnett Area 5 and Lavant Reservoir settlements

Discussion

The Iron Age Countryside, by A.P. Fitzpatrick

An increasing number of Iron Age settlements are known on the Coastal Plain (Fig. 88). The information available in the mid-1970s was mapped by Bedwin and Pitts (1978, fig. 24) and this distribution reflected principally finds made i) during the expansion of Littlehampton and Worthing, ii) the erosion of Selsey Bill, and iii) a more general scatter of finds in building work. Since then an increasing number of settlements that are known or suspected to be of Middle/Late Iron Age date have been identified, particularly in the Chichester area. A number of these are enclosed settlements whose boundaries have been identified through air photography: Carne's Seat, Goodwood (Holgate 1986, first seen as a parch mark), Copse Farm, Oving (Bedwin and Holgate 1985), Oldplace Farm, Westhampnett (Bedwin 1983a, 36, fig. 4; 1984b, 50, fig. 3.3; both identified on calcareous marls), Selhurstpark Farm (Bedwin 1984b, 46, fig. 3.2; Holgate 1986, fig. 1) and Denge Bottom (Bedwin 1984b, 46; Holgate 1986, fig. 1). Other evidence has been recovered incidentally in the exploration of Roman sites at Fishbourne (Magilton 1995, 15) and in the north-west of Chichester (Down 1978, 187–9)

The enclosed settlement at North Bersted was identified during building work (Bedwin and Pitts 1978) and further work took place subsequently (M.A.B. Lyne, pers. comm.); the enclosure at Ounces Barn, Boxgrove, was found during quarrying (Bedwin and Place 1995, 67–8), while the settlement at Ford Airfield was identified by archaeological evaluation (Place 1999). The only two open settlements currently known, at Lavant Reservoir on the southern face of the South Downs and Westhampnett Area 5, were both found by archaeological evaluations (Fig. 89). It is uncertain if the settlement at Shopwyke immediately to the south of that in Area 5 was enclosed (see above; Browse and Kenny 1991; Kenny 1992). Like Westhampnett, the settlement at Lavant appears to have a north–south linear arrangement, and despite being sited on chalk where it would be practicable to excavate storage pits, no pits were found (Hamilton and Manley 1997, 103). Other evidence for Middle Iron Age settlement comes from finds of 'saucepan pottery' at Tote Copse, Aldingbourne. and Chalcroft Lane, Bersted (Pitts 1979b), and elsewhere within a quarry at Boxgrove Common.

As Bedwin has suggested, the relative proliferation of settlements datable to the Middle/Late Iron Age on the West Sussex Coastal Plain mentioned above appears to represent a considerable increase in settlement in this period (Bedwin 1983a, 35–8; 1984b). Many of the farms appear to have been built in a landscape that was increasingly bounded by enclosures and in some areas, such as North Bersted, drained by ditched field systems. Whether there is sufficient evidence to support the suggestion that this part of the Coastal Plain was first drained extensively, and thus settled, in this period (e.g. Bedwin 1983a, 38) is uncertain. At all of these sites cattle were the most important animal kept and at Copse Farm, Oving, the emphasis is on droveways and enclosures. Three of the sites, Denge Bottom, Selhurstpark Farm and Carne's Seat, appear to be banjo enclosures of a type well known, if less well understood, to the west in Hampshire (Bedwin 1984b, 46; Holgate 1986, 35, 47) and may be thought likely to date to the Middle Iron Age.

The recovery of charred plant remains and charcoal enables some comment on the broader economy of settlements on the Coastal Plain. The settlements received produce farmed locally (beans and legumes) and perhaps further afield on the chalk Downs (cereals) indicating a diverse and integrated pattern of cultivation that is seen in the artefactual evidence and, to a lesser extent, the settlement pattern. Despite the non-survival of animal bone on the excavated sites, it seems clear that the farming economy was mixed, and structures included those for living, storage and perhaps stabling.

The origins of the unenclosed settlement in Area 5 are slightly earlier than many of these sites, where they are known. But with its trackway and adjacent fields or compounds, and perhaps a byre also, it falls within the general pattern of extensification within the Coastal Plain identified by Bedwin. The chronology of these sites is not, however, sufficiently developed to be able to support the suggestions that hillforts, such as The Trundle (Curwen 1929; 1931) which overlooks all of these sites (Hamilton and Manley 1997), were either established at the time of a decline in non-hillfort settlement, as hinted at by Bell (1977), or given up at a time of increased settlement on the Coastal Plain (Bedwin 1983a, 38). The presently unique 1st century BC religious site in Area 2 was founded well after these developments had begun, and as set out in Volume 2 (pp. 8–9), before the development of a settlement of high status at or near Chichester in the late 1st century BC. The increasing number of Middle/Late Iron Age settlements that can be identified or inferred from finds of pottery increasingly provide a context within which to view the religious site with its cemetery, apparently used by the occupants of several settlements.

7. Romano-British Activity (Areas 2, 3, 5 and 7)

Andrew B. Powell, Vaughan Birbeck and A.P. Fitzpatrick

Evidence of Romano-British activity was found in Areas, 2, 3 and 5 (Fig. 90). A small cremation burial cemetery was found in Area 2. It lay to the south-east of the Late Iron Age cemetery and may have been focused on an undated ring ditch. A single pyre site and 36 graves were recorded (Vol. 2, 242–86). In addition to the Lateglacial Interstadial palaeosol and the Bronze Age penannular ditch, Area 3 contained a Romano-British enclosure, possibly a shrine.

In Area 5 a small number of features show that the Middle/Late Iron Age occupation reported in the previous chapter, continued into the Romano-British period. For the sake of continuity, these are described first.

Romano-British Settlement (Area 5), by Vaughan Birbeck

A number of features in Area 5 were dated to the Romano-British period (Fig. 91). These consisted of six pits (five in Area 5a, and one in Area 5b), six postholes or pits/postholes, none of which could be assigned to any recognisable structure, and six ditches. One further ditch is dated as Romano-British or later. In addition, a very small, truncated layer of Romano-British date (50473) was recorded. How many of the undated or unexcavated postholes might have been of Romano-British date is unknown, but they seem unlikely to have comprised any significant proportion.

Pits (Fig. 92)

Five of the six pits (50240, 50346, 50360, 50361 and 50441) form a close group, no more than 10 m wide, in the centre of Area 5a.

Pit 50240 was sub-circular in plan, *c.* 1.1 m in diameter and 0.3 m deep with irregular concave sides and a concave base. Three sherds of greyware pottery dated to the 1st or 2nd century AD were recovered from the single fill (50241) along with 41 sherds of flint-gritted Late Iron Age pottery datable to the 1st century AD and small quantities of burnt flint and fired clay. The irregular positions in which the potsherds were found and the rather mixed nature of the fill may indicate that this feature was deliberately backfilled in a single episode.

Pit 50346 was roughly circular with a diameter of 1.46 m with steeply sloping sides and a slightly concave base. Relatively large quantities of charred grain (in particular spelt) (samples 59014 and 59015) were recovered from its fill (50347). They may derive from features contemporary with rectangular structure 50330 which is only *c.* 7 m to the north-east, and from which even larger quantities of spelt and other charred plant remains were recovered. Only two sherds of pottery were recovered; one was an upright rim sherd of Iron Age date (roughly contemporary with rectangular structure 50330) whilst the other was a small undiagnostic coarseware sherd of Romano-British date.

Pit 50360 was circular in plan, 0.85 m in diameter and 0.35 m deep with steep irregular sides and a fairly flat base. Finds retrieved from its dark greyish-brown silty clay loam fill (50257) included three pieces of undiagnostic waste from flint-working of Late Neolithic/Early Bronze Age date, small amounts of fired clay and burnt flint. There were two sherds of pottery – a sherd of sparsely flint-gritted Iron Age pottery of 1st century BC or AD date and a small sherd of undiagnostic Romano-British greyware.

Pit 50361 was a small sub circular pit, 0.75 m in diameter and 0.31 m deep with irregular sides and a concave base. Its dark greyish-brown silty clay loam fill (50362) appeared, from its homogeneous nature and the fairly uniform angles at which the flint pebbles lay within it, to be the result of natural silting rather than deliberate backfilling. The only datable material recovered consisted of two very small sherds of pottery, one a sherd of flint-gritted pottery of general Iron Age date and a small sherd of undiagnostic Romano-British greyware.

Pit 50441 was a large sub circular or oval pit, 1.55 m long, 1.3 m wide and 0.4 m deep with steep to moderate straight sides and a concave base. The reddish-brown silty clay fill (50442), which was only distinguished from the surrounding brickearth by the presence of charcoal flecks and occasional greyish-brown loamy lenses, appeared to be the result of natural silting rather than deliberate backfilling. The small quantity of finds recovered included burnt flint, daub with wattle impressions and four small sherds of pottery. One flint-gritted sherd was datable only to the later prehistoric period while the remaining three sherds were undiagnostic Romano-British greywares.

Pit 52047, in Area 5b, was a shallow sub rectangular pit, 3.6 m long, 1.1 m wide and 0.21 m deep with a dark brown silty clay fill (52048). Twenty sherds of Romano-British fine ware, including fragments of a New Forest colour-coated vessel more closely datable to the 3rd or 4th century AD, were recovered from the pit.

Ditches (Fig. 93)

Ditch 50001, which was in the western corner of Area 5a and aligned north-east to south-west, was 1.5–2 m wide and 0.6–1.2 m deep and traced for *c.* 35 m. It contained relatively large quantities of material of Romano-British date, along with Iron Age finds.

Ditch 50025 was traced for *c.* 25 m in the north-eastern end of Area 5a (where it cut the Iron Age hollow way 50432), and was aligned approximately north-west to south-east. It narrowed from 2.8 m wide and 1.1 m deep at the south-east end to 1.5 m wide and 0.6 m deep at the north-western end. Like ditch 50001, it contained

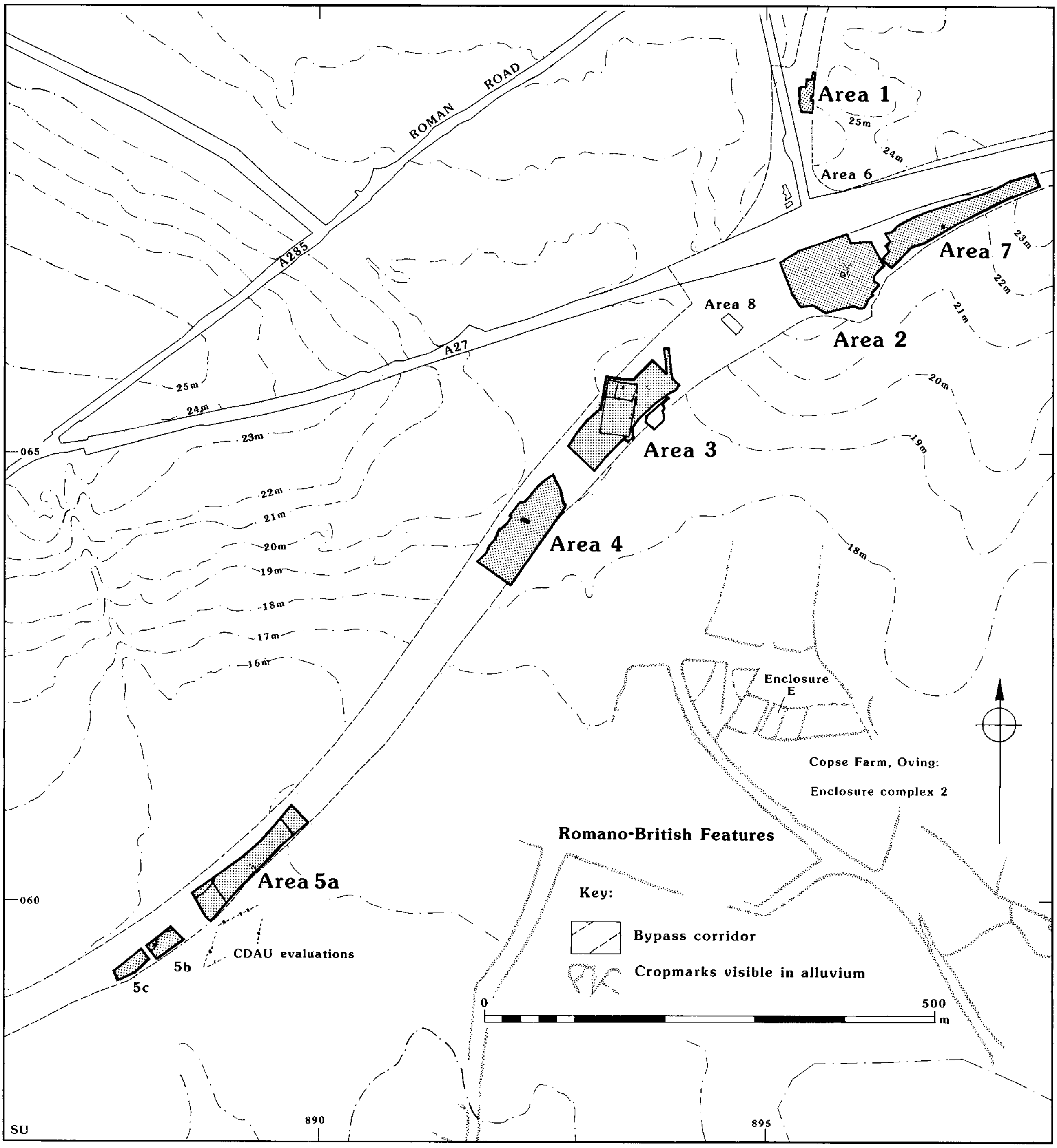


Figure 90 Excavation areas with features of Romano-British date and cropmarks of Copse Farm, Oving

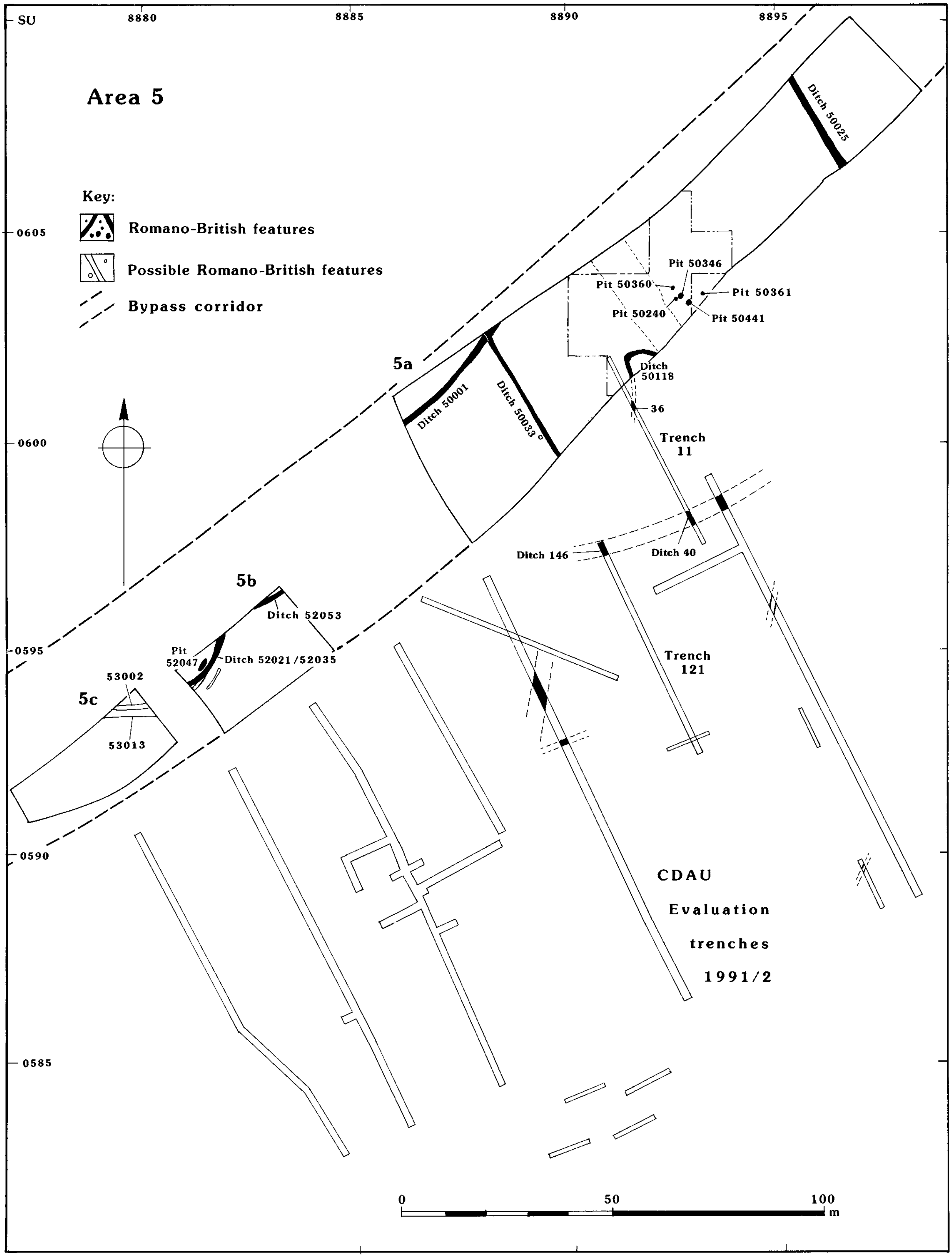


Figure 91 Area 5 and Chichester and District Archaeology Unit evaluation trenches: Romano-British features

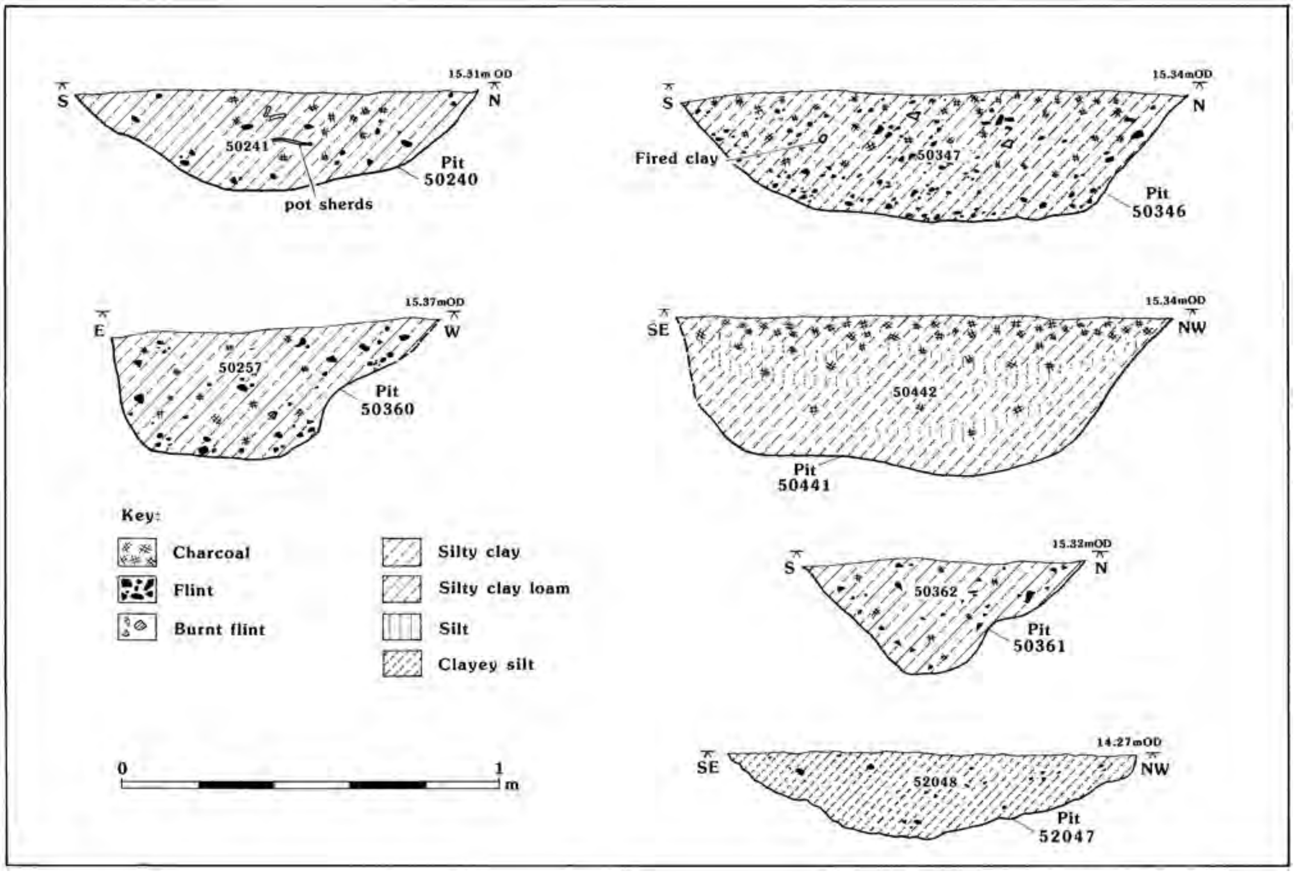


Figure 92 Area 5a: sections of Romano-British pits

relatively large quantities of material of Romano-British date, along with Iron Age finds. A short curvilinear ditch (50009) that cut the upper fills of ditch 50025 (Fig. 63) also produced Romano-British pottery. However, the fragments of clay pipe stem that were also recovered from the feature show it to be of post-medieval or modern date.

Ditch 50033 ran parallel to ditch 50025 in the south-western end of Area 5a and cut the upper fills of ditch 50001 and the Iron Age well (50060). It could be dated to the Romano-British period (or later) by its stratigraphic relationships, and the small quantities of prehistoric and Romano-British pottery that were recovered from its fills.

Ditch 50118 was a shallow ditch 1.3 m wide and 0.33 m deep. It ran north-north-west from the south-eastern limit of excavation in the centre of Area 5a for some 6 m before turning sharply to the east and curving back out of the excavation area. Thirty-eight sherds of flint-gritted pottery, including two rim sherds closely datable to the 1st century BC or AD, were recovered along with three very small sherds of Romano-British pottery, one of Rowlands Castle ware. No features were encountered within the excavated area (*c.* 16 m^2) enclosed by this ditch.

Ditch 52053 in Area 5b, on a similar alignment to ditch 50001 but offset from it by at least 10 m, was 1.1 m wide and 0.4 m deep. The only finds were 41 sherds of greyware, possibly all from a single vessel.

Ditch 52021/52035, in Area 5b, was a curvilinear ditch traced for *c.* 18 m from the north-western to the south-western edges of the excavation. It varied from 1.9 m wide and 0.7 m deep at its northern end to 1.1 m wide and 0.4 m deep at its southern end. It contained pottery datable to the 1st or 2nd century AD and appears to be a re-cut of undated ditch 52020, which it partly truncates. Both ditches may have been recorded in Area 5c as ditches 53002 and 53013, which were on a roughly similar alignment and were of comparable dimensions and profiles, but no stratigraphic relationships between 53002 and 53013 could be discerned and no datable material was recovered from either ditch.

The Metalwork, by R. Montague

A copper alloy pin (ON 57009) (Fig. 94) from ditch 50025 is a hair pin. Its shank is decorated with grooves and facets and the biconical knobbed head is decorated with a cross. Hair pins have been studied by Cool and the decoration on the head falls within her Group 12, 'knob heads with incised decoration' (1990, 164, fig. 8, 3–5, 8–10) but the shank is best paralleled within Group 5, 'simple grooved heads' (1990, 157, fig. 4, 2–11). Group 5 was made throughout the Romano-British period but was most popular in the 2nd century AD, and the dating for Group 12 is consistent with this.

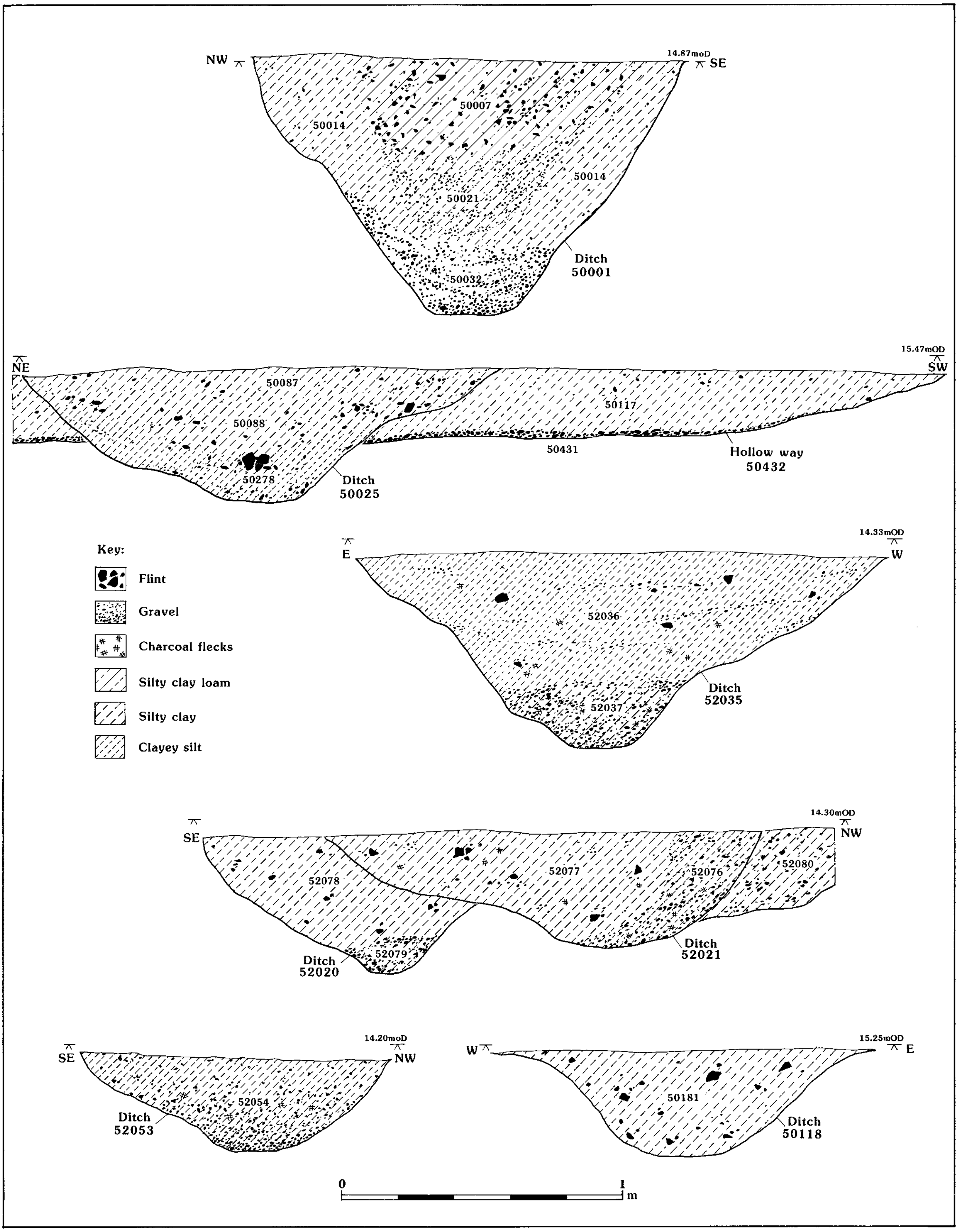


Figure 93 Areas 5a–b: sections of Romano-British ditches and hollow way

The only other metal objects from Romano-British contexts were one nail (ON 57506), a possible nail shank, and four hobnails from ditch 50001 (ON 57003, 57005) (Fig. 94).

The Pottery, by Lorraine Mepham

The assemblage comprises 286 sherds (4027 g), all derived from stratified contexts. While unstratified pottery from Area 5 is not considered here in detail, unstratified sherds were scanned for the presence of types not represented amongst the stratified assemblage, and these are included in the discussion below.

Methods

The methods used for this assemblage were the same as that employed for other settlement assemblages within the Westhampnett complex, as described in detail below for Area 3 (pp. 210–18), and full details are held in the archive. The assemblage from Area 5 was divided into 22 separate fabric types on the basis of the range and size of inclusions. These were then grouped according to the dominant inclusion type into four broad fabric groups: Group G (grog-tempered); Group I (fabrics with iron oxides); Group Q (sandy fabrics) and Group M (micaceous fabrics), as well as 'established' wares of known type or source. The fabric descriptions employ the following terms to define the frequency of inclusions: rare (1–3%); sparse (3–10%); moderate (10–20%); common (20–30%).

Fabrics

The comparatively limited range of fabrics identified within the assemblage can be divided, for the purposes of the discussion presented here, into five groups (Table 59):

1. Samian and other imported wares
2. British fine wares of known source
3. Other fine wares of unknown type
4. Grog-tempered coarsewares
5. Sandy coarsewares

Table 59 Area 5, Roman pottery fabric totals

Fabric type	*No. of sherds*	*Weight (g)*
Imported wares		
Samian	20	73
Amphora (Dr 1-4)	1	142
Amphora (Dr 2-4)	1	31
Amphora (Dr 20)	2	274
Amphorae (?)	1	17
Fine wares of known source		
New Forest	14	151
Other fine wares		
I101	1	6
M100	2	11
M101	5	49
M102	2	4
Q124	4	13
Grog-tempered coarsewares		
G101	2	38
G102	1	3
Sandy coarsewares		
Q100	78	931
Q101	2	5
Q102	10	57
Q103	117	2048
Q104	2	18
Q105	4	30
Q107	8	58
Q112	8	53
Q115	1	15
Total	**286**	**4027**

Samian and other imported wares

The quantities of samian recovered were very small, perhaps surprisingly given the postulated date range for activity on the site (see below). All sherds were small and abraded, and there was only one rim sherd identifiable as to type, deriving from a form 37 bowl.

Five sherds of amphora were recovered from stratified contexts. Two of these are of Dressel 20 type, and two more sherds of Dressel 20 came from unstratified cleaning layers across the site. This is a particularly common and long-lived type, and these sherds could date anywhere between the late 1st to early 3rd century AD. The three remaining stratified sherds of amphora, all from the same context (fill 50101 of ditch 50025), comprise one sherd in the distinctive 'black sand' fabric characteristic of Campanian amphorae, probably deriving from a Dressel 2-4 vessel; one sherd in a soft, calcareous fabric probably of southern French origin (e.g. Peacock and Williams 1986, Classes 27–30), and one sherd from an unspecified Dressel 1-4 type, but which is perhaps most likely to be from a Dressel 2-4. A similarly extended date range is possible for these three types.

British fine wares of known source

Other fine wares were similarly restricted in quantity, and the only recognised British fine ware consisted of sherds of New Forest colour-coated vessels. None were identifiable as to vessel type. Based on the evidence from the excavated kilns, a date range of late 3rd–4th century AD may be suggested for these sherds (Fulford 1975a).

Other fine wares of unknown type

Two fabric types were distinguished on the basis of the fineness of the clay matrix and inclusions, and are described below.

I101 Soft, fine silty matrix; sparse, poorly sorted iron particles <1 mm; rare mica; wheelthrown; unoxidised.

Q124 Soft, micaceous, moderately sandy matrix, poorly wedged; moderate, well-sorted subrounded quartz <0.25 mm; rare red iron oxides <0.25 mm; wheelthrown; oxidised pink-orange.

Fabric I101 is represented by only one sherd, and fabric Q124 by four sherds, all probably from the same vessel. In neither case could vessel form be determined. Fabric I101 has also been recognised within the assemblage from Area 3 (below), although no diagnostic forms were recovered from the latter site.

In addition, one sherd from unstratified cleaning over the site warrants a brief note. This sherd derives from the rim of a beaker with rouletted decoration on the lower half and traces of a red colour-coat (Fig. 94, P79). The fabric of this sherd (not included in fabric type series), which comprises a fine, silty matrix with a soapy feel, containing red iron particles <1 mm and cream-coloured grog/clay pellets <1 mm, is not paralleled elsewhere at Westhampnett. The vessel type is paralleled at Fishbourne in pre-Flavian contexts, and is apparently common in Sussex in a variety of wares (Cunliffe 1971, fig. 85, type 32). An example of a slightly different form, but with comparable rouletted decoration, in a fabric described similarly as 'soapy', came from a pit at Wiggonholt dated AD 90–110 (Evans 1974, fig. 15, no. 124).

Grog-tempered coarsewares

Two grog-tempered fabrics were identified.

G101 Soft, moderately fine matrix; moderate, well-sorted, subrounded quartz <0.25 mm; moderate, poorly sorted irregularly shaped grog/clay pellets <5 mm; rare iron oxides <0.5 mm; uncertain manufacture; oxidised with unoxidised core.

G102 Hard, moderately sandy matrix; sparse/moderate, poorly sorted, subangular grog <2 mm; moderate, well-sorted, subrounded quartz <0.25 mm; rare iron oxides <0.5 mm; uncertain manufacture; unoxidised.

No diagnostic sherds were present.

Sandy coarsewares

The remaining nine fabrics (Table 59), fall into the category of coarse sandy fabrics. All these fabrics also occur within the assemblage for Area 3, and are described in the report for that area (below).

The potential sources of these sandy fabrics are discussed below (p. 213) with particular regard to the Rowlands Castle-type fabrics Q100 and Q103, and as for Area 3, these two fabrics overwhelmingly dominate the Romano-British assemblage from Area 5. None of the other sandy fabrics occur in quantities greater than ten sherds (Table 59), and there is a correspondingly restricted range of identifiable vessel forms (Table 60): ten jars, one carinated bowl (Fig. 94, P84), and one imitation Gallo-Belgic (*Cam.* 14) platter (Fig. 94, P85).

Table 60 Area 5, Roman vessel forms by fabric (coarsewares only)

	Q100	*Q102*	*Q103*	*Q104*	*Q107*	*Total*
Jars						
Unspec., 1st/2nd C	1		1	–	–	2
High-shouldered	–	1	3	–	–	4
Rounded	–	–	3	–	–	3
Necked	1	–	–	–	–	1
Bowl						
Carinated bowl	–	–	–	1	–	1
Platter						
Cam. 14	–	–	–	–	1	1
Total	**2**	**1**	**7**	**1**	**1**	**12**

The jar types include the characteristic everted rim, high-shouldered or rounded forms common within the assemblage from Area 3 (Fig. 94, P80–83). All these vessel forms may be considered as of 1st or 2nd century AD date, but none are particularly closely datable within this period. There is a growing body of evidence to suggest that the Rowlands Castle production centre was in operation before the conquest in the first half of the 1st century AD, manufacturing greywares of 'Romanised' appearance (M.A.B. Lyne pers. comm.) and, given the presence on the site of characteristically Late Iron Age fabrics and forms, a similar date might be suggested for some of these greywares. The distribution of fabrics Q100 and Q103, however (see below), and their consistent association with samian and other demonstrably Romano-British wares, would argue instead for a more traditional dating.

Distribution on Site

Pottery was recovered from ditches, pits and postholes from which vertical stratigraphy was almost entirely lacking, except in the case of the ditches, in which more than one fill could sometimes be distinguished.

Ditches 50001 and 50025

The vast majority of the Romano-British assemblage derived from ditch fills (Table 61), mostly from the two ditches 50001 and 50025, located at opposite ends of the main excavation area. Just over two-thirds of the total assemblage from these two ditches comprised sherds in Rowlands Castle-type sandy fabrics (Q100, Q103). Vessel forms recognised include a small range of jars of 1st/2nd century AD type (Fig. 94, P80–2, and this early Romano-British date is supported by the presence of sherds of samian, including a form 37 bowl, a whiteware flagon and an imitation Gallo-Belgic platter in a coarse sandy fabric (Fig. 94, P85), all from ditch 50001. Ditch 50025 would appear to be of the same general date range, containing early jar forms in Rowlands Castle wares and other sandy fabrics, as well

Table 61 Area 5, Roman pottery from ditches (by number/weight in grams)

Feature	*Context*	*Samian*	*Amph.*	*New Forest*	*Other fine*	*Rowlands Castle*	*Other sandy*	*Grog-t.*	*Total*
50001	50003	–	–	–	–	1/14	1/26	–	2/40
	50004	4/19	–	–	–	45/508	–	–	49/527
	50005	1/18	–	–	1/6	22/100	1/15	–	25/139
	50007	–	–	–	–		7/50	–	7/50
	50014	–	–	–	–	1/7	2/1	–	3/8
	50015	1/2	–	–	–	–	–	–	1/2
	50016	–	–	–	1/8	–	–	–	1/8
	50021	–	–	–	–	15/448	–	1/3	16/451
	50052	–	–	–	–	13/756	–	–	13/756
	50058	3/7	–	–	–	–	7/27	1/37	11/71
	50084	–	–	–	4/13	–	4/7	–	6/20
	50102	–	–	–	–	1/4	–	–	1/4
50025	50026	–	–	1/58	1/5	3/38	1/5	–	6/106
	50030	–	–	–	2/4	–	–	–	2/4
	50037	–	–	–	–	4/26	1/4	–	5/30
	50050	–	–	–	–	2/9	3/21	–	5/30
	50087	–	–	–	–	–	2/13	–	2/13
	50088	–	–	–	2/25	1/72	–	–	3/97
	50100	–	2/274	–	2/19	–	1/16	–	5/309
	50101	–	3/190	–	–	16/407	2/35	–	21/632
	50278	–	–	–	1/3	4/22	–	–	5/25
50033	50049	–	–	–	–	1/4	–	–	1/4
50118	50181	–	–	–	–	2/7	1/3	–	3/10
52021/ 52035	52067	–	–	–	–	–	1/7		
52053	52054	–	–	–	–	41/484	–	–	–
Total		**9/46**	**5/464**	**1/58**	**14/83**	**172/2906**	**34/230**	**2/40**	**195/3336**

Table 62 Area 5, Roman pottery by feature (other than ditches)

Feature	*Samian*	*New Forest*	*Grog-t*	*Rowlands Castle*	*Total*
Pit/posthole 50047	–	–	–	1/4	1/4
Pit/posthole 50205	1/5	–	–	–	1/5
Pit 50240	–	–	–	3/9	3/9
Pit/posthole 50279	–	–	–	1/2	1/2
Posthole 50328	–	–	1/1	1/3	2/4
Pit 50346	–	–	–	1/7	1/7
Pit 50360	–	–	–	1/2	1/2
Pit 50361	–	–	–	1/1	1/1
Hollow way 50432	–	–	–	1/5	1/5
Pit 50441	–	–	–	2/7	2/7
Layer 50473	–	–	–	2/6	2/6
Pit/posthole 50500	–	–	–	1/1	1/1
Posthole 50566	–	–	–	1/2	1/2
Pit 52047	10/22	10/78	–	–	20/100
Total	**11/27**	**10/78**	**1/1**	**17/56**	**39/162**

as sherds of three different amphora types (Dressel 1-4, Dressel 2-4 and a southern French type), although the presence of one later sherd of New Forest colour-coated ware should also be noted.

Ditches 50009, 50033 and 50118

Two other ditches within the main excavated area produced much smaller quantities of Romano-British pottery. From ditch 50033 came a handful of sherds in sandy fabrics, none diagnostic, though 50118 contained rather more. In addition, post-medieval ditch 50009 produced four sherds of Rowlands Castle-type sandy wares, and one small sherd of New Forest colour-coated ware.

Ditches 52021/52035 and 52053 (Area 5b)

To the south-west of the main excavated area, two ditches within Area 5b produced Romano-British pottery, all Rowlands Castle-type sandy wares, including sherds of what appears to be a single jar in fabric Q103 from ditch 52053.

Other features

Very small quantities of pottery were recovered from other features within the excavated area (Table 62), in a very limited range of fabrics, and this small group of pottery is generally in poor condition, characterised by small, abraded sherds (mean sherd weight 4.1 g). The majority of sherds are in Rowlands Castle-type sandy fabrics. Other coarsewares are restricted to a single tiny grog-tempered sherd from posthole 50328. There are no diagnostic sherds amongst the coarsewares. Pit 52047 (Area 5b) produced only fine wares, including ten sherds of very abraded samian, and ten sherds of New Forest colour-coated ware, probably all from the same vessel, a flagon or bottle of unknown form. A single sherd of samian came from posthole 50205.

The distribution of features containing Romano-British pottery shows a distinct patterning within the main excavated area. Most of the pits and postholes cluster in a small group in the centre of the excavated area or are in the vicinity of ditch 50118.

Discussion

The small Romano-British assemblage from Area 5 appears to be largely of 1st or 2nd century AD date. The Romano-British wares have a restricted distribution, mainly in ditches and the small number of pits and postholes that produced Romano-British pottery include a marked concentration in the centre of the site. Romano-British activity in this area must have been at a low level of intensity, and may not have continued much beyond the beginning of the 2nd century, although some sporadic activity in the later Romano-British period is demonstrated by the presence of a few sherds of New Forest fine wares.

List of illustrated sherds (Fig. 94)

P79 Rim of beaker; wheelthrown; rouletted decoration; traces of possible red-brown colour-coat on exterior. Context 50000, unstratified overburden.

P80 Everted rim jar, fabric Q103; wheelthrown. PRN 660, context 50021, ditch 50001.

P81 Everted rim jar, fabric Q103; wheelthrown. PRN 717, context 50052, ditch 50001.

P82 Everted rim jar, fabric Q103; wheelthrown. PRN 783, context 50101, ditch 50025.

P83 Everted rim jar, fabric Q103; wheelthrown. PRN 1056, context 52037, ditch 52021/52037

P84 Carinated bowl, fabric Q104; wheelthrown. PRN 711, context 50050, ditch 50025.

P85 Platter imitating *Cam.* 14, fabric Q107; wheelthrown. PRN 634, context 50007, ditch 50001.

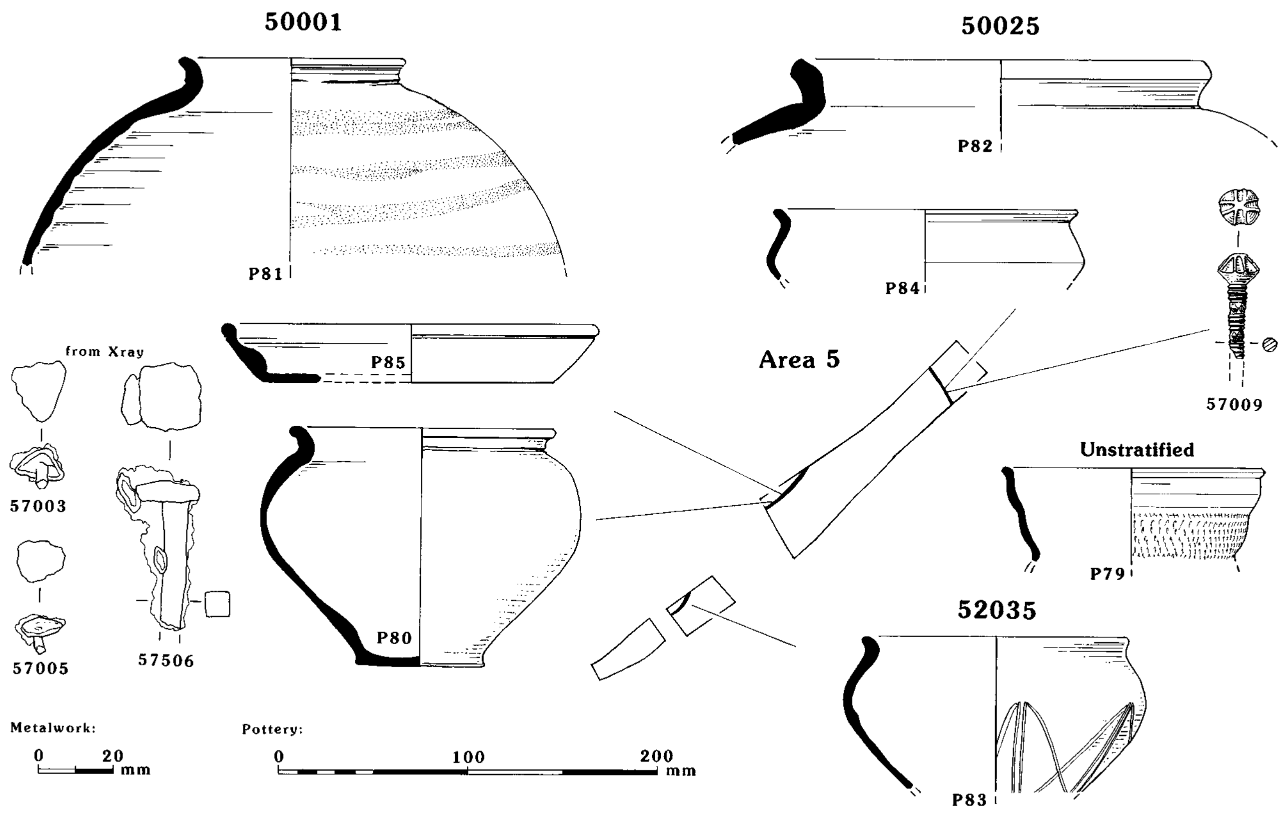


Figure 94 Area 5a–b: finds from Romano-British ditches

Other Finds, by H.F. Beamish

Ceramic Building Material

Seventy fragments of Romano-British ceramic building material (7312 g) were recovered and they have been identified largely on the basis of their thickness and fabric; only two fragments could be identified to type (one *tegula* and one flue tile). Just under half of the material was recovered during the initial clearance of the topsoil from the site and was unstratified. Most of the remainder came from ditch contexts (Romano-British ditches 50001, 50025, 52053 and 50033, and post-medieval ditch 50009), with one fragment found in an upper fill of well 50060 and one from posthole 50328. None of this material can be considered to be *in situ* and, as with Area 3 (below), it appears to represent a background scatter of material derived from a nearby building or buildings.

Fired Clay

Almost half of the fired clay came from pit 50346 and this and the other pits or postholes that contained fired clay (50047, 50240, 50328, 50360, 50441) form a small cluster in the centre of Area 5a. A small quantity of fired clay (71 fragments; 217 g) was recovered from ditch 50001. The fired clay consists mainly of small, featureless, fragments which are most likely to be of structural origin, either from standing structures or from hearth or pit linings; a small number of fragments have either surfaces or possible wattle marks. The remaining fired clay was found in very small quantities in other features scattered across the site and it is possible that this material is largely redeposited as a similar distribution is apparent in features of Iron Age date. In addition, one ceramic spindlewhorl made from a pot sherd was found.

Worked Stone

Two fragments of quern, one certainly from a rotary quern, were found in ditch 50001

Charred Plant Remains, by Pat Hinton

Charred plant remains were recovered from a single pit (50346) (Table 79). Given the proximity of this pit 50346 to the Iron Age structure 50330, one posthole of which (50103) contained similarly large quantities of cereals, chaff, and other seeds (see Table 56), it is possible that some of the material in the pit derived from the earlier structure.

Charcoal, by Rowena Gale

One sample from ditch 50001 included a mixture of charcoal and seeds, and was thought to be discarded fire refuse. The charcoal contained a mass of well-preserved oak stems/branches (diameter >20 mm) and heartwood; *Prunus* was comparatively sparse. Samples from pit 50346 included fragments of oak (narrow roundwood, sapwood and heartwood), *Prunus*, and hazel. The charcoal was mixed with general debris: bone, seed, burnt flint and pottery.

Discussion

The evaluation in advance of gravel extraction in the Shopwyke quarry to the south of the Area 5a revealed evidence for extensive Romano-British settlement (Fig. 91). Ditch 40 in evaluation trench 11 (ditch 146 in trench 121) contained very large quantities of Romano-British pottery (almost twice as much as excavated from Area 5), as well as brick, tile and animal bone (Browse and Kenny 1991; Kenny 1992). As this area was designated as an Archaeologically Sensitive Area and excluded from the quarry, no further information is available.

The pottery and tile suggest settlement in the vicinity but in so far as can be seen, and assuming that the great majority of undated postholes in Area 5 are Iron Age rather than Romano-British in date, this was not within the excavated area. The pits and postholes may represent a specialised activity area outside the settlement, which lies to the north or, more likely, to the south-east. The ditches in Area 5 and those recorded in the evaluations may well be associated with a network of cattle droveways and corrals of the sort identified on air photographs immediately to the east at Copse Farm, Oving (Fig. 90).

The Romano-British Enclosure (Area 3), by Andrew B. Powell

Two Romano-British ditched enclosures were excavated. The earlier, a square enclosure contained a square post-built structure that was subsequently enclosed within the northern end of a larger rectangular enclosure, the eastern side of which had been recorded in evaluation trench 30 (Pl. 24). Because the large enclosure straddled the whole of the road corridor, the area of excavation on the north-west side was extended by *c.* 20 m in order to locate its north-western corner (Pl. 25). Although later prehistoric pottery was found in both enclosures, it seems likely to be residual in those contexts (p. 233 below).

Phase 1: Square Enclosure

The first phase consisted of a square ditched enclosure (30370), covering an area of *c.* 360 m² (Fig. 95). There was an entrance midway along the eastern side incorporating a post-built structure, and the interior of the enclosure contained a square timber structure (30200) consisting of 24 postholes set 1–2 m inside the ditch. A long shallow hollow (30174) inside its

Plate 24 View to the south-west of the Phase 1 enclosure 30370 and square timber structure 30200 in Area 3

Plate 25 View from the north-east of the north-west corner of the Phase 2 enclosure 30381, its ditch truncating the Phase 1 ditch on the northern side and extending beyond it to the west to create the extension 30382. Note the absence of postholes along the northern side of the Phase 1 timber structure 30200. Hollow 30266 is in the centre ground in front of the 1 m scales

eastern side appears to have been directly related to this structure. A number of other certain and possible postholes, some in close association to a second hollow (30266), were recorded within the enclosure. Some of the possible postholes might be regarded as forming an irregular north–south alignment across the enclosure, but otherwise none formed an identifiable structure.

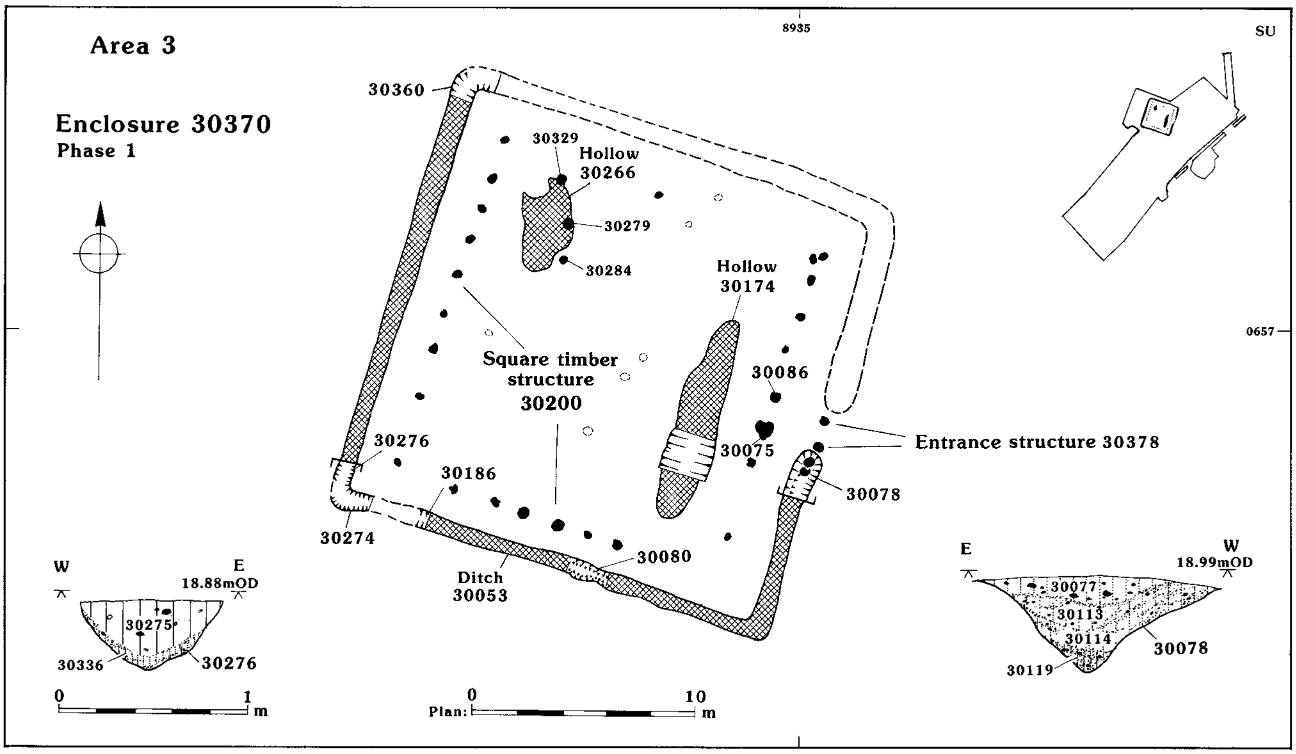


Figure 95 Area 3: plan and sections of Phase 1 Romano-British enclosure 30370

Enclosure ditch

The ditch (30053), which would originally have had a total length of 82 m, was 21 m long on each side and, so far as could be seen, was broken only by the entrance on the east. The ditch was completely recut along its northern side and to the north of the entrance on the eastern side by the Phase 2 enclosure ditch, but survived around the rest of the circuit, although truncated by recent ploughing and by the machine removal of the brown 'alluvial soil' (p.18). Five sections were excavated around its circuit, one at the southern terminal, two on the southern side, and one each at the south-western and north-western corners, comprising a 17% sample.

The profile of the ditch varied depending on the geology into which it was cut (Figs 15 and 95). Because the ditch on the east side had been visible cutting the fine chalk gravel immediately after the removal of the ploughsoil, no further machine cleaning was required in this area, and consequently the ditch survived to its greatest depth at the southern terminal. Here it had a moderately steep V-shaped profile and was 2.3 m wide and 0.8 m deep, with a narrow flat base and a flat steep-sided lip at the top of either side (30078). On the southern side of the enclosure, where the ditch cut through the calcareous marls but did not extend into the underlying layer of compact flints, it was 0.9 m wide with steep sides 0.25 m deep and had a flat base. On the western side, where the chalk marl was deeper, it had a U-shaped profile, and was 0.75 m wide and 0.38 m deep.

Apart from in the southern ditch terminal, a maximum of two fills were evident – a shallow primary fill of light brown sandy silt containing peagrit, and a secondary layer of darker brown silty loam. Only at the ditch terminal did the upper fills survive, and here consisted of dark yellowish-brown sandy loams containing increasing quantities of artefactual and faunal remains towards the surface. The finds recovered from the ditch, including pottery, animal bone, oyster shell, with some burnt flint and burnt clay, appear to be typical of domestic refuse. However, apart from at the ditch terminal, the quantities are relatively small in comparison to the material from the Phase 2 enclosure ditch (pp. 202–3 below).

Enclosure entrance

There is evidence of a post-built structure (30378) at the entrance to the enclosure. Access to the interior was gained across the ditch through a 2 m wide causeway situated midway along the east side. Although the ditch to the north of the entrance had been almost completely recut by the deeper and wider Phase 2 ditch, the position of the northern ditch terminal remained just visible in plan. On either side of the causeway, and in line with the terminals, were two postholes with a gap between them of only 0.8 m, forming part of some entrance structure or gateway. The posthole on the north side (30098) was 0.55 m in diameter and 0.18 m deep, that on the south side (30095) being 0.4 m in diameter and 0.2 m deep.

As both postholes were cut into the loose chalk gravel, and neither contained any packing material, this structure would not, by itself, have been stable. However, on the same line, two further postholes (30116) and (30118), were recorded in the base of the southern ditch terminal. They were apparent as shallow circular depressions filled with brown silty loam cut into the gritty primary fill of ditch 30119, but were not visible at higher levels in the ditch fills. These postholes may represent some form of lateral support to the entrance structure and, if so, it is probable that there would have been similar features in the northern ditch terminal. However, the Phase 2 recutting of the ditch to the north of the entrance would have destroyed any evidence of corresponding features that might have existed there.

Even with these lateral posts, without further support either in front of or behind the entrance, this structure would have lacked stability. There is evidence, however, that this entrance structure was linked to the square timber structure within the enclosure (below). The two postholes of the timber structure positioned immediately inside the entrance were significantly larger than those from the rest of its circuit. The more southerly of the two (30075) was 0.8 m in diameter and 0.45 m deep, and the one to the north (30086) was 0.6 m in diameter and 0.36 m deep. These two postholes were set relatively close together in comparison with most of the rest, with a gap of only 0.8 m between them, the same distance as between the pair set in the causeway. Their larger size may be due to these timbers having been replaced, and/or because they formed the inner part of a substantial entrance structure.

Square timber structure

Evidence for the post-built structure (30200) within the enclosure consisted of an arrangement of 24 postholes, with average dimensions of *c.* 0.4 m in diameter and *c.* 0.2 m in depth. They were set 1.5–2 m in from the east, south and west ditches, with only a single posthole surviving on the north side, at approximately the mid-point (Pl. 3). It seems probable that the absence of postholes on the north side was because they had been completely truncated by a combination of subsequent cultivation and the mechanical excavation. (The depth of surviving features was generally shallow, and on the north side the upper surface of the fine chalk gravel, at which level manual excavation in this area commenced, was between 0.1–0.2 m lower than over the rest of the enclosure.) There were a number of gaps in the arrangement of postholes on the three other sides, again probably where former postholes had been completely truncated.

On this basis, the structure would have been constructed of up to 40 timber posts, spaced at 1.5–2 m intervals, set in a square approximately 15 m by 15 m, with 10 or 11 posts along each side. Access to the structure, which enclosed an area of *c.* 230 m², appears to have been gained through a narrow wooden gateway positioned immediately inside the ditch. The supporting timbers in the ditch terminals would have had the effect of restricting access to any original berm between the posts and the ditch. Although during the excavation there was a 1–2 m wide gap between post and ditch, its width due in part to the truncation of the upper fills of the ditch, it is likely that any berm would originally have been significantly narrower.

A number of the postholes, which might otherwise have been overlooked, or considered to have been of doubtful authenticity on account of their shallow and irregular profiles, were identified as being part of the structure by their regular spacing. There was no evidence that the structure was roofed and, given the average diameters of its postholes (*c.* 0.4 m), it did not appear to have been very substantial in its construction. A single posthole, set immediately within the north-east corner of the structure, may indicate an additional support bracing the corner post or a replacement. The posts were too widely spaced to have formed an effective palisade, and instead had more of the appearance of fence posts.

Internal features

A number of posthole-like features were recorded in the interior of the structure, some in an irregular north–south alignment across the enclosure, although it is possible that not all were archaeological in origin.

Approximately 1.5 m inside the entrance, and running 9.5 m north to south, parallel to the eastern side of the square structure, there was a shallow-sided hollow (30174), 2 m wide and 0.13 m deep. A 2 m wide section of it was excavated which showed it to be cut mainly through the calcareous marls. Its base corresponded to the upper surface of the underlying compact flint layer, and it was filled with a brown sandy loam, which was lighter in colour towards the base. Its position and alignment identified it as being directly related to the Phase 1 enclosure but as no other features were recorded in association with it and there were no finds from it, its origin or function remains unclear. It may, however, represent an area where traffic, restricted by other, now lost, features to the west had led to trampling and the erosion and puddling of the marl.

A second hollow (30266) was situated in the north-western corner of the square structure (Fig. 96). It was irregular in plan, approximately 4 m long north to south, and 2 m wide, and it had a shallow profile with a maximum depth of 0.22 m. The feature was cut into fine calcareous gravel at the north end, and calcareous marl to the south. In the base of the hollow there was a thin layer of very hard sandy grit (30292), from which an unidentified fragment of copper alloy rod (possibly from a terret – a harness ring) and a second fragment were recovered. Initially regarded as mortar, this deposit proved to be calcareous gravel compacted with

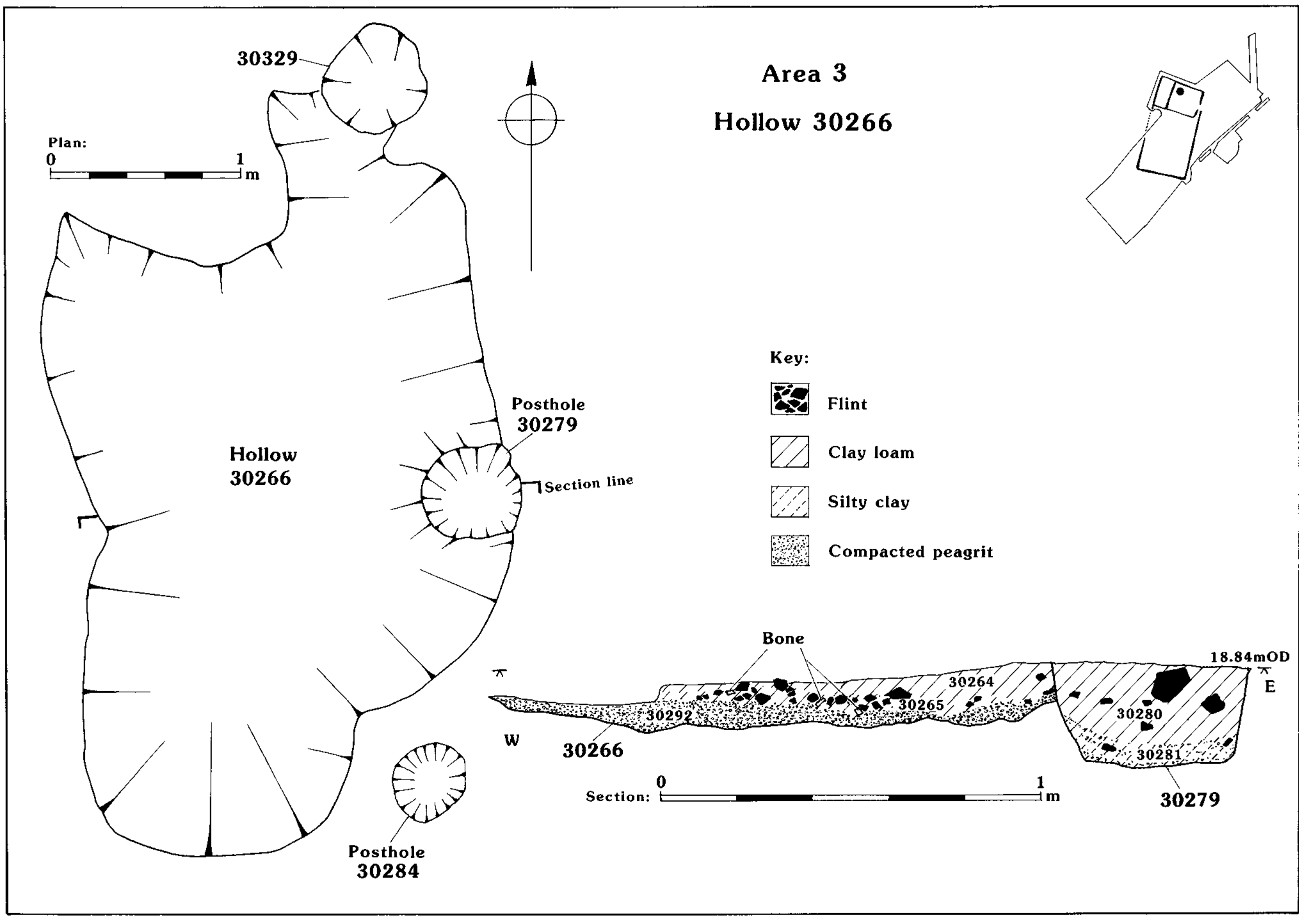


Figure 96 Area 3: plan and section of Romano-British hollow 30266

a manganese and iron pan. Embedded in the top of this layer was a spread of larger flint gravel and pebbles (30265) forming a second hard surface, within and over which was a dark brown soil (30264) (Pl. 26). Incorporated within, and lying immediately on top of this surface, were quantities of animal bone and oyster shell, as well as a sherd of Middle–Late Iron Age pottery and 1st–2nd century AD samian. It appears that here, as in hollow 30174, trampling may have caused the underlying chalk gravel to be compacted. Here, however, flint gravel and pebbles were deposited on the base of the hollow, perhaps to consolidate the surface. In view of the number of finds within and on top of the soil layer 30264 and the quantities of finds from the dark brown silty secondary fills of the Phase 2 enclosure ditch, it is possible that the layer is actually contemporary with Phase 2.

Two postholes on the eastern side of hollow 30266 may have formed some structure associated with it, although only one had a clear stratigraphical relationship to it. Posthole 30279, which cut through all the fills of the hollow, was just within its edge midway along its eastern side. It was rounded in plan, 0.45–0.5 m in diameter and 0.25 m deep, with steep sides and a flat base, and it contained a piece of animal bone, probably deriving from layers (30264–5) in the hollow. A second similar posthole (30284), 0.4m in diameter and 0.32 m deep, was sited 1.5 m to the south, just outside the south-eastern corner of the hollow. A third feature (30329) at the north-eastern corner, although similar in plan, was only 0.07 m in depth and may have been natural in origin.

Plate 26 The compacted pebble surface 30265 in hollow 30266 viewed from the south, in the north-west corner of the Phase 1 enclosure. In front of the surface is an unexcavated posthole 30279, with a second posthole 30329 cutting the surface at the right end of the section line. Scale 1 m

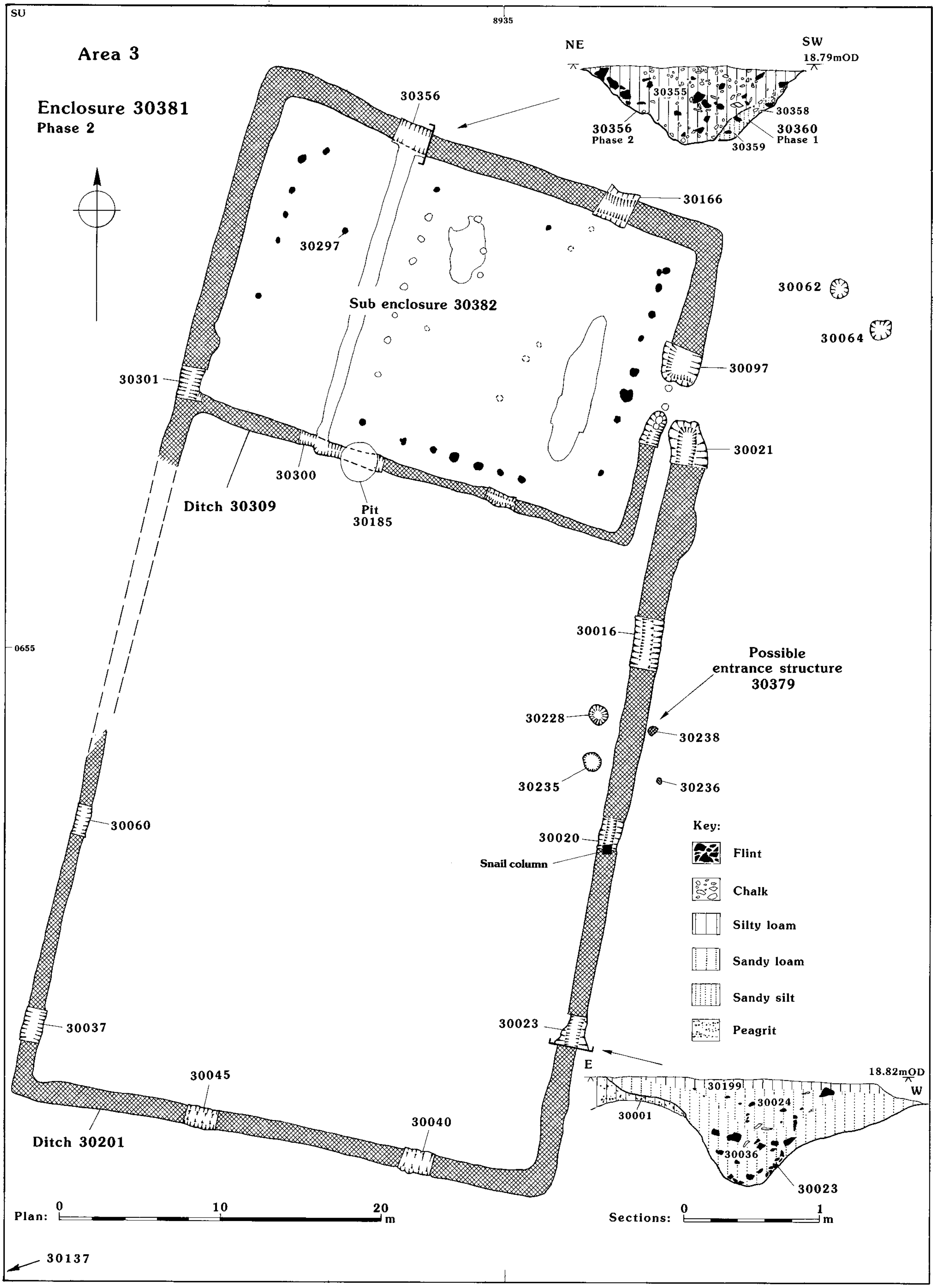


Figure 97 Area 3: plan and sections of Phase 2 Romano-British enclosure 30381

Phase 2: Rectangular Enclosure

By the time the Phase 2 enclosure was constructed, the Phase 1 ditch had silted up to a depth of at least 0.35 m. In its north-western corner the secondary fills were cut away by the later enclosure ditch. This second phase witnessed a reworking and extension of the Phase 1 structures, in order to incorporate them within the northern end of a much larger rectangular enclosure (30381) covering an area of *c.* 1800 m² (Fig. 97). The Phase 1 causewayed entrance continued to provide access into the northern end of the enclosure, but a group of postholes (30379) midway along the eastern side of the enclosure may represent an entrance into the southern part.

Enclosure ditch

The Phase 2 enclosure ditch (30201) had a presumed total length of *c.* 190 m, and was broken only by a 2.2 m wide entrance 10 m south of the north-eastern corner. The ditch was traced for all but a 20 m section midway along its western side, and while the assumption is made here that the ditch was continuous, it is possible that there was another causeway or entrance in that 20 m length. The ditch did not form a perfect rectangle, since at 61 m in length the eastern side of the enclosure was 7 m shorter than the western side, and the northern end, at 31 m, was almost 4 m shorter than the southern end. Twelve sections were excavated at approximately 10 m intervals, providing a *c.* 13% sample of the ditch.

To the north of the causeway the ditch ran on the same line as the Phase 1 ditch. However, although the inner edges of the two ditches were in approximately the same position, the outer edge of the Phase 1 ditch had been completely truncated by the wider Phase 2 ditch, which was 2.5 m wide at its northern terminal, narrowing to 1.5 m at the north-eastern corner. Along the northern side the Phase 2 ditch had also truncated the earlier ditch, but then continued for *c.* 9.5 m further west, cutting through new ground. It did not run on precisely the same line, but curved slightly to the north, before turning at a right-angle towards the south. On the southern side of the entrance the Phase 2 ditch did not cut the earlier ditch but was positioned outside it, leaving a narrow gap between them, although prior to the truncation of these features, it is unlikely that this gap existed. Its alignment also varied slightly from the line of the square enclosure's eastern side, being tilted to the east at its south end. As a result the two ditch terminals were not aligned exactly and in order to compensate for this, the southern terminal was cut so that it turned inwards towards the causewayed entrance.

As with the Phase 1 ditch, the profiles around the circuit of the Phase 2 ditch varied with the underlying geology and the degree to which the ditch had been truncated. Along the eastern side of the enclosure, the line of the ditch had been clearly visible cutting the brown alluvial soil, with the result that soil there had not been removed mechanically; all the ditch sections had relatively complete profiles, on average *c.* 2 m wide and *c.* 0.7 m deep. They had moderately steep V-shaped profiles with narrow, flat bases, and with wide shallow lips on either side. Along that section where the ditch overlay the Phase 1 enclosure, it had shallower sides, possibly due to the recutting of the earlier ditch combined with the fact that, in this area, it was cut into the fine calcareous gravel. Around the rest of the enclosure, where it cut through the calcareous marl, the ditch had been more severely truncated and on average was 1.2 m wide and 0.6 m deep and only the steep-sided lower part of the ditch remained.

In most of the ditch sections, a clear distinction could be made between primary and secondary fills and, where they survived, the tertiary fills. The primary fills consisted mostly` of light brown silty clays, the secondary fills of darker brown silty loams. Where, at the north-eastern side, the ditch cut the fine chalk gravel, these fills contained a very high fine gravel content, but elsewhere contained only small quantities of chalk and flint. The tertiary fills survived to their greatest depth along the north-eastern sector of the enclosure, but had been almost completely truncated to the south and west. The tertiary fills consisted of very dark greyish brown soils, containing isolated concentrations with a high organic content (Pl. 27). In one instance (in section 30040) a small scoop, possibly a pit (30025) cut within the tertiary fills, was identified but there is little to suggest any significant difference in date.

The artefactual and faunal material recovered from the ditch, consisting largely of Romano-British pottery, animal bone and oyster shell, appears typical of domestic refuse. There were also fragments of briquetage, burnt clay and burnt flint, pieces of quern, as well as small quantities of glass, and objects of copper alloy and iron.

Plate 27 South-facing section through Phase 2 enclosure ditch terminal 30097. Note the oyster shells and the difference between the lighter primary and secondary fills and the dark tertiary fill which contained a high organic content. Scale 0.5 m

Enclosure entrance(s)

Access across the Phase 2 ditch was gained through a 2.2 m wide causeway, situated on the same line as the Phase 1 entrance and close to the enclosure's north-eastern corner. This entrance opened into the area occupied by the Phase 1 enclosure, which was enlarged to occupy the whole of the northern end of the Phase 2 enclosure. It appears that this entrance did not give access to the southern, larger, part of the Phase 2 enclosure.

As already noted, the two terminals of the Phase 2 ditch were slightly offset at the entrance, the northern terminal cutting the Phase 1 ditch, but with the southern one positioned just outside it to the east. The result of this was to leave a narrow berm between the two ditches south of the entrance, up to 1 m wide at the south-eastern corner of the Phase 1 enclosure. However, the inward curve of the southern terminal of the Phase 2 ditch narrowed the berm to 0.3 m adjacent to the entrance, effectively denying anything more than very limited access into the southern part of the Phase 2 enclosure. Moreover, given that both ditches had been truncated, and would originally have been significantly wider than recorded in excavation, it is clear that the south terminals of the Phase 1 and Phase 2 ditches would have met.

Unless there was a second causeway across the ditch in the 20 m long section on the western side that was not exposed, access into the southern part of the Phase 2 enclosure would have required some form of bridge over the ditch. Such a possible entrance structure (30379) is indicated by four postholes, two either side of the ditch, sited approximately midway along the eastern side of the enclosure (Pl. 24). The two postholes on the inside (30228) and (30235), were positioned 1.9 m apart and parallel to the ditch, *c.* 0.8 m from its edge. They averaged over 1 m in diameter and *c.* 0.4 m in depth, and were the largest features in the whole of the southern part of the enclosure, and the largest postholes in the whole enclosure complex. Immediately opposite them, on the outside of the ditch, there were two smaller postholes, averaging 0.55 m in diameter and 0.2 m deep. The one to the south (30236) was positioned 1.3 m from the outer edge of the ditch, while that to the north (30238) was positioned right next to the edge of the ditch.

The arrangement of the pair of smaller postholes was not symmetrical like the pair inside but it is probable that the four postholes together represent some form of bridge. Because of the asymmetry and difference in size between the internal and external posts the exact nature of this structure is not clear and it remains possible that other, shallow, postholes may have been truncated entirely. The larger size of the internal postholes would be consistent with some form of drawbridge where the weight is taken on the internal posts.

Expansion of Phase 1 enclosure

Because the Phase 2 enclosure was wider than the Phase 1 enclosure, there remained a *c.* 8 m wide area between their two ditches on the western side. In order to enclose this area an 8 m long ditch (30309) was cut running west from the south-western corner of the Phase 1 ditch to join the Phase 2 ditch (Pl. 25). It was similar in profile to the Phase 1 ditch, measuring on average 1.1 m wide and was up to 0.4 m deep, with moderately steep sides and a flat base. Unfortunately, at its western end a tree root hole obscured the stratigraphical relation between 30309 and the Phase 2 ditch and at its eastern end (section 30300) the relationship with the Phase 1 enclosure could not be established with certainty. It is clear in plan, however, that this was an addition to the Phase 1 ditch and not an extension of it, since its line was slightly offset from the south-west corner of the earlier enclosure.

A total area of *c.* 520 m² was enclosed by this enlarged enclosure. While it is possible that it remained divided into two parts, the original square enclosure and a smaller rectangular extension to its west, it is more likely, given the disposition of the postholes in the interior (below), that it formed a single enclosure (30382), with the only access remaining through the original Phase 1 causewayed entrance.

Extension of Phase 1 square timber structure

A continuity of use in the enlarged Phase 1 enclosure is suggested by the extension of the Phase 1 square post-built structure. This was represented by a line of postholes, similar in size and arrangement to those in Phase 1, positioned 1.5–2 m apart inside the Phase 2 ditch. Five postholes were recorded 1.7–1.9 m in from the western ditch, with a single posthole on the northern side. The latter, while 2.3 m in from the ditch, was in a direct line with the three surviving postholes (two of them being corner posts) forming the northern side of the Phase 1 enclosure. At *c.* 0.34 m in diameter, they were slightly smaller than those of the Phase 1 structure, but they too had also been severely truncated, surviving on average to a depth of less than 0.14 m. Again, it seems probable that other postholes completed the circuit and joined with the earlier structure.

It is not known whether the posts forming the western side of the original structure remained, resulting in two 'compartments', or whether they were uprooted and moved, or replaced by new posts, to the west. If they were removed, but the remainder of the Phase 1 structure had remained standing, the new structure would have incorporated up to 60 posts and enclosed an area of *c.* 360 m² with one entrance on the eastern side.

It is possible that the two hollows located within the Phase 1 structure were dated to the second phase, or to both phases. It may not be coincidental that the irregular hollow (30266), with its hard packed surface and associated postholes, is situated exactly midway along the north side of the extended enclosure. The similarities between the upper fill and finds from 30266 and the secondary ditch fills and their contents might support this.

The only other features which might have given some additional clue to the function of the expanded enclosure and timber structure were an inhumation burial (30269) which radiocarbon dating has shown to be Late Neolithic (p. 117), and a single irregular rounded feature (30297), *c.* 0.4m in diameter and 0.4 m deep, containing a quantity of animal bone and burnt flint.

Pit 30185

The only archaeological feature within the large Phase 2 rectangular enclosure was a substantial circular pit (30185), which cut the ditch forming the southern side of the Phase, 1 enclosure. It was half-sectioned, being excavated manually to a depth of 1.2 m and then, for reasons of health and safety and pressure on resources, it was excavated mechanically in order to determine its depth and profile (Fig. 98). For this reason finds were only recovered systematically from its upper fills. The pit was 2.4 m in diameter at the top with steeply sloping sides to a depth of *c.* 0.9 m, from where it narrowed and the sides dropped vertically to a flat base at a depth of 1.65 m. It is possible that the feature was a well. Thirteen layers were recorded, the lower part of the pit having been filled by the erosion of the upper sides. Finds included pottery of 2nd century AD date, iron nails, ceramic building material, a dressed chalk block, and animal bone and oyster shells. On the basis of the pottery it would seem reasonable to suggest that this small group of pottery is broadly contemporary with that from the secondary fills of the Phase 2 enclosure ditch (p. 217). This is supported by the evidence of the ceramic building material. Twenty-four per cent (by weight) of this derived from pit 30185 with a further 48% from section 30166 of the Phase 2 ditch section on the enclosure's northern side.

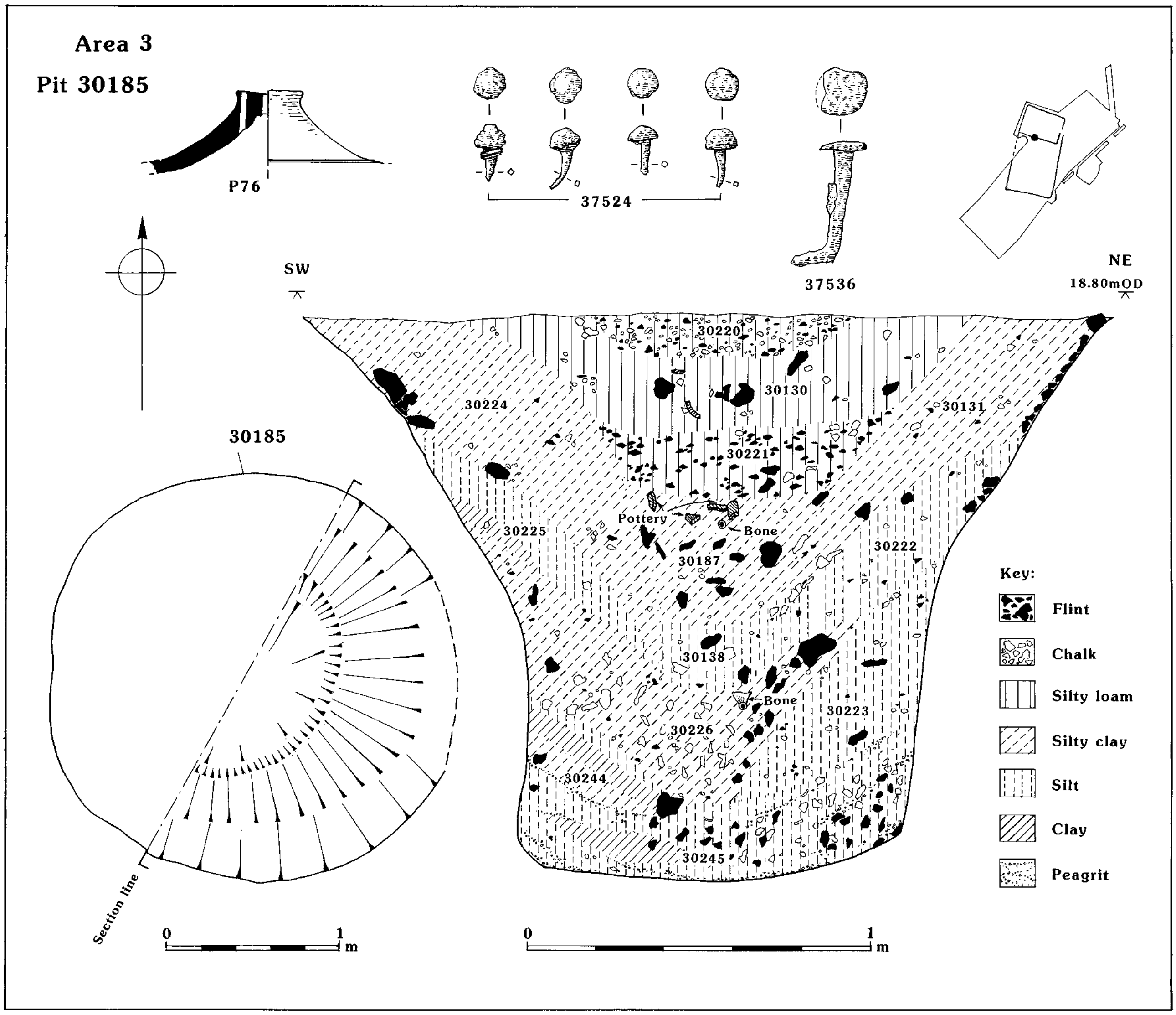


Figure 98 Area 3: plan and section of Romano-British pit 30185 and associated finds

Apart from two shallow features to the east of the enclosures (below), pit 30185 is the only feature from Area 3 that might be considered domestic in nature. If the ditch forming the southern side of the Phase 1 enclosure close, which the pit cut, continued in use into Phase 2, then the pit post-dates the Phase 2 inner enclosure. This could suggest that the layout and organisation of features within the northern end of the Phase 2 enclosure were not long-lived.

Features Outside the Enclosures

Pits 30062 and 30064

A pair of small pits (30062 and 30064) lay only 1 m apart, *c.* 12 m to the east of the north-east corner of the enclosures (Fig. 97). Both pits were roughly circular, *c.* 1.1-1.3 m in diameter and *c.* 0.15 m deep, with shallow sloping sides and concave bases. Only 30064 could be dated but it is assumed that they were contemporaneous. Both contained fragments of bone, flint and burnt flint, but pit 30064 also contained oyster shell, a spherical fired-clay spindlewhorl (ON 37504), and Romano-British pottery.

Pit/well 30137

A large waterlogged pit or well (30137) was excavated close to the western corner of the area (Fig. 8). It was approximately oval in plan, 4 m long and 2.6 m wide, and was initially visible as an area of grey silty clay. It was half-sectioned manually to a depth of *c.* 0.5 m at which level, *c.* 18.8 m OD, the water table was reached. The base of the section was then exposed by machine, showing that the pit had steep sides towards the top before curving to a concave base at a depth of 1.3 m.

The pit was cut into the Lateglacial flint layer (30377). A clay-filled hollow and a small feature (30151) on the pit's northern face, 0.6 m long and 0.4 m wide with steeply tapering sides, would appear to be natural periglacial features. The pit was filled with a series of layers of gravelly sandy loams and clays, some apparently dumped and containing lenses of very dark humic silt and fragments of charcoal. Small quantities of animal bone, flint and fired clay were recovered from the feature, but the only dating evidence, consisting of four sherds of Middle/Late Iron Age pottery and a single sherd of 3rd–4th century AD New Forest pottery, derived from the uppermost fill (30136).

The nature and date of the feature cannot be determined with certainty. The feature has, however, been ascribed to the Romano-British period, as redeposited prehistoric pottery also occurred in the Phase 2 enclosure ditches (p. 233), and it is suggested that it may have been a well.

Two postholes (30180 and 30178), *c.* 0.4 m in diameter and 0.25 and 0.4 m deep respectively, were situated 1 m and 2 m to the north-west of the pit, and may be associated with it, perhaps as a well head – both contained the burnt remains of oak posts.

Coins, by John A. Davies

All five coins from Area 3 are heavily worn late Roman bronze issues, with little or no detail remaining, suggesting lengthy circulation. Four can be dated to the second half of the 4th century AD with certainty. The fifth is completely illegible and must be given a broader date range, of late 3rd or 4th century. Four of the five coins come from cleaning layers (30000–1) while coin no. 1 comes from the tertiary fill of the Phase 2 enclosure ditch 30201, in section 30023.

Catalogue

1	Constantius II/Constans	Follis	AD 347–8
	O CONST—		
	R [VICTORIAE DD AVGG Q NN]; 2 Victories.		
	ON 37003, context 30024, tertiary fill, enclosure ditch 30201.		
2	Magnentius/Decentius	AE2	AD 350–3
	O Illegible		
	R [FELICITAS REIPVBLICE]; Emperor standing left.		
	ON 37515, context 30000, unstratified clearance layer.		
3	House of Valentinian	AE3	AD 364–78
	O Illegible. Very worn		
	R [SECVRITAS REIPVBLICAE]		
	ON 37516, context 30000, unstratified clearance layer.		
4	House of Valentinian	AE3	AD 364–78
	O Illegible. Very worn.		
	R [SECVRITAS REIPVBLICAE]		
	ON 37517, context 30000, unstratified clearance layer.		
5	Completely illegible	AE3	AD 260–402
	ON 37002, context 30001.		

Metalwork, by R. Montague

In total, 133 pieces of metalwork were recovered from Area 3. They are shown by phase, type and material in Table 63. Further details of the metalwork, including detailed catalogue entries, can be found in the archive.

Objects of Copper Alloy

Five copper alloy objects were recovered from Romano-British contexts. They comprised a disc, possibly the lid from a seal box (Fig. 99, ON 37009), a finger ring (Fig. 100, 3000), and two fragments, possibly from the same terret (harness ring) or bracelet, from clearance layers and so undated but presumed to be Roman (Fig. 100, ON 37000; Fig. 101, ON 37001). If the object is a terret it is unlikely to be later than the 1st century AD. The disc came from the secondary fill of the Phase 1 enclosure ditch in section 30274. Two unidentified copper alloy objects, one now lost, the other a short length of rod, conceivably from the same object, were recovered from hollow 30266 in the north-west corner of the Phase 1 timber-built structure 30200. The twisted wire finger ring ON 3000 was recovered from the fill of the eastern side of the Phase 2 enclosure ditch. It can be compared locally with two rings from

Chichester–Cattlemarket, one from a pit dated to the late first to mid–late 2nd century AD, and the other from a pit dated to the mid 4th to early 5th century AD (Down 1989, 195, fig. 27.1/1, and 1/3).

Illustrated objects (Figs 99–101)

ON 37009: disc (both sides illustrated). ?seal box lid. Diameter *c.* 20 mm, context 30273, secondary fill of Phase 1 enclosure ditch in section 30274. Fig. 99.
ON 37000: possible terret or bracelet. L. 27 mm, context 30001, cleaning layer above southern terminal of Phase 2 enclosure ditch, section 30021. Fig. 100.
ON 3000: finger ring. Diameter 22 mm, context 1106 evaluation of Phase 2 enclosure ditch in section 30016. Fig. 100.
ON 37001: possible terret or bracelet. L. 37 mm, context 30001, cleaning layer at east end of site. Fig. 101.

Objects of Iron

In total, 117 pieces of ironwork were recovered from Romano-British contexts. No ironwork was recovered from the Phase 1 ditches, and only a single nail (Fig. 99, ON 37525) was recovered from posthole 30075, part of the Phase 1 timber structure 30200. A total of 84 pieces came from the Phase 2 enclosure ditches. Twenty-four pieces of ironwork were recovered from pit 30185 which cuts the Phase 1 enclosure ditch and is stratigraphically the latest Romano-British feature on the site, immediately post-dating the use of the Phase 2 enclosure. What might have been a small pit, 30026, in the tertiary fill of the southern length of the Phase 2 enclosure ditch in section 30040 contained eight pieces if ironwork.

The majority of the ironwork is structural in nature, and includes nails (Fig. 100, ON 3008, ON 37509; Fig. 101, ON 37513), T-clamps (Fig. 100, ON 3015, ON 37531), hinges (Fig. 100, ON 3005), loop-headed pins (Fig. 101, ON 37519), studs (Fig. 100, ON 37532), and a strip (Fig. 101, ON 37526), and strap or hinge fragments (Fig. 100, ON 37510). Only a single fragmentary nail (Fig. 99, ON 37525) had traces of mineral-preserved organic material but this was too degraded to identify. All the fittings are well known Romano-British types (Manning 1985 *passim*), but there are no tools. The distribution of the structural ironwork around the site shows a concentration on the eastern side of the Phase 2 enclosure, with one section (30016) producing 70 pieces of ironwork, all, other than three hobnails, probably structural. Elsewhere around the Phase 2 enclosure ditch, ironwork occurs with much lower frequency, with a maximum of five pieces from ditch section 30023.

Twenty-three hobnails came from pit 30185, four from possible pit 30026, and one from ditch section 30016. The presence of the hobnails in the certain and possible pits may result from the disposal of worn-out shoes in these features, and may imply domestic activity associated with the two pits which may post-date the use of the Phase 2 enclosure.

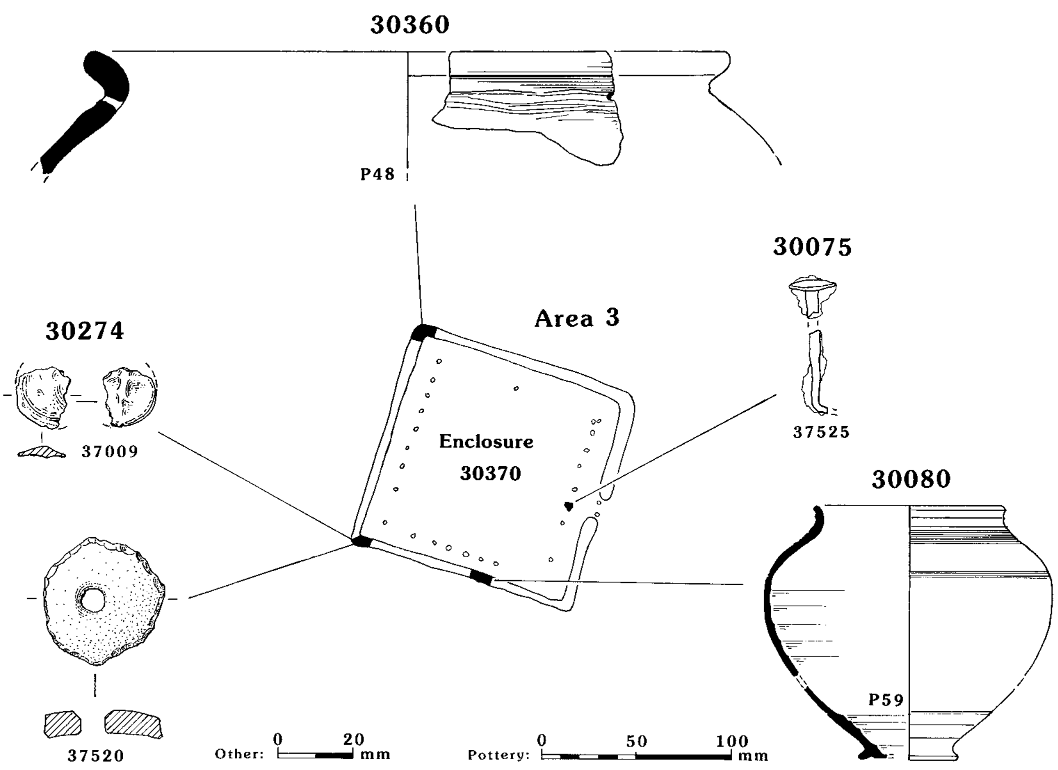


Figure 99 Area 3: finds from Phase 1 Romano-British enclosure 30370

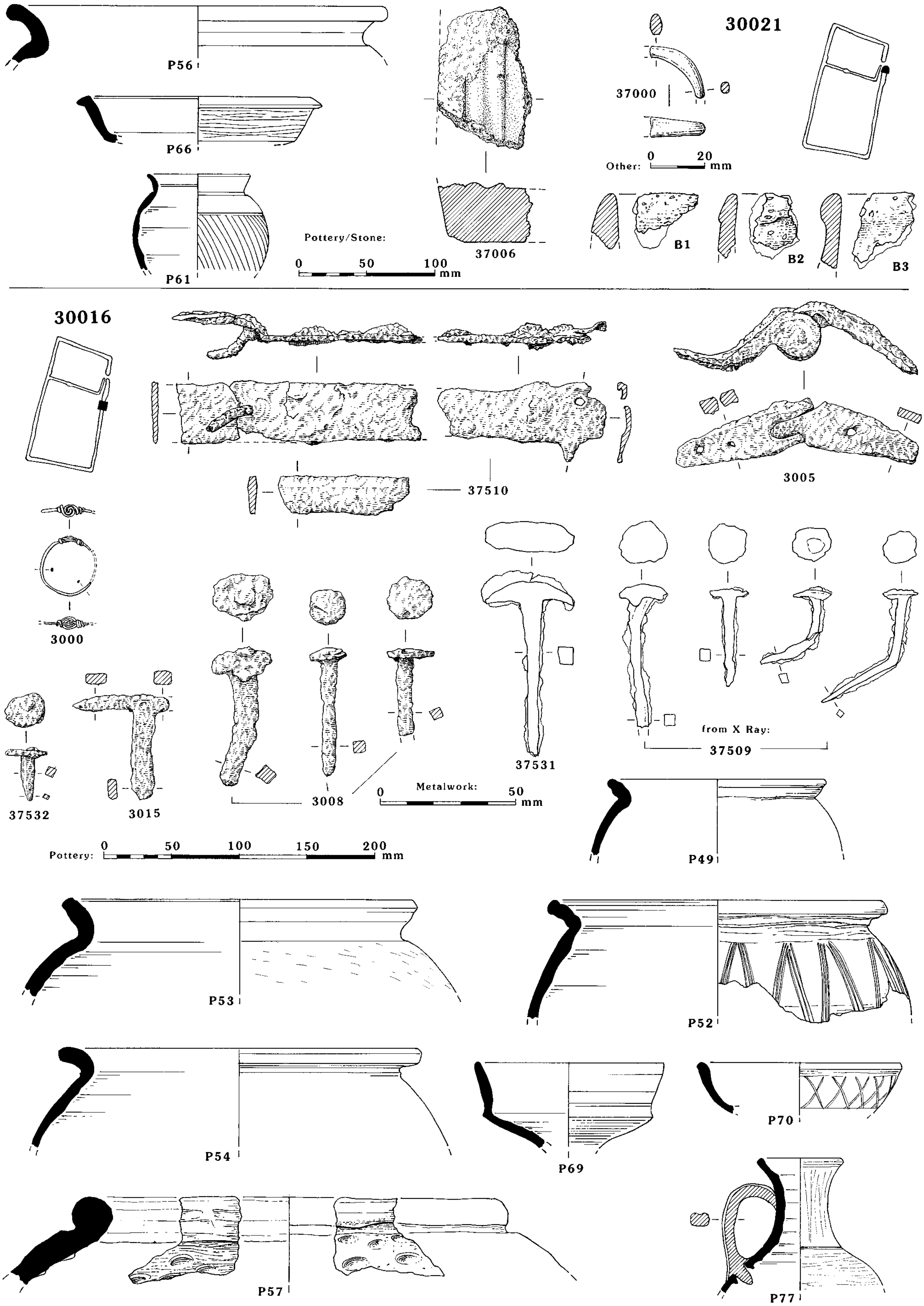


Figure 100 Area 3: finds from Phase 2 Romano-British enclosure 30381 ditch, sections 30021 and 30016

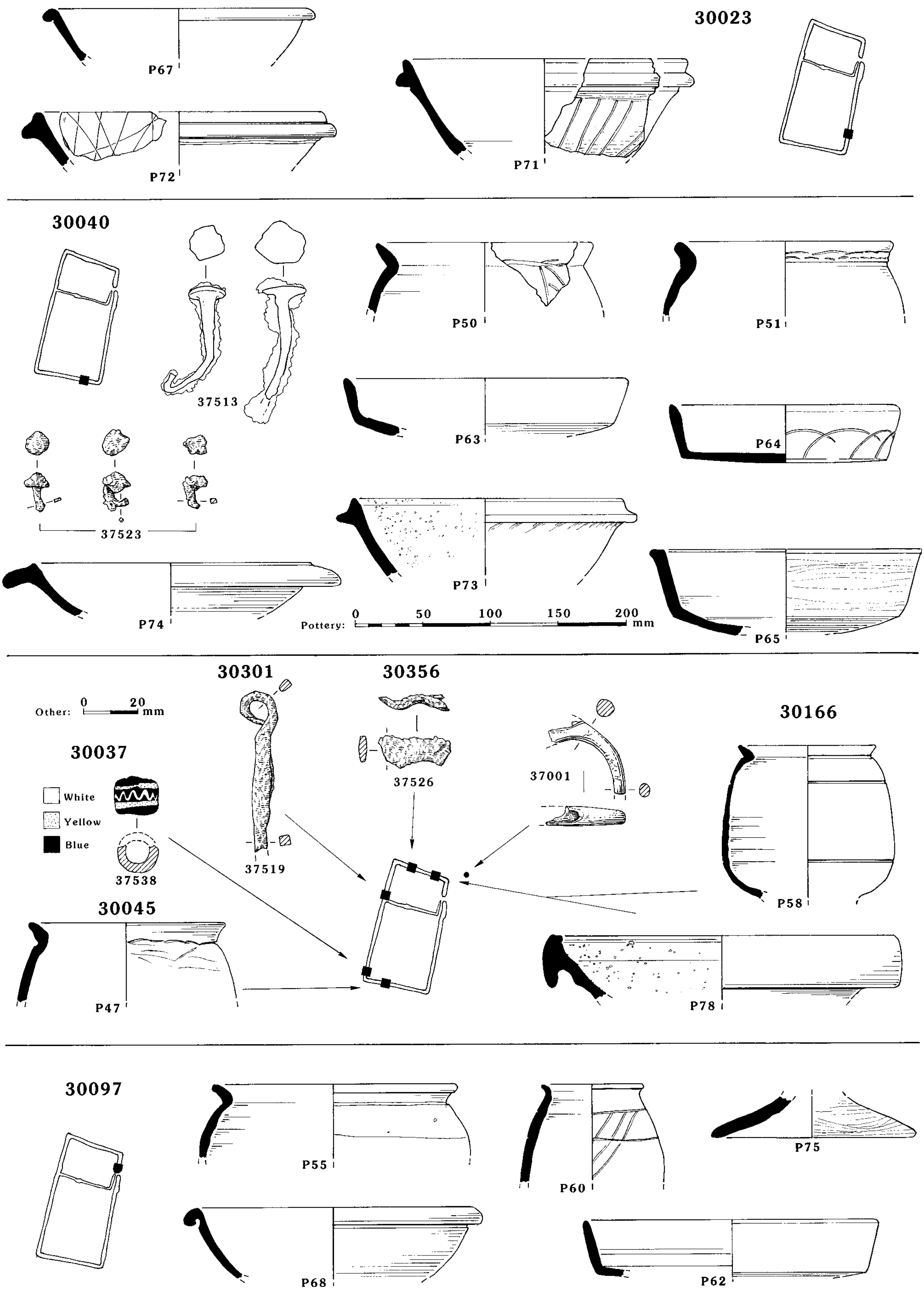


Figure 101 Area 3: finds from Phase 2 Romano-British enclosure 30381 ditch sections 30023, 30040, 30037, 30301, 30356, 30166, 30045 and 30097

Table 63 Area 3, Roman metalwork by phase

	Phase 1	*Phase 2*	*Post-Phase 2*	*Total*
Copper alloy				
Coin	–	1	–	1
Finger ring	–	1	–	1
Disc	1	–	–	1
Unidentified object	2	–	–	2
Total copper alloy	*3*	*2*	–	*5*
Iron				
Nails	1	36	3	40
Nail shanks	–	28	2	30
T-clamps	–	2	–	2
Studs	–	1	–	1
Hinges	–	1	–	1
Loop-headed pins	–	1	–	1
Strap fragments	–	4	–	4
Sheet fragments	–	6	–	6
Hobnails	–	3	–	30
Unidentified objects	–	2	–	2
Total iron	*1*	*84*	*32*	*117*
Totals	**4**	**86**	**32**	**133**

Illustrated objects (Figs 98–101)

ON 37524: four of 23 hobnails. L. 18 mm, context 30187, fill of well 30185. Fig. 98.

ON 37536: nail. L. 48 mm, context 30187, fill of well 30185. Fig. 98.

ON 37525: nail (drawn from X-ray) with traces of mineral-preserved organic material, too degraded for Jacqui Watson to identify. L. 39 mm, context 30076, fill of posthole 30075 Phase 1 timber structure. Fig. 99.

ON 37510: strap fitting, probably from a loop-linked hinge, with one nail *in situ*. L. (of two conjoining fragments on left) 93 mm, W. 23 mm, context 30014, secondary fill of Phase 2 enclosure ditch 30201 in section 30016. Fig. 100.

ON 3005: hinge. L. 88 mm, context 1106, evaluation of Phase 2 enclosure ditch 30201 in section 30016. Fig. 100.

ON 37532: stud. L. 19 mm, context 30014, secondary fill of Phase 2 enclosure ditch 30201 in section 30016. Fig. 100.

ON 3015: T-clamp. L. 38 mm, context 1106, evaluation of Phase 2 enclosure ditch 30201 in section 30016. Fig. 100.

ON 3008: three of 12 nails. L. of longest 49 mm, context 1106 evaluation of Phase 2 enclosure ditch 30201 in section 30016. Fig. 100.

ON 37531: anchor-headed T-clamp (drawn from X-ray). L. 66 mm, context 30014, secondary fill of Phase 2 enclosure ditch 30201 in section 30016. Fig. 100.

ON 37509: four of 14 nails (drawn from X-ray). L. of largest complete example 60 mm, context 30014, secondary fill of Phase 2 enclosure ditch 30201 in section 30016. Fig. 100.

ON 37513: two nails (drawn from X-ray). L. of largest 53 mm, context 30025, tertiary fill of Phase 2 enclosure ditch 30201 in section 30040. Fig. 101.

ON 37523: three of four hobnails. L. 15 mm, context 30025, tertiary fill of Phase 2 enclosure ditch 30201 in section 30040. Fig. 101.

ON 37519: cranked loop-headed pin. L. 59 mm, context 30304, fill of Phase 2 enclosure ditch 30201 in section 30301 (*cf.* Partridge 1981, 114–15, fig. 61, 77, 79). Fig. 101.

ON 37526: twisted iron strip. L. 27 mm, context 30355, fill of Phase 2 enclosure ditch 30201 in section 30356. Fig. 101.

Glass, by H.F. Beamish

Two pieces of glass were found, both from the Phase 2 enclosure ditch: one small body fragment (ON 37512), perhaps from a bottle, in a pale blue metal from the secondary fill in section 30166 on its northern length, and a wave-decorated bead (Fig. 101, ON 37538) from an upper fill in section 30037 at the south-west.

Wave-decorated beads, particularly those with the colour combination of opaque white or yellow on translucent blue, were current in southern England from the Iron Age into the post-Roman period. Romano-British and later examples tend to be larger and less carefully made and decorated (Guido 1978, 63–4). The comparatively large size and the quality of colour and decoration of this example suggest it is probably a later example of this type. Its context, within an upper fill of the enclosure ditch, suggests a likely date range in the 2nd to early 3rd century AD (although elsewhere earlier material was also incorporated in the late fills of the ditch).

ON 37538: semi-translucent dark or cobalt blue cylindrical bead, decorated with a rather irregular opaque white wave, within and overlain by two horizontal opaque yellow bands. Diameter *c.*16 mm, context 30038, tertiary fill of Phase 2 enclosure ditch, section 30037. Fig. 101

The Pottery, by Lorraine Mepham, with a contribution by Brenda Dickinson

This section considers the pottery recovered from features of Romano-British date within Area 3. The assemblage totals 2580 sherds (39,818 g), all recovered from stratified contexts (including cleaning layers). Unstratified material is not included here.

Methods

The pottery has been analysed in accordance with the principles set out in *The Analysis of Pottery* (Wessex Archaeology Guideline No. 4, 1994). The assemblage was examined using a binocular microscope (×20 magnification) and was divided into 34 separate fabric types on the basis of the range and size of inclusions. These fabric types were then grouped according to the dominant inclusion type into five broad fabric groups: Group G (grog-tempered); Group I (fabrics containing iron oxides); Group M (micaceous fabrics); Group Q (sandy fabrics) and Group E ('established' wares, i.e. fabrics of known type or source). Fabric totals are presented in Table 64. Type series were constructed for rim and base sherds, and for decorative motifs. Table 66 gives the correlation of vessel form to fabric. Pottery was quantified, both by number and by weight, by fabric type within each context. Details of sherd type (rim, base, body etc.), vessel form where known, rim/base diameters, surface treatment, decoration and manufacturing technique were also recorded, and can be found in the archive.

Fabrics

For the purposes of discussion, the fabrics identified within the assemblage from Area 3 may be divided into six groups (Table 64):

1. Samian
2. Other imported wares
3. British fine wares of known source
4. Other fine wares of unknown source
5. Coarse wares of known type
6. Coarse wares of unknown source

Samian

Samian is relatively poorly represented within this assemblage (Table 65), and the condition of the sherds is generally abraded. Few sherds could be definitively identified to vessel form; the breakdown of vessel form by production centre is given in Table 65. With the exception of two early 2nd century sherds from Les Martres, the bulk of the samian from Area 3 appears to fall within the Hadrianic or Antonine periods, with an emphasis on the second half of the 2nd century AD; although the East Gaulish vessels could be slightly later in date as these were imported until the mid-3rd century AD. The bulk of the samian derived from secondary and tertiary fills within the large Phase 2 enclosure ditch 30201, where it is likely to be redeposited (see below).

Stamped samian, by Brenda Dickinson

Two platters of form 31 are stamped. Both platters came from a secondary fill of the Phase 2 enclosure ditch 30201.

1 HABILIS F (Durand-Lefebvre 1963, no. 332); stamp of Habilis; die number 5d; Lezoux. This is probably one of Habilis's later stamps, since it was apparently not used on cups of form 27, which he stamped with other dies. It does, however, appear on form 31R, which should be later than *c.* AD 160, and has been noted from Benwell, Northumberland. A range *c.* AD 160–80 is likely.

2 REBV<u>R</u>VS F; stamp of Reburrus ii; die number 14d; Lezoux. Reburrus ii's stamps occur in a mid-Antonine group at Lezoux and appear on a wide range of forms, including 15/31, 18/31, 27, 38 and 79. Two

Table 64 Area 3, Roman pottery fabric totals

Fabric type	*No. of sherds*	*Weight*
Samian	60	1118
Other imports		
Amphora	6	467
Mortarium (NE France/SE Eng.)	1	136
British fine wares		
New Forest parchment ware	7	235
New Forest colour-coat	42	247
Fine wares, unknown source		
I100	51	313
I101	7	45
I102	5	45
M100 (white ware)	26	190
M101	57	274
M102	11	100
Coarsewares, known type		
Black Burnished Ware (BB1)	119	1500
WessexGrog-tempered Ware	8	183
Coarsewares, unknown or uncertain source		
Q100 (Rowlands Castle)	1043	18124
Q101	155	2203
Q102	66	562
Q103 (Rowlands Castle)	694	11433
Q104	9	101
Q105	5	62
Q106	1	29
Q107	82	1242
Q108	42	429
Q109	3	19
Q110	6	79
Q111	5	55
Q112	23	169
Q114	5	32
Q115	2	39
Q116	2	24
Q117	17	229
Q118	10	29
Q119	6	49
Q120	2	28
Q121	2	28
Total	**2580**	**39818**

Table 65 Area 3, samian

Form	*Central Gaulish (LM)*	*Central Gaulish (Lez)*	*East Gaulish*
Drag. 18/31	1	1	–
Drag. 31	–	3	2
Drag. 33	–	–	1
Drag. 37	1	–	–
Drag. 45	–	–	1
Curle 11/Drag. 38	–	1	–
Total	**2**	**5**	**4**

LM = Les Martres de Veyre; Lez = Lezoux

examples of this particular stamp are known on burnt vessels from Gauting, Germany, which may have come from the mid-Antonine fire there. *c.* AD 150–70.

Other imported wares

Other known imports are restricted to six sherds of amphora, all of Dressel 20 type, the amphora type found most commonly in this country, and very long-lived (late 1st century BC to early 3rd century AD).

One other possible import is represented by a single sherd from a wall-sided mortarium with a slightly inturned bead rim (Fig. 101, P78) in a hard, fine, pale-firing fabric with white quartzitic grits over the interior and on the outside of the flange (fabric Q113). Both fabric and form are matched at Dorchester, Dorset (Seager Smith and Davies 1993, fabric 42O, type 306), where the type is considered to form part of a group of mortaria with a provenance either in the Pas-de-Calais in north-east France or south-east Britain (Kent), extending the range of forms contained within Hartley's (1977) group I and group II vessels from this general source. At Dorchester the form has a suggested date range of AD 130–70.

British fine wares from known sources

Two fine wares were recognised: parchment ware and colour-coated ware, both from the New Forest production centre. Both fabrics occurred in small quantities. Vessels represented include parchment ware bowls and mortaria (one example of a type 103 mortarium was noted; see Fulford 1975a), and colour-coated jars or beakers; few diagnostic sherds are present. Based on published evidence from the excavated kilns, these wares have a date range of late 3rd to 4th century AD (*ibid.*).

Other fine wares of unknown or uncertain type

Six fabrics have been distinguished on the basis of fineness and vessel forms represented, and are described below. Terms used here, and in fabric descriptions throughout this report, to define frequency of inclusions are as follows: rare (1–3%); sparse (3–10%); moderate (10–20%); common (20–30%); very common (30–40%).

I100 Soft, moderately fine, micaceous sandy matrix, slightly powdery feel; sparse, poorly sorted black iron oxides <0.5 mm; wheelthrown; unoxidised.

I101 Soft, fine silty matrix; sparse, poorly sorted iron particles <1 mm; rare mica; wheelthrown; unoxidised.

I102 Soft, fine sandy matrix with a powdery feel; sparse, poorly sorted red iron particles <1 mm; oxidised (pale-firing) with unoxidised core.

M100 Soft, fine silty matrix; sparse fine mica; rare red iron oxides; wheelthrown; oxidised (pale-firing).

M101 Soft, very fine silty matrix; sparse fine mica; sparse iron particles <0.25 mm; rare carbonaceous material <0.5 mm; wheelthrown; unoxidised with oxidised margins.

M102 Soft, fine sandy matrix; rare fine mica; very rare black iron particles <0.5 mm; wheelthrown; unoxidised.

The pale-firing fabrics I102 and M100 are found only in flagon forms, while the unoxidised fabrics I100, I101, M101 and M102 are used for small jars or beakers of uncertain form. At least one of these vessels, in fabric I100, has a band of rouletted decoration around the girth, and this vessel may also have been colour-coated originally. There is also one shallow bowl or lid in fabric M101. None of the vessel forms is sufficiently diagnostic for close dating, but a general date range of late 1st to 2nd century AD could be suggested for fabrics I100, M101 and M102 on the basis of the jar and beaker forms present. One almost complete beaker in fabric M101 (Fig. 99, P59) is paralleled at Fishbourne in late 1st and 2nd century AD contexts (Cunliffe 1971, fig. 89, types 66/67). Fabrics I100, M100 and M101 have also been identified amongst the Romano-British cemetery assemblage from Area 2, where they occur in vessel forms which are broadly dated to the period AD 70–150 (Vol. 2, 260).

Fine, pale-firing wares comparable to fabrics I102 and M100, notably in flagon forms, have been found in some quantity in early Roman contexts at Fishbourne and in Chichester. It has never been established with certainty whether these represent local, traded or imported wares (e.g. Rigby 1989, 117). Certainly the forms represented were imported from continental Europe during the pre-Flavian period and later, but the evidence from Fishbourne and Chichester suggests that these forms were being copied from a very early stage, either by a local or a non-local British source. Whiteware flagons occur at Fishbourne from Period 1 (pre-Flavian), and continue in use throughout the 2nd century AD. The examples from Area 3 are of uncertain form, which precludes any close dating, but flagons in fabric M100 from the Romano-British cemetery in Area 2 include definite pulley-rim forms, with a potential date range of late 1st to 2nd century AD (Vol. 2, table 38).

Coarse wares of known type

Sherds of two recognised types were identified: Black Burnished Ware (BB1) and Wessex Grog-tempered Ware.

E101 Black Burnished Ware (BB1): for description see Seager Smith and Davies (1993, fabric 1).

G100 Wessex Grog-tempered Ware: soft, moderately fine clay matrix; common, fairly well-sorted subangular grog <2 mm; rare iron oxides <1 mm; handmade; slightly soapy feel; unoxidised with some external oxidisation.

The Black Burnished Ware is of a type commonly found in southern England and identified as a product of kilns in the Poole Harbour area. A number of variations on the basic fabric have been recognised (Seager Smith and Davies 1993, 249); the sherds from Area 3 are all of the dominant type, commonly described as BB1 (*ibid.*, fabric 1). Three vessel forms were recognised, all common types: jars with widely flaring everted rims, straight-sided 'dog dishes' and drop-flanged bowls. The 'dog dish' had a lengthy lifespan, occurring from the late 1st century AD through to the end of the Roman period, with a possible increase in numbers from the late 2nd century (Gillam 1976, 73–7). The other two forms are a late Roman type, found from the late 3rd century onwards. This dating for all three types at Area 3 is confirmed by evidence from Fishbourne (Cunliffe 1971, types 200, 328–9, 356). Imitations of Black Burnished Ware vessels were also found in Area 3 (fabric Q101).

Wessex Grog-tempered Ware was first recognised by Cunliffe (1970), and is found in a fairly restricted area of south central England bounded by Winchester, Portchester and Bitterne, all in Hampshire. Heavy mineral analysis has so far failed to locate any one specific source (Fulford 1975b), and it may be that more than one centre within this area was producing such wares. At Area 3 the fabric was used for drop-flanged bowls of noticeably crude manufacture (Fig. 101, P73), such as have been recognised at Portchester (*ibid.*, type 86).

Coarse wares of unknown type

The twenty-one fabrics remaining are classed here as coarsewares, and probably represent a number of potential sources.

Q100 Hard, moderately coarse matrix; common, well-sorted quartz <0.5 mm; rare iron particles; very rare grog/clay pellet <1 mm; handmade or wheelthrown; unoxidised, sometimes with oxidised margins; distinctive 'speckly' appearance.

Q101 Hard, moderately coarse matrix; moderate, fairly well-sorted subrounded quartz <0.25 mm; handmade or wheelthrown; unoxidised, sometimes with oxidised margins.

Q102 Hard, moderately fine matrix; moderate, fairly well-sorted subrounded quartz <0.25 mm; sparse red iron particles; wheelthrown; oxidised with unoxidised surfaces.

Q103 Hard, moderately coarse matrix; common, fairly well-sorted subrounded quartz <0.25 mm; sparse red/black iron particles <1 mm; rare carbonaceous material <2 mm; wheelthrown; generally at least partially oxidised.

Q104 Soft, moderately fine matrix; sparse to moderate, fairly well-sorted subrounded quartz <0.25 mm; sparse iron particles <1 mm; rare fine mica; wheelthrown; unoxidised with oxidised margins.

Q105 Hard, moderately coarse matrix; very common, well-sorted subrounded quartz <0.5 mm; wheelthrown; unoxidised blue-grey.

Q106 Soft, moderately coarse-textured clay matrix; common, well-sorted, subrounded quartz <0.125 mm; wheelthrown; unoxidised dark grey.

Q107 Hard, moderately fine matrix; moderate, well-sorted, subrounded quartz <0.25 mm; rare carbonaceous material <1 mm; rare iron oxides <0.25 mm; rare very fine mica; wheelthrown; unoxidised.

Q108 Soft, moderately fine matrix; rare, subrounded quartz <0.25 mm; rare carbonaceous material <1 mm; rare iron particles <0.25 mm; wheelthrown; oxidised pale orange-buff to brown.

Q109 Soft, fine matrix; rare subrounded quartz <0.25 mm; rare iron particles <0.25 mm; rare fine mica; wheelthrown; oxidised cream-buff.

Q110 Hard, moderately fine matrix; moderate, fairly well-sorted quartz <1 mm; wheelthrown; oxidised off-white.

Q111 Hard, moderately coarse matrix with a gritty feel; moderate, poorly sorted subrounded quartz <0.5 mm; rare red iron particles <0.5 mm; probably wheelthrown; oxidised with unoxidised exterior.

Q112 Soft, moderately fine matrix; moderate, well-sorted, subrounded quartz <0.125 mm; sparse red iron particles <1 mm, some 'smeared' on exterior; rare soft unidentified white inclusions <0.5 mm (do not react with acid); rare fine mica; wheelthrown; oxidised orange.

Q114 Hard, moderately fine matrix; sparse, poorly sorted, subrounded quartz <0.25 mm; sparse red and black iron particles <0.5 mm; rare fine mica; wheelthrown; oxidised pale orange-buff with unoxidised core.

Q115 Hard, moderately fine matrix; common, well-sorted, subrounded quartz <1 mm; sparse, poorly-sorted clay pellets <4 mm; rare iron oxides <1 mm; manufacture uncertain; oxidised orange with unoxidised core.

Q116 Hard, moderately fine matrix; moderate, fairly well-sorted subrounded quartz <0.5 mm; rare red iron particles <0.5 mm; wheelthrown; oxidised (pale-firing), externally unoxidised.

Q117 Hard, fine silty matrix; sparse, poorly-sorted subrounded quartz <0.25 mm; very rare shell fragments <1 mm; sparse black iron particles (?glauconite); sparse fine mica; wheelthrown; unoxidised black, sometimes with oxidised orange-red surfaces.

Q118 Hard, moderately fine matrix; moderate, fairly well-sorted subrounded quartz <0.5 mm; sparse, poorly sorted red iron particles <1 mm; wheelthrown; oxidised (pale-firing).

Q119 Hard, moderately coarse matrix; moderate, well-sorted subrounded quartz <0.25 mm; rare carbonaceous material <3 mm; sparse red iron particles <0.5 mm; wheelthrown; oxidised (pale-firing) with unoxidised core.

Q120 Hard, moderately fine matrix; sparse, poorly sorted quartz <0.25 mm; sparse black iron particles <0.25 mm; possibly handmade; unoxidised brown to dark grey.

Q121 Hard, moderately coarse matrix; moderate, poorly sorted, subrounded quartz <0.5 mm; rare red iron particles <0.25 mm; rare fine mica; handmade; oxidised orange.

Most of these coarse fabrics occur in small quantities only, and potential source areas are difficult to pinpoint. Two fabrics can, however, be fairly confidently attributed to a particular source. The greyware Q100 is comparable to products of the Rowlands Castle, Hampshire, kilns and fabric Q103 appears to be an oxidised version of the same fabric. These two fabrics, with the characteristic iron inclusions giving a distinctive 'speckly' appearance, match closely the fabric descriptions for fabric groups A and B at Fishbourne (Cunliffe 1971, 252–3), found from the pre-Flavian period through to the 3rd century AD. Analysis has indicated that these two fabric groups are petrologically indistinguishable, suggesting either that they are products of the same kiln, or that they are products of two kilns, or kiln groups, utilising the same band of clay (Peacock 1971). Certain forms found at Fishbourne in Periods 2 and 3, notably the everted rim jars with 'tally marks' below the rim (Cunliffe 1971, types 313–14), match products of the Rowlands Castle kilns, but it seems likely, from the date range of Fabric Groups A and B, that kilns in this area were in production from at least the late 1st century AD, using the market of Chichester as their major outlet (*ibid.*, 254).

This is supported by the evidence from Area 3. Fabrics Q100 and Q103 are the most commonly represented fabric types within the Romano-British assemblage from Area 3, as might be expected for local products, and also dominate the Romano-British cemetery assemblage from Area 2 (Vol. 2, 261–2). In both areas, the two fabrics are most commonly found in jar forms (Table 66; Figs 99–101, P47–55; Vol. 2, table 38). Where profiles are reconstructable those from Area 3 match most closely the Rowlands Castle products from Fishbourne (Cunliffe 1971, type 313), dated there to the 3rd century, although the possibility of an earlier starting date for production of this form is acknowledged. Subsequent work has supported the notion of a fairly long lifespan for this form (Hodder 1974). Eight of the Area 3 examples have tally marks below the rim (Figs 99–101, P47–51). Also present are larger, slightly coarser, storage jars with beaded rims and finger-smearing on the interior (Fig. 100, P57), another long-lived type, found at Fishbourne from the 2nd to the 4th century AD (Cunliffe 1971, fig. 119, type 391). Bowls and dishes are also represented, and include 'dog dishes', convex-sided bowls and drop-flanged bowls (Fig. 101, P63, P68, P71), as well as lids (Fig. 101, P75; Fig. 98, P76).

Fabric Q101 includes all imitation 'black burnished ware' vessels, and may comprise products of more than one source. Forms recognised include everted rim jars of both early and late Roman type, 'dog dishes', flanged bowls, a platter of unknown form and a flagon (Fig. 100, P77). Fabric Q107 appears to represent a slightly finer element of this imitation black burnished ware group, and includes a similar range of vessel forms (Table 66): jars and beakers (Fig. 101, P60), bowls and dishes (or lids) (Fig. 101, P62, P67, P72; Fig. 100, P70), and one carinated cup (Fig. 100, P69).

All other fabrics were found in much smaller quantities (Table 64), and diagnostic sherds are correspondingly scarcer. Rim sherds from jars and bowls were recognised in several fabrics (Table 66) (Fig. 100, P56, Fig. 101, P58, Fig. 99, P59).

Apart from Rowlands Castle, other potential sources for the Westhampnett material include the group of excavated and putative kilns around Pulborough, West Sussex, *c.* 20 km to the north-east of Westhampnett. Kilns have been excavated here at Storrington and Wiggonholt, and wasters found at Hardham, Waterfield and Stopham (Evans 1974). These kilns were producing a range of wares from the late 1st century AD, particularly Wiggonholt, whose products included ring-necked flagons, imitation Curle 15 cups, paterae, lids, pinch-mouth jugs, possibly face jars, bowls with reeded rims, S-profiled cooking pots, funnels and rusticated jars (*ibid.*). Evidence from the other potential kilns is more limited: sandy buff wares and greywares from Waterfield (mostly jars), flagons/jugs and jars from Stopham, and greyware jars from Storrington and Hardham. It would seem, however, that while the finer wares (e.g. flagons and platters) from Wiggonholt are present in small quantities in Chichester (e.g. Rigby 1989), the coarsewares did not make much of an impression on the Chichester market, which was dominated by products of the Rowlands Castle production centre. Westhampnett is, therefore, unlikely to have received more than very small quantities of Pulborough area products.

Further afield, the large production centres of the New Forest and the Alice Holt, Hampshire/Surrey area were both producing greywares. Products of these centres may occur amongst the Westhampnett assemblage (e.g. fabrics Q104, Q105, Q107), although positive recognition of these greywares, the forms and fabrics of which varied very little between production centres, is very difficult. Certainly fine wares from the New Forest were reaching the site, albeit in small quantities (see p. 211above), and Alice Holt wares were marketed at Chichester from the late 1st century AD (Lyne and Jefferies 1979, 52). At a distance of approximately 35 km to the west, the kiln at Shedfield was in operation in the mid to late 1st century AD. It produced greywares in a limited range of forms (Cunliffe 1961), but again this centre does not seem to have contributed greatly to the Chichester market (Cunliffe 1971, 252).

Distribution on Site

The vast majority of pottery recovered from Area 3 came from contexts within the Phase 2 enclosure ditch 30201, and from cleaning layers over this feature. Smaller quantities came from the Phase 1 enclosure ditch 30053, and from its Phase 2 extension 30309. Other small groups were excavated from other isolated features across the site.

Phase 1 enclosure

Table 67 presents a breakdown of the pottery by fabric from primary, secondary and tertiary fills in the ditches of the Phase 1 enclosure and its extension. In comparison with the Phase 2 enclosure ditch, pottery was very sparsely represented within the ditches, and

Table 66 Area 3, Roman vessel forms by fabric

	Imports		*Brit fine*	*Other fine wares, unknown source*				*Coarsewares, known source*		*Other coarsewares*											
	Sam.	*Q113*	*NF*	*I100*	*M100*	*M101*	*M102*	*BB1*	*WGT*	*Q100*	*Q101*	*Q102*	*Q103*	*Q104*	*Q107*	*Q108*	*Q110*	*Q112*	*Q117*	*Q120*	*Total*
JARS																					
Unspec. 1st/2nd C AD	–	–	1	4	–	–	–	–	–	22	1	1	9	–	1	1	–	–	2	–	42
High-shouldered	–	–	–	–	–	–	–	–	–	1	–	–	1	–	1	–	–	–	–	–	3
Rounded	–	–	–	–	–	1	–	–	–	31	3	1	22	1	1	–	–	–	–	–	60
Ovoid	–	–	–	–	–	–	–	–	–	6	–	–	6	–	1	–	–	–	–	–	13
Necked	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1
Storage	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	2
Unspec. 3rd/4th C AD	–	–	–	–	–	–	–	4	–	–	1	–	–	–	1	–	–	–	–	–	6
BEAKERS																					
Unspec.	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Ovoid	–	–	–	–	–	1	1	–	–	–	–	–	–	–	1	–	–	–	–	–	3
BOWLS/DISHES																					
Unspec.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	2
Hemispherical	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1
Convex, flat rim	–	–	–	–	–	–	–	–	–	5	–	1	3	–	1	–	–	–	–	1	11
Convex, plain rim	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	1
'Dog dish'	–	–	–	–	–	–	–	6	–	2	5	–	1	–	4	–	–	–	–	–	18
Flanged bowl	–	–	–	–	–	–	–	–	–	1	2	–	–	–	1	–	–	1	–	–	5
Drop-flanged bowl	–	–	–	–	–	–	–	6	2	3	–	–	2	–	2	1	–	–	1	–	17
Drag. 37	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
PLATTERS																					
Unspec.	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1
Drag. 18/31	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
Drag. 31	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5
CUPS																					
Carinated	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1
Drag. 33	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Curle 11/Drag. 38	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
FLAGONS																					
Unspec.	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Plain rim	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1
MORTARIA																					
Wall-sided	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
NF Type 103	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Drag. 45	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
LIDS																					
Plain rim	–	–	–	–	–	1	–	–	–	–	2	–	2	–	3	–	–	–	–	–	8
Knopped	–	–	–	–	–	–	–	–	–	1	–	–		–	–	–	–	–	–	–	1
TOTAL	**11**	**1**	**2**	**5**	**1**	**3**	**1**	**16**	**2**	**73**	**16**	**4**	**49**	**1**	**18**	**2**	**2**	**1**	**3**	**1**	**209**

BB1 = Black Burnished Ware; WGT = Wessex Grog-tempered; NF = New Forest only one sherd came from a primary fill: a rim sherd from a tally-marked jar in Rowlands Castle ware from ditch section 30360 (Fig. 99, P48). The secondary and tertiary fills are dominated by Rowlands Castle wares (just under 75% by weight of the total), and much of the remainder is made up of sherds from a single vessel: a small jar or beaker in micaceous fabric M101, from the secondary fill of ditch section 30080 (Fig. 99, P59). A single samian sherd came from the tertiary fill of the southern ditch terminal 30078.

The dating of the Phase 1 enclosure is thus somewhat ambiguous. The tally-marked jar from the primary fill is not a closely datable form, and could be placed anywhere within the range 2nd to 4th century AD. The almost complete micaceous ware jar from section 30080, however, would suggest a fairly early date for the secondary ditch fill; such jars were numerous at Fishbourne in late 1st and 2nd century contexts (Cunliffe 1971, fig. 89, types 66/67). In addition, the absence of anything demonstrably later than 2nd century AD (with the *caveat* that some of the Rowlands Castle jars may be of later date), would tend to suggest that the Phase 1 enclosure was in use at a period corresponding at least in part with the Romano-British cemetery in Area 2. The very small amount of pottery from the Phase 2 extension 30309 includes no diagnostic material.

Phase 2 enclosure

A breakdown of the pottery, by broad fabric group from primary, secondary and tertiary fills in the ditches of the Phase 2 enclosure, is given in Table 68. This demonstrates amply that although large quantities of pottery were excavated from the enclosure ditches, pottery from the primary fills is very scarce. Of the clearly definable primary fills, only ditch section 30016 contained pottery. Sections 30301 and 30356 contained pottery but in each only a single fill was identified, while ditch terminal 30097 also contained pottery. Ditch sections 30016 and 30301 contained no diagnostic sherds. Ditch section 30356 produced one samian form 45 mortarium, probably Eastern Gaulish, and a small jar or beaker of unknown form in fabric I101, while ditch terminal 30097 yielded two jar rims in Rowlands Castle wares, Q100 and Q103 respectively.

The secondary and tertiary fills of the Phase 2 enclosure ditch were much more prolific in terms of pottery, and yielded an assemblage which includes a chronological mixture of types. A very marked concentration of pottery in the eastern arm of the ditch can be discerned, with large quantities of pottery deriving from ditch sections 30023, 30016 and ditch terminals 30021 and 30097 (but not, interestingly, ditch section 30020). Both secondary and tertiary fills are dominated by Rowlands Castle wares (just over 75% by weight of the total), including large numbers of everted rim jars, some with tally marks (Fig. 101, P47, P55; Fig. 100, P49, P52–4), as well as a smaller proportion of bowls and dishes of various forms (Fig. 101, P63, P65, P68, P71) and lids (Fig. 101, P75). These are accompanied by a variety of wares that can be dated either to the early or the late Roman period.

Early (1st/2nd century AD) wares are represented by samian, including two stamped Central Gaulish platters, from the secondary fill of ditch section 30016 (see Dickinson, above). All samian from these fills is Central Gaulish and, with the exception of two sherds from Les Martres-de-Veyre, is all from Lezoux. Sherds of the fine ware fabrics of Groups I (I100–102) and M (M100–102) are also present, most of which, on comparison with similar wares from the Romano-British cemetery in Area 2, would appear to be of late 1st or early 2nd century AD date. This includes one bowl, from the secondary fill of ditch section 30166, in fabric M102 (Fig. 101, P58), of a type paralleled, although in a more ornate form, at Fishbourne in 2nd century contexts (Cunliffe 1971, fig. 106, type 215). From the tertiary fill of ditch section 30166 came a wall-sided mortarium rim (Fig. 101, P78), possibly an import, with a suggested date range of AD 130–70.

Alongside these early wares are sherds of Wessex Grog-tempered Ware and Black Burnished Ware (BB1), both in demonstrably late forms, including flanged and dropped flange bowls (Fig. 101, P73) and everted rim jars with the flaring rims characteristic of late 3rd/4th century AD forms. Black Burnished Ware imitations in fabrics Q101 and Q107 occur in a similar range of forms (Fig. 100, P66, P69–70; Fig. 101, P67, P72). Sherds of New Forest colour-coated and parchment wares would also fall into the late 3rd/4th century AD range.

As for the Phase 2 enclosure, any determination of a date for the construction and earliest use of the enlarged enclosure is hampered by a scarcity of diagnostic material. There is sufficient evidence, nevertheless, to suggest a start date within the 2nd century AD, although the presence of the East Gaulish samian mortarium in the primary fill of section 30356 would place this rather late in the 2nd, or even in the early 3rd century AD. The material from the later fills suggests a mass clearance of domestic refuse into the ditches, from an accumulation elsewhere in the vicinity, perhaps over a comparatively restricted time scale in the late Roman period, i.e. late 3rd or, as the coins would suggest, 4th century AD.

Pottery from other features

Comparatively small quantities of pottery were excavated from other features across Area 3 (Table 69). The overall assemblage recovered from these features is comparable, although of more restricted range, to that excavated from the fills of the Phase 2 enclosure ditch. Coarsewares of Rowlands Castle type are again predominant and, as in the enclosure ditch fills, these wares are accompanied by a chronological mixture of

Table 67 Area 3, Roman pottery from the Phase 1 enclosure (ditch 30053) and Phase 2 extension (ditch 30309) (by number/weight in grams)

Ditch section		*samian*	*M100*	*M101*	*Rowlands Castle*	*Q101*	*Q104*	*Q107*	*Q114*	*Q119*	*Total*
*30078	1						no pottery				
	2	–	–	–	5/166	–	–	–	–	–	5/166
	3	1/4	1/1	3/10	40/451	5/32	5/40	1/6	4/18	1/4	61/566
30080	1						no pottery				
	2	–	–	48/194	3/12	–	–	–	–	–	51/206
30274	1						no pottery				
	2	–	–	–	4/76	–	–	–	–	–	4/76
30360	1	–	–	–	1/128	–	–	–	–	–	1/128
	2	–	–	–	1/166	–	–	–	–	–	1/166
Extension (Phase 2)											
30300	1					no pottery					
	2	–	–	–	1/8	6/26	–	–	–	–	7/34
Total		**1/4**	**1/1**	**51/204**	**55/1007**	**11/58**	**5/40**	**1/6**	**4/18**	**1/4**	**130/1342**

* indicates ditch terminal; 1 = primary fills; 2 = secondary fills; 3 = tertiary fills

Table 68 Area 3, Roman pottery from the Phase 2 enclosure (by number/weight in grams)

Ditch section		*Samian*	*Amph.*	*Q113*	*New Forest*	*Other fine*	*BB1*	*WGT*	*Rowlands Castle*	*Other coarse*	*Total*
*30021	1						no pottery				
	2	–	1/232	–	–	–	–	–	2/56	1/9	4/297
	3	2/11			13/245	5/53	27/269	5/95	127/1774	29/351	208/2798
30016	1	–	–	–	–	–	–	–	2/36	1/3	3/39
	2	27/674	1/12	–	15/114	2/10	–	–	613/11813	44/732	702/13145
	3	1/5	–	–	2/7	3/2	–	–	85/1620	25/325	116/1959
30020	1						no pottery				
	2						no pottery				
	3	–	–	–	–	8/53	–	–	14/166	4/30	26/249
30023	1/2						no pottery				
	3	4/8	–	–	1/3	17/149	3/17	–	124/1304	42/521	191/2002
30040	1						no pottery				
	2	1/28	–	–	–	–	–	–	36/230	11/174	48/432
	3	–	–	–	–	–	–	–	3/26	3/67	6/93
30045	1						no pottery				
	2	1/35	–	–	–	–	2/9	–	17/316	–	20/360
	3	–	–	–	–	–	–	–	8/52	–	8/52
30037	1						no pottery				
	2						no pottery				
	3	–	1/39	–	–	–	3/10	–	–	–	4/49
*30097	1/2	–	–	–	–	1/14	–	–	13/127	7/108	21/249
	3	6/104	–	–	3/35	3/15	12/281	2/31	170/2150	47/696	243/3312
30166	1						no pottery				
	2	3/124	1/90	–	–	19/146	–	–	87/3251	14/205	124/2037
	3	4/34	–	1/136	–	8/102	9/181	–	134/2642	46/752	202/3847
30301	–	–	–	–	–	–	–	–	1/24	1/11	2/35
30356	–	1/20	–	–	–	7/45	–	–	1/29	–	9/94
Total		**50/1043**	**4/373**	**1/136**	**34/404**	**73/589**	**56/767**	**7/126**	**1437/25616**	**275/3984**	**1937/33038**

* = ditch terminal; 1 = primary fills; 2 = secondary fills; 3 = tertiary fills; – = single fill

Table 69 Area 3, Roman pottery from other features (by number/weight in grams)

Feature	*Samian*	*Amph.*	*New Forest*	*Other fine*	*Rowlands Castle*	*Other coarse*	*Total*
Ditch 30004	–	–	1/13	–	–	–	1/13
Pit 30064	–	–	–	–	1/2	–	1/2
Pit/well 30137	–	–	1/19	–	–	–	1/19
Pit 30185	1/8	–	–	–	40/613	10/125	51/746
Penannular ditch 30192	–	–	–	3/16	6/80	1/6	10/102
Posthole 30235	–	–	–	–	–	1/38	1/38
Posthole 30236	–	–	–	–	–	1/7	1/7
Hollow 30266	6/23	1/78	–	–	1/5	2/9	10/115
Nat. feature 30293	–	–	–	–	1/4	1/3	2/7
Total	**7/31**	**1/78**	**2/32**	**3/16**	**49/704**	**16/188**	**78/1049**

other wares, including samian, Dressel 20 amphorae, New Forest fine wares and other coarsewares. The largest group came from the stratigraphically latest feature on the site. Pit 30185 (51 sherds from three fills) cut through the Phase 1 enclosure ditch and contained Rowlands Castle wares, including two jar rims and a lid with a pierced knob (Fig. 98, P76), one sherd of Central Gaulish samian, possibly from a form 18/31 or 31 platter, and a small range of other coarsewares (fabrics Q101, Q108, Q111, Q112). On ceramic evidence, it would seem reasonable to suggest that this small group of pottery is contemporary with that from the Phase 2 enclosure ditch. Other features are not so easily datable, although the exclusive presence of New Forest fine wares in pit 30137 would indicate a fairly late date (late 3rd/4th century AD). New Forest fine wares were also found in ditch 30004, east of the enclosure, but ceramic building material of medieval date was also found in stratigraphically earlier contexts. One late vessel form, a dropped-flange bowl in Rowlands Castle fabric Q100, came from the upper fill of the eastern terminal of penannular ditch 30192, indicating that this feature was not finally filled in until the late Romano-British period. Other sherds, including some from a possible flagon in fabric M100, a probable late 1st/early 2nd century AD form, found in context 30006, geological test pit GTP 2, may have been introduced when the test pit was machine excavated through the ploughsoil.

List of illustrated sherds

P47 Everted rim jar, fabric Q100; 'tally mark' below rim; wheelthrown. PRN 265, context 30035, secondary fill, Phase 2 enclosure ditch section 30045. Fig. 101.

P48 Everted rim jar, fabric Q103; 'tally mark' below rim; wheelthrown. PRN 507, context 30359, Phase 1 enclosure ditch section 30360. Fig. 99.

P49 Everted rim jar, fabric Q103; 'tally mark' below rim; wheelthrown. PRN 71, context 30014, secondary fill, Phase 2 enclosure ditch section 30016. Fig. 100.

P50 Everted rim jar, fabric Q103; 'tally mark' below rim; wheelthrown. PRN 213, context 30027, cleaning layer over Phase 2 enclosure ditch section 30040. Fig. 101.

P51 Everted rim jar, fabric Q100; 'tally mark' below rim; wheelthrown. PRN 197, context 30027, cleaning layer over Phase 2 enclosure ditch section 30040. Fig. 101.

P52 Everted rim jar, fabric Q103; wheelthrown. PRN 67, context 30014, secondary fill, Phase 2 enclosure ditch section 30016. Fig. 100.

P53 Everted rim jar, fabric Q100; wheelthrown. PRN 37, context 30014, secondary fill, Phase 2 enclosure ditch section 30016. Fig. 100.

P54 Everted rim jar, fabric Q100; wheelthrown. PRN 35, context 30014, secondary fill, Phase 2 enclosure ditch section 30016. Fig. 100.

P55 High-shouldered jar with everted rim, fabric Q100; wheelthrown. PRN 401, context 30067, tertiary fill, Phase 2 enclosure ditch section 30097. Fig. 101.

P56 Everted rim jar, fabric Q105; wheelthrown. PRN 126, context 30022, tertiary fill, Phase 2 enclosure ditch section 30021. Fig. 100.

P57 Bead-rimmed storage jar with finger-smearing on inside surface, fabric Q103; handmade. PRN 21, context 30013, tertiary fill, Phase 2 enclosure ditch section 30016. Fig. 100.

P58 Small bowl, fabric M102; wheelthrown. PRN 438, context 30074, secondary fill, Phase 2 enclosure ditch section 30166. Fig. 101.

P59 Small jar or beaker, fabric M101; wheelthrown. PRN 336, context 30047, Phase 1 enclosure ditch section 30080. Fig. 99.

P60 Small jar or beaker, fabric Q107; wheelthrown. PRN 409, context 30067, tertiary fill, Phase 2 enclosure ditch section 30097. Fig. 101.

P61 Small jar or beaker, fabric Q120; wheelthrown; burnished lattice decoration. PRN 139, context 30022, tertiary fill, Phase 2 enclosure ditch section 30021. Fig. 100.

P62 'Dog dish', fabric Q107; wheelthrown, burnished internally. PRN 408, context 30067, tertiary fill, Phase 2 enclosure ditch section 30097. Fig. 101.

P63 'Dog dish', fabric Q103; wheelthrown. PRN 202, context 30027, cleaning layer over Phase 2 enclosure ditch section 30040. Fig. 101.

P64 'Dog dish', fabric Q101; wheelthrown; burnished inside and out. PRN 205, context 30027, cleaning layer over Phase 2 enclosure ditch section 30040. Fig. 101.

P65 Straight-sided bowl with flat rim, fabric Q100; wheelthrown. PRN 273, context 30039, secondary fill, Phase 2 enclosure ditch section 30040. Fig. 101.

P66 Straight-sided bowl with flat rim, fabric Q101; wheelthrown; burnished externally. PRN 122, context 30022, tertiary fill, Phase 2 enclosure ditch section 30021. Fig. 100.

P67 Convex bowl with flat rim, fabric Q107; wheelthrown. PRN 179, context 30024, tertiary fill, Phase 2 enclosure ditch section 30023. Fig. 101.

P68 Convex bowl with hooked rim, fabric Q103; wheelthrown. PRN 404, context 30067, tertiary fill, Phase 2 enclosure ditch section 30097. Fig. 101.

P69 Carinated bowl or cup, fabric Q107; wheelthrown; burnished externally. PRN 23, context 30013, tertiary fill, Phase 2 enclosure ditch section 30016. Fig. 100.

P70 Shallow bowl or lid with plain rim, fabric Q107; wheelthrown; burnished lattice decoration. PRN 25, context 30013, tertiary fill, Phase 2 enclosure ditch section 30016. Fig. 100.

P71 Dropped-flange bowl, fabric Q100; wheelthrown. PRN 161, context 30024, tertiary fill, Phase 2 enclosure ditch section 30023. Fig. 101.

P72 Dropped-flange bowl, fabric Q107; wheelthrown; burnished lattice decoration inside. PRN 181, context 30024, tertiary fill, Phase 2 enclosure ditch section 30023. Fig. 101.

P73 Dropped-flange bowl, fabric G100; handmade; burnished externally. PRN 241, context 30027, cleaning layer over Phase 2 enclosure ditch section 30040. Fig. 101.

P74 Flanged bowl, fabric Q112; wheelthrown. PRN 240, context 30027, cleaning layer over Phase 2 enclosure ditch section 30040. Fig. 101.

P75 Shallow bowl or lid with simple rim, fabric Q103; wheelthrown. PRN 398, context 30067, tertiary fill, Phase 2 enclosure ditch section 30097. Fig. 101.

P76 Lid with perforated knob, fabric Q100; wheelthrown. PRN 472, context 30130, pit 30185. Fig. 98.

P77 Flagon, fabric Q101; wheelthrown; burnished externally and inside rim. PRN 60, context 30014, secondary fill, Phase 2 enclosure ditch section 30016. Fig. 100.

P78 Wall-sided mortarium, fabric Q113; wheelthrown. PRN 330, context 30046, tertiary fill, Phase 2 enclosure ditch section 30166. Fig. 101.

Briquetage, by H.F. Beamish

Briquetage was distinguished from pottery on the basis of fabric and form, occurring in fabric types that are quite distinct from the pottery, and generally as fragments with only one visible surface with a rough surface finish. A total of 77 sherds of briquetage (215 g) was identified.

Fabrics

The assemblage has been divided into fabric types following the methods used for the pottery (see Mepham, above), and fabric codes were allocated within the same type series. Three fabric types were defined on the basis of dominant inclusion type, one sandy, one shell-tempered, and one organic-tempered. These are described below, and fabric totals are given in Table 70.

In the following fabric descriptions, terms used to define the frequency of inclusions are as follows: rare (1–3%); sparse (3–10%); moderate (10–20%); common (20–30%). All fabric types show a wide variation of colouring and firing conditions.

Q150 Soft, moderately coarse clay matrix; moderate, well-sorted, rounded quartz <0.5 mm; sparse to moderate, poorly-sorted, subangular to subrounded flint <2 mm; moderate voids representing leached organic material <4 mm; rare crushed shell <1 mm.

S100 Soft, moderately coarse clay matrix with a soapy feel; common, poorly sorted crushed shell <4 mm; moderate organic material <2 mm, generally leached out; rare subrounded quartz <0.5 mm; rare fine mica.

V100 Soft, moderately coarse clay matrix with a slightly soapy feel; common, fairly well-sorted linear voids <4 mm, representing organic tempering (grass, straw etc.); rare subangular quartz <0.25 mm; rare grog or clay pellets <0.5 mm.

The shelly fabric S100 occurs most commonly in terms of both sherd numbers and weight. The sandy fabric Q150 is the next most common, but is entirely made up of sherds from a single context (upper fill of Phase 2 enclosure ditch section 30021).

Forms

Most of the assemblage appeared to consist of body sherds but the relatively small size of the fragments hampered identification. Eleven rim sherds were noted, from a minimum of eight vessels, all in fabric Q150 (Fig. 100, B1–3). Six rims (from a minimum of four vessels) are simple, rounded or pointed forms; the remaining five (from a minimum of four vessels) are externally thickened. All rims are formed rather than cut. One sherd in fabric V100 appears to have been either perforated or distorted before firing, possibly by a finger. No other diagnostic sherds were noted.

Discussion

The small size and generally undiagnostic nature of the assemblage must necessarily limit discussion of the range and significance of the briquetage. On the basis of context and associated pottery, a broad date range within the Romano-British period can be proposed. No chronological sequence can be determined within the range of three fabric types; all three types occur together in the secondary and upper fills of the Phase 2 enclosure ditch, and fabrics S100 and V100 in fills of the Phase 1 enclosure ditch.

The manufacture of briquetage vessels at or close to the site of salt extraction is well documented, and this would certainly seem to be supported in this case by the occurrence of the non-local shelly fabric S100.

Table 70 Area 3, Romano-British briquetage by context (by number/weight in grams)

Feature	*Context*	*Q150*	*S100*	*V100*	*Total*
Phase 1 Enclosure					
Ditch section 30274	30273	–	–	1/2	**1/2**
Ditch section 30276	30275	–	1/3	–	**1/3**
Phase 2 Enclosure					
Ditch section 30016	30013	–	1/3	–	**1/3**
Ditch section 30016	30014		1/4	1/4	**2/8**
Ditch section 30020	30018	–	6/18	1/8	**7/26**
Ditch section 30020	30019	–	2/17	–	**2/17**
Ditch section 30021	30022	32/70	2/2	4/11	**38/83**
Ditch section 30021	30041	–	–	1/1	**1/1**
Ditch section 30023	30024	–	6/24	4/19	**10/43**
Ditch section 30040	30039	–	1/3	–	**1/3**
Ditch section 30301	30304	–	2/5	–	**2/5**
Cleaning over ditch	30027	–	3/5	–	**3/5**
Entrance structure posthole 30228	30230	–	1/1	–	**1/1**
Entrance structure posthole 30235	30233	–	2/9	–	**2/9**
Other features					
Pit 30064	30065	–	2/4	–	**2/4**
Natural feature 30293	30294	–	2/1	1/1	**3/2**
Total		**32/70**	**32/99**	**13/46**	**77/215**

The other two fabrics do not contain sufficiently distinctive tempering materials for a potential source area to be defined, but a similarly non-local source seems likely. The closest possible modern source for the briquetage, i.e. the nearest body of shallow, tidal salt water, would be Chichester Harbour, some 12 km to the west, where salt production sites of the 1st and 2nd centuries AD are common, as they are also around the fringes of Langstone Harbour (Bradley 1975; 1992; Cunliffe 1991a, 468; Allen and Gardiner 2000).

'Chaff-tempered' sherds amongst the Late Iron Age assemblage from Copse Farm, 1 km to the south of Westhampnett, were identified as briquetage. No diagnostic forms were present, but the similarity with other briquetage fabrics known from Sussex and Hampshire coastal contexts was noted (Hamilton 1985, M:15, citing Bradley 1975; see also Bradley 1992, 36).

Illustrated sherds Fig. 100

B1 Fabric Q150, context 30022, fill of Phase 2 enclosure ditch, section 30021

B2 Fabric Q150, context 30022, fill of Phase 2 enclosure ditch, section 30021

B3 Fabric Q150, context 30022, fill of Phase 2 enclosure ditch, section 30021

Ceramic Building Material, by H.F. Beamish

A very small quantity of Romano-British ceramic building material (19 fragments/1516 g) was recovered. Of this total, only three diagnostic fragments could be identified to type; all are from *tegulae*. Approximately half of the ceramic building material (ten fragments) came from contexts within the Phase 2 enclosure ditch, two pieces came from pit 30185, and the remaining seven fragments were found during the initial clearance of the site.

None of this material appears to be *in situ*, and the quantities are too small to suggest the presence of any tiled building on the site. Taken together with the small quantity of ceramic building material from Area 7 (p. 242), however, this could indicate that such a building previously existed in the vicinity.

Fired Clay, by H.F. Beamish

A small quantity of fired clay was found (16 pieces/87 g), mostly comprising featureless, undiagnostic fragments, but two spindlewhorls were identified. The first came from the Phase 1 enclosure ditch and was made from a pottery sherd (pottery fabric type Q100 above), roughly trimmed to a circular shape and perforated (Fig. 99, ON 37520). The second came from pit 30064, 12 m to the east of the Phase 2 enclosure, and is a fragment, probably from a spherical whorl, in a coarse fabric with calcareous inclusions.

Illustrated object (Fig. 99)

ON 37520: spindlewhorl made from a pottery sherd. Fabric Q100, context 30273, secondary fill of Phase 1 enclosure ditch, section 30274.

Worked Stone, by H.F. Beamish

Six possible or probable quern fragments, one piece of chalk, possibly an architectural fragment, and a piece of moulded Purbeck marble from the edge of a slab were recovered.

The six quern fragments have been identified on the basis of stone type rather than diagnostic form, since all fragments are small and none have more than part of one surviving surface. All are in Greensand, and a likely source is the Lodsworth quarry some 17 km to the north of the site (Peacock 1987). All fragments derived either from a secondary fill of the Phase 2 enclosure ditch, or from initial cleaning over this feature.

The piece of chalk (ON 37522) appears to have been roughly squared, and could be from an architectural fragment. This came from pit 30185, which cut the Phase 1 enclosure ditch and was stratigraphically the latest Romano-British feature in the area.

Worked Purbeck Marble, by Martin Henig

A single fragment of worked Purbeck marble (Fig. 100, ON 37006) was found in context 30022 (the upper fill of Phase 2 enclosure ditch section 30021) and is part of the edge of a slab, surviving length 95 mm, surviving width 65 mm. It is 42 mm thick. There was evidently a *cyma recta* moulding around the edge of the frame.

Moulded panels from wall-inlays are recorded amongst the large quantity of Purbeck marble from Fishbourne (Cunliffe 1971, 22, 24, nos 24–5), from Chichester itself (Down 1989, 162–3, no. 6), the legionary bath-house at Exeter (Bidwell 1979, 136–41) and the Fortress Baths at Caerleon (Zienkiewicz 1986, 303–6, esp. fig. 8-96). They have approximately the same thickness as the Westhampnett panel.

Purbeck marble was also used for inscriptions, including a number from Chichester, one of which is the famous dedication slab of the temple of Neptune and Minerva at Chichester (*RIB* 91) and which has a similar moulding as does, for example, a fragmentary dedication slab from Silchester (*RIB* 76).

There are no traces of letters on the Westhampnett slab and there is no intrinsic evidence to favour one use rather than another. On stylistic grounds the piece is unlikely to be any later than the mid-2nd century AD. The site in Area 3 does not seem to have been a rich one and if the stone was associated with a built structure in the enclosure, such as a shrine or column, it may indeed be the remains of an inscription. The alternative is that it was rubbish from elsewhere, perhaps from Chichester or the possible villa at Westhampnett (see p. 239 below), and of no deep significance for the site, in which case a fragment of veneer from a ruined but once rich building is the likeliest explanation.

Purbeck marble was quite commonly used in southern Britain especially on sites belonging to, or strongly connected with, *Legio II Augusta* which may have been involved with the quarrying of the stone from the mid-40s AD (*cf.* Zienkiewicz 1986, 303, n. 1; Henig 1993, 14).

Illustrated object (Fig. 100)

ON 37006: Edge of Purbeck marble slab, surviving length 95 mm, surviving width 65 mm, 42 mm thick. Context 30022, tertiary fill of Phase 2 enclosure ditch, section 30021.

Animal Bone, by Pippa Smith and Dale Serjeantson

Some 722 fragments were recovered from contexts of Romano-British date in Area 3 (Table 71), of which 238 (33%) were identified to species.

The function and role of the enclosure is unclear. The possibility that the faunal assemblages may help clarify these aspects is examined here. In particular it has been considered whether the assemblage is typical of those from later Romano-British settlements, or whether there appear to be discrete deposits of material, or repeated and regular associations between different species and parts of animals that would suggest structured or ritual deposition.

Other classes of finds suggest that the material in the Phase 2 enclosure ditch may have been redeposited from an unknown source, and the bone evidence from this phase is examined from this point of view. The assemblage as a whole is summarised, and then described by phase. In the concluding discussion, questions of selection and deposition are addressed as far as possible. Interpretation is, however, constrained by the small sample sizes.

The Assemblage

From the site as a whole, cattle and sheep, possibly including some goat, were the most numerous species recovered, with 99 fragments from cattle and 75 of sheep or goat. Of the last, it was only possible to identify two fragments more closely: a lower deciduous fourth premolar and a horn core, which were both from sheep. Other species present in much smaller numbers were pig (26 fragments), horse (25), dog (6), domestic fowl (5) and hare, one bone of which was found. The vertebrae, ribs and unidentified long bone splinters are shown in Table 73.

The condition of the assemblage

In Area 3 the sediments were calcareous silts and bone was better preserved than in other areas, but even here preservation appears to have been patchy. Silts and gravels, if sufficiently calcareous, will preserve bone well but factors such as trampling or water percolation, where the deposits are close to the ground surface, will destroy bone in the ground.

Table 71 Area 3, animal bones: number of identified specimens (NISP) from Romano-British contexts

	Phase 1	*Phase 2*	*Pit 30185*	*Total*
Dog (*Canis familiaris*)	–	5	1	6
Horse (*Equus caballus*)	7	14	4	25
Pig (*Sus domesticus*)	2	24	–	26
Cattle (*Bos taurus*)	47	51	1	99
Sheep/goat (*Ovis/Capra*)	15	53	5	73
Sheep (*Ovis aries*)	(1)	(1)	–	(2)
Hare (*Lepus* sp.)	–	1	–	1
Domestic fowl (*Gallus gallus*)	–	5	–	5
Bird, not further identified	–	1	–	1
Sheep/pig size	47	76	5	128
Cow/horse size	15	36	–	51
Unidentified	128	175	2	305
Total	**261**	**441**	**18**	**720**

Table 72 Anatomical distribution of cattle and sheep or goats from Romano-British contexts

Element	*Cattle*	*Sheep/goat*	*Sheep*	*Goat*
Phase 1				
Horncore	4	–	1	–
Loose maxilliary tooth	9	–	–	–
Mandible	2	2	–	–
Loose mandibular tooth	21	1	–	–
Scapula	3	1	–	–
Humerus	–	1	–	–
Radius	1	3	–	–
Tibia	1	1	–	–
Astragalus	2	–	–	–
Metacarpal	1	1	–	–
Metatarsal	2	3	–	–
Phalanx I	–	1	–	–
Phalanx II	1	–	–	–
Total	**47**	**14**	**1**	**0**
Phase 2				
Horncore	2	–	–	–
Skull fragment	–	1	–	–
Maxilla	1	–	–	–
Loose maxilliary tooth	8	3	–	–
Mandible	4	3	–	–
Loose mandibular tooth	8	21	1	–
Scapula	6	2	–	–
Humerus	4	4	–	–
Radius	2	4	–	–
Ulna	3	–	–	–
Pelvis	3	1	–	–
Femur	–	1	–	–
Tibia	1	7	–	1
Carpal	2	–	–	–
Metacarpal	2	2	–	–
Metatarsal	3	2	–	–
Astragalus	1	–	–	–
Phalanx I	1	1	–	–
Total	**51**	**52**	**1**	**1**

Table 73 Area 3, number of cattle/horse size and sheep/pig size fragments from Romano-British contexts

Phase 1	*Cattle sized*	*Sheep sized*	*Unid.*	*Total*
Longbone fragment	6	40	–	46
Vertebra fragment	1	–	–	1
Rib	8	7	–	15
Unidentified	–	–	128	128
Total	15	47	128	190
Phase 2				
Long bone fragment	16	52	–	68
Caudal vertebra	–	1	–	1
Vertebra fragment	2	–	–	2
Rib	18	23	–	41
Unidentified	–	–	175	175
Total	**36**	**76**	**175**	**287**

Most of the bones discussed were recovered by hand, but 20 samples were taken and sieved through 2 mm and 1mm mesh. The manual recovery of 72 loose teeth (Table 72) and a toe bone of domestic fowl shows that the standard of retrieval was high across the site. None of the fragments recovered in the sieves was identifiable to species, so the assemblage is discussed here as a whole. The bones were identified at the Faunal Remains Unit, University of Southampton, and recorded on a database which is held in the project archive.

The condition of the bones was generally fragmented and eroded and was recorded to see if the condition varied between the three enclosures. The following classes were recorded:

1. Bone surface in pristine condition
2. Surface has very few cracks
3. Surface is cracked
4. Surface is pitted
5. Surface is both cracked and pitted
6. Surface is flaking off
7. Surface is missing

The results are summarised in Fig. 102. No bones were recovered, from any phase, that could be described as in pristine condition (class 1) and none had reached the stage in which all the surface was missing (class 7). The bones from the Phase 1 square enclosure have suffered most from surface damage and those from Phase 2, the least. Possible reasons for the poorer condition are that the material was closer to the ground surface (not the case here), or that it had been left exposed for longer before incorporation into the archaeological layer, or that it had been reworked or redeposited.

Very little evidence for carnivore damage to the bones was seen in any phase; it was recorded on only 31 bones, 4% of the whole assemblage. Similarly, few clear traces of butchery were seen, with only 26 bones

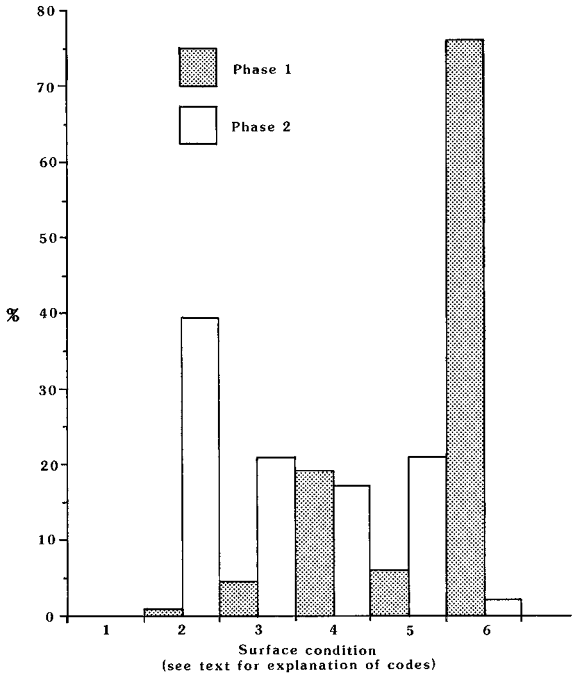


Figure 102 Area 3: comparative surface condition of animal bones from the Phase 1 and 2 Romano-British enclosures 30370 and 30381

(3.5%) bearing any evidence of chops or cut marks. Surface degradation of the bone and fragmentation both tend to mask evidence of gnawing or butchery, and it is likely much of the evidence here has been lost owing to the poor surface condition.

Table 72 lists the elements recovered from cattle sheep and goat. All parts of the skeleton are represented but there was a bias towards the head. As discussed, the assemblage is fragmented and weathered and to some extent the pattern of elements recovered is the result of a survival bias. Teeth survive preferentially to post-cranial material. The difference between these species may also be due to survival, as cattle bones are larger and more robust. What these figures do show is the likelihood that much of the original assemblage deposited at Area 3 did not survive in the ground.

Phase 1: Square Enclosure

In total, 261 fragments were recovered from the square enclosure of which 71 (27%) were identified to species. Cattle and sheep or goat were the most numerous identified species, 47 and 15 fragments respectively (Table 71).

The presence of both upper and lower teeth of cattle shows that both skulls and mandibles had been present. Cattle skulls were also suggested by the presence of four fragmented horncores. The high number of bones from the head of cattle could be from deposition of skulls and mandibles in the ditch, either from butchery waste or deliberate deposition of skulls. However, a high proportion of the head fragments are loose teeth, and, as discussed, the taphonomic factors affecting this assemblage make interpretation difficult. As well as a lack of identifiable fragments of vertebrae, there is an almost complete absence of vertebrae from cattle-sized beasts, which may also be a factor of survival. These elements will be removed from an assemblage by dogs and other attrition processes very rapidly (Brain 1981; Binford and Bertram 1977).

The anatomical distribution is more even for sheep or goat, with all parts of the body deposited, though there is also a dearth of ribs and vertebrae from sheep or pig-sized animals. One radius and six loose teeth of horse were also recovered from this area. One pig radius and one first phalanx of pig were retrieved.

Phase 2: Rectangular Enclosure

The bones from this phase have the best overall preservation. Of the 441 fragments recovered, 156 (35%) were identified to species. Sheep or goat bones were slightly more numerous than cattle in this enclosure, with 53 fragments compared to 51. There are 24 fragments of pig, 14 of horse, five of domestic fowl, five of dog and a hare tibia (Table 71).

In this part of the site a bias towards the head bones in cattle can again be seen (Table 72). Very few vertebrae of any species were recovered and there is a dearth of both ribs and vertebrae from sheep-sized animals. The anatomical elements of pig are similar: a skull fragment, two maxillae, four mandibles and six loose teeth from the head, and three humeri, a radius, one femur, four tibias, and two calcaneii. Horse is represented in this area by one maxilla, three mandibles, seven loose teeth, one atlas, one metacarpal and one second phalanx. Dog bones are less common: three mandibles, one humerus and one radius are present.

The only bird bones from Area 3 were found in the Phase 2 deposits, all from contexts 30013 and 30014 within ditch section 30016, five from domestic fowl and one, an immature humerus, not identifiable, from a passerine or other small bird. Four of the fowl bones, two carpometacarpi, a tibiotarsus and a phalanx, are from adult birds, and the fifth, a crushed or gnawed humerus, is from an immature fowl.

Has Material been Reworked?

In his analysis of the deposits at the Iron Age site of Mingies Ditch in Oxfordshire, Wilson (1985) stated that bones from the ditches and pits were the least damaged while those from layers, postholes and occupation deposits were the most degraded. He relates the extent of damage to bones to the depth of bone-bearing deposits below ground level. Maltby (1985) has also observed that material in ditches is usually better preserved than that from other features. In the case of

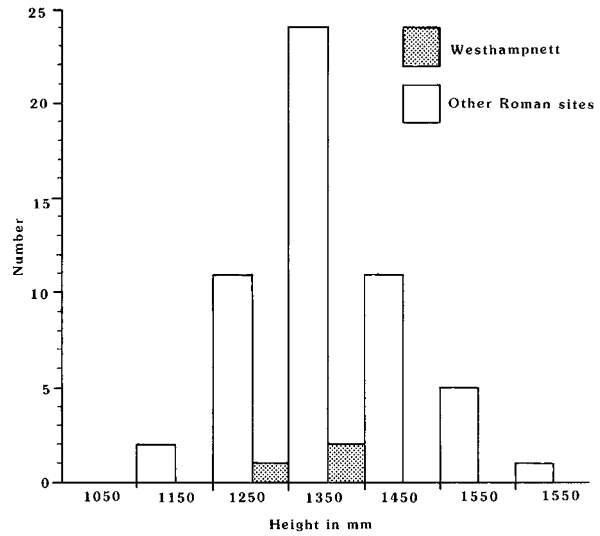


Figure 103 Area 3: horse withers height from Westhampnett Area 3 and selected Romano-British sites

Westhampnett Area 3 it would therefore be expected that the material from the ditch would have suffered least damage, and this is indeed the case. The surface condition of the material is markedly better than that from Phase 1, which suggests that the material has not been reworked.

Pit 30185

Only 18 fragments came from this pit, of which 11 are identified to species (Table 71). Two horse radii that were complete enough to measure came from this feature and this may suggest an element of selection in the deposition. These are complete, but this is more typical for finds of horse than of other species, as horse were not invariably eaten. The pit also contained a cattle scapula, metapodials of sheep or goat, oyster shells and four unidentified fragments of bone. Most were well preserved, with surfaces cracked, but not pitted or flaking.

The withers heights were calculated from the length of three horse radii from Area 3 (including one from Phase 1) following Kiesewalter (von den Driesch and Boessneck 1974), and compared to withers heights from southern Romano-British sites (Coy 1987; Maltby 1987; 1995; Pipe unpub. a; b; c). The horses from Westhampnett were found to fall in the middle of the range (Fig. 103).

Discussion

Discrete deposits

The intra-site distributions of material culture is considered below, but the concentrations or groupings of material around the ditch do not appear to contain discrete groups of either species or elements. Elsewhere on site there is a general scatter of species and anatomical elements. There is no good evidence of distinct groups of material, but again the small sample size must be considered.

Associations of elements

The question of whether there are repeated and regular associations between different species and parts of animals, which would suggest structured deposition, has been examined. No evidence was seen for articulated skeletons or limbs, nor for any groups of single elements, with the possible exception of the two horse radii from the stratigraphically late pit 30185. There are a high proportion of fragments of bones from the head, but all parts of the skeleton of the two most common species are represented, and, as discussed, this is as likely to be a product of survival as the result of any form of structured deposition. No regular associations between species and anatomical elements were noted. The fragmented and weathered nature of the assemblage could, however, have clouded any existing pattern.

Comparisons with other sites

The small size of the assemblage must be borne in mind when making comparisons with other sites. Allowing for this, it can be said that the species composition of the assemblage is similar to other Romano-British settlements in the area. The Chichester–Cattlemarket excavations (phase 5) yielded an assemblage of animal bone in which cattle were the most numerous species followed by sheep or goat (Levitan 1989). Similarly, the nearby Romano-British settlements at Copse Farm, Oving (adjacent to Westhampnett Area 3), and Ounces Barn (Fig. 109) had faunal assemblages dominated by cattle. In a wider context, an increasing reliance on cattle has been noted for the later Romano-British period throughout Britain (King 1991; Robinson and Wilson 1987), and Westhampnett Area 3 fits within this trend.

Although the species composition of the assemblage suggests a settlement origin, the analysis also sought to examine other possible functions (including ritual/religious) of the enclosures from whose ditches most of the material was recovered. However, the predominance of cattle in the Westhampnett assemblage contrasts with assemblages from the major Romano-Celtic temple or ritual sites from which the fauna have been analysed and which have had an emphasis on sheep, goats and pigs. At the Harlow, Essex, temple (Legge and Dorrington 1985) sheep made up over 80% of the assemblage in all levels associated with the temple. At Uley, Gloucestershire (Levitan 1993), sheep and goats made up more than 68% of the assemblage in all phases and reached a peak of 93% in phase 5 (4th century AD). Most of these were found to be goat, an unusual pattern for a British site (Maltby 1981). Two species predominate at Hayling Island in the Late Iron Age temple: sheep or goats and pig, with only a few cattle (Downey *et al.*

Table 74 Area 3, mandibles of cattle, sheep or goat, and pig from Romano-British contexts showing wear stages and approximate age at death

		P4	*M1*	*M2*	*M3*	*Age (Halstead 1985)*
Cattle			Wear stages (Grant 1982)			
	Mandible			g	c	30–36 months
	Mandible			f	b	30–36 months
	Mandible	f	k	g	g	Adult
	Loose DPM4	h				
	Loose M3				g	Adult
	Loose M3				g	Adult
	Loose M3				e	Young adult
	Loose M3				c	30–36 months
Sheep or goat			Wear stages (Grant 1982)			Age (Payne 1973)
	Mandible		g	f	e	3–4 years
	Mandible	i	m	h	g	4–6 years
	Mandible		g	g	b	2–3 years
	Loose teeth *		g	e	a	1–2 years
	Loose M3				e	3–4 years
	Loose M3				e	3–4 years
	Loose M3				f	3–4 years
	Loose M3				b	2–3 years
	Loose M3				d	2–3 years
* reconstucted tooth row						
Pig			Wear stages (Grant 1982)			Age (Maltby 1979)
	Mandible	e	g	g		16–22 months
	Mandible			b	half	7–9 months
	Mandible	(b)				2–6 months

1980, 294; Merrifield 1987). Though there was a predominance of sheep, goats and pigs at these major religious sites, other species are not absent. Domestic fowl remains, of which over half are apparently from cockerels, were also common at Uley and the fowl from Westhampnett may be noted.

Slonk Hill, Shoreham-by-Sea, East Sussex, a site with some parallels to Westhampnett Area 3, has a mixed assemblage, but has a higher proportion of sheep or goat with all positive identifications being of sheep (Sheppard 1978). Sheep, with some possible goat, is the most numerous species, making up 38% and 41% of the assemblages from the Romano-British levels, with pig the next most common species and only 20% and 22% of the bones coming from cattle.

A second feature of the bones from the major shrines of Uley and Harlow Temple is the high degree of selection for age at death. At Harlow Temple juvenile and sub-adult sheep made up 90% of sheep found, though at Uley both immature and mature animals were slaughtered. Both fusion (Table 75) and dental evidence (Table 74) were recorded for the cattle, sheep or goat and pig bones from Westhampnett Area 3 in order to investigate age at death. Very little fusion evidence survived because of the fragmented nature of the assemblage. The elements were assigned to an age stage (Sisson and Grossman 1975). The mandibles, including loose fourth premolars and third molars where possible, were recorded after Grant (1982). The age categories are taken from Maltby (1979) for pig, Halstead (1985) for cattle and Payne (1973) for sheep or goat. All the recordable mandibles of pig are from animals below two years, while the bones with surviving fusion evidence are from older animals. The cattle jaws and teeth are from

Table 75 Area 3, fusion data for cattle, sheep or goat and pig from Romano-British contexts. The number of unfused and fused bones and the approximate fusion age is shown

	Unfused	*Fused*	*Age at fusion*
Cattle			
Radius prox.	–	1	1–1.5 years
Humerus.dist.	–	1	1–1.5 years
Sheep or goat			
Scapula	–	2	10 months
Humerus dist.	–	1	10 months
Radius prox.	–	2	10 months
Tibia dist.	–	4	1.5–2 years
Ulna	1	–	2.5 years
Humerus prox.	–	1	3–3.5 years
Pig			
Radius prox.	2	2	1 year
Tibia dist.	1	–	2–2.5 years
Calcaneum	1	–	2–2.5 years
Tibia prox.	1	–	3.5 years

animals of two years and above, with a single exception, and the two bones with fusion evidence fit this. The sheep or goat teeth and jaws are also, with one exception, all from animals over two years. The discrepancy for the pig remains is likely to be the result of differential destruction of bone, especially immature bone, compared with jaws and teeth. The high proportion of remains of old animals in the other two species may partly be because the denser, older bones have survived better than those from young animals. The evidence of age at death does not suggest that the animals were selected for a restricted age group, as at Harlow Temple, but as with the evidence for species, this selection need not be a feature of smaller scale shrines.

Conclusion

The animal bone assemblage from Area 3 points to it having derived from a settlement context. Moreover, the deposition of animal bones in the enclosure ditches appears to have been unstructured, with no concentrations of material around the ditches and no regular associations between species and anatomical elements. The assemblage displays similarities with other Romano-British settlement sites in the area, and contrasts with those from Romano-Celtic temple or ritual sites.

Oysters, by Sarah F. Wyles

In total, 1627 marine shells were retrieved from 54 Romano-British contexts in Area 3. The majority of the shell was oyster (1618); the range of other marine molluscs was very small and included cockle (4), mussel (3), saddle oyster (1) and carpet shell (1). One aim was to determine if these represented a high-status or religious site rather than domestic debris. Their analysis sought to determine the origin and method of exploitation of this shellfish resource, and to examine intra-site spatial variability relating to structured deposition and disposal.

Methods

Nineteen contexts were selected for more detailed analysis (Table 76) from ditch sections with more than 45 measurable shells. This provided analyses from a range of locations around the enclosure ditches. Due to the low numbers of shells in some contexts, the shells were grouped by ditch section for the further analysis. The methods used follow those developed by Winder and detailed elsewhere (Winder 1992a; Wyles and Winder 2000).

These shells were then studied for evidence of infestation or encrustation by other small marine organisms that had attacked or damaged the shell or had taken shelter there, following Winder (2002). The eight infestations and encrustations recorded were *Polydora ciliata*, *Polydora hoplura*, *Cliona celata*, calcareous tubes, barnacles, *Polyzoa*, boreholes and sandtubes. These are recorded by presence/absence with an estimated percentage of the shell infested by all the categories.

Other shell characteristics, some of a more subjective nature, were also recorded. These were relative shell thickness, the presence of chambers and chalky deposits, physical shell condition and discoloration, the attachment of oysters or spat, mis-shapeness, deliberate notches and cuts and surviving traces of ligament.

Minimum numbers of individuals per cubic metre were calculated for each feature/ditch section. Comparisons were also made between minimum numbers of individuals for the primary and secondary fills and those from the tertiary fills of the ditch sections.

These details were entered onto a database (DBase 111+) and basic statistical analysis was undertaken using a statistics package (statgraphics version 2.6). Statistical methods employed to test population questions included: simple linear regression, student two sample *t*-tests, and Kolmogorov-Smirnov tests, and frequency tables of shell size in 5 mm bands for all four measurements were also calculated. The averages and standard deviations were calculated for shell width and length and the occurrence of each of the twenty attributes by sample.

Results

Origin of the Westhampnett oysters

The organisms that left visible traces of their attack on the Westhampnett oysters were *Polydora ciliata*, *Polydora hoplura*, *Cliona celata* and the sting winkle. These suggest the source of the Westhampnett oysters was likely to be an oyster bed in an inshore location with fairly shallow water and a soft mud substrate on the south coast. There is also likely to be a small freshwater input in the vicinity, as shown by the relatively high level of chambering (20% of the shells). This environment would not exclude the presence of the other marine shell retrieved from Westhampnett.

The size of the shells was analysed. They had a width range of 22–115 mm, the majority falling between 60–85 mm, and a length range of 18–110 mm with most being 50–85 mm. The frequency histogram produced a ‘normal’ distribution. The low numbers of shells with other oysters attached may indicate a general management of natural oyster beds. There is, however, a large proportion (*c.* 45%) of irregularly shaped shells, with either the complete shell or just the heel being affected. This points to the cultivation and collection of a natural oyster bed. Collection by hand or the use of dredging nets could disperse some of the shells, creating more room for growth.

Table 76 Area 3, marine shell from Romano-British contexts

Feature type	*Feature/ Segment*	*Fill*	*Context*	*Oysters*					*Other species*
				LV	*UMLV*	*RV*	*UMRV*	*MNI*	
Ditch	30016	T	30013	**41**	1	**21**	0	42	
30201		S	30014	**12**	2	**6**	0	14	
	30020	T	30018	Not collected				0	1 mussel
			30020					0	2 cockles
	30021	T	30022	**47**	6	**69**	9	78	
		S	30041	**1**	1	**2**	1	3	
	30023	T	30024	**26**	9	**37**	9	46	
	30040	T	30032	**5**	1	**3**	1	6	
		S	30039	**10**	5	**31**	2	33	1 saddle oyster
	30045	T	30034	**1**	0	**0**	0	1	
		S	30035	**30**	7	**28**	8	37	
	30037	T	30038	2	1	5	2	7	
		S	30044	4	1	5	1	6	
	30060	S	30058	7	5	10	2	12	
	1105=	T	1106	**15**	9	**24**	7	31	
	30016	T	1107	**11**	2	**6**	1	13	
		P	1114	**6**	2	**4**	2	8	
	30097	T	30066	**5**	2	**14**	4	18	
		T	30067	**41**	20	**50**	4	61	
		P/S	30079	**43**	13	**36**	17	56	
	30166	T	30046	**39**	49	**36**	17	88	
		S	30074	**59**	30	**62**	12	89	mussel frags
Ditch	30053		30054	5	3	10	2	12	
30053	30078		30077	**44**	9	**62**	15	77	1 cockle, 1 carpet shell
			30113	**11**	2	**12**	2	14	
	30080		30047	3	3	1	1	6	
	30274		30273	2	0	2	0	2	
			30275	1	0	2	1	3	
			30299	1	1	0	0	2	
	30360		30358	0	0	2	0	2	
			30359	0	0	2	0	2	
	1103		1109	2	1	0	0	3	
	30301	P/S	30304	10	7	12	2	17	
	30356	P/S	30355	3	4	13	1	14	
Cleaning	30002/3		30027	3	1	3	3	6	
Pit	30026		30025	0	1	0	0	1	
Pit	30064		30065		frag.			1	
Pit	30185		30130	5	1	7	1	8	
			30131	1	0	5	2	7	
			30138	3	1	2	1	4	
			30187	4	1	8	2	10	
Posthole	30235		30233	0	0	0	1	1	
Scoop/	30266		30264	1	0	1	1	2	
Hollow			30265	1	0	0	1	1	1 mussel
Tree throw	30293		30294	0	1	3	1	4	

Key: those shells analysed are shown in **bold**

Comparison with other local sites

The data from Area 3 were compared with assemblages from a range of other sites – the Roman town of Chichester, a villa and a palace – to examine the possibility of variation in the oysters chosen for consumption in relation to status and location (Table 77). Nine sites were considered: four from the Roman town of Chichester (East Street; 66 East Street; The Hornet; and the Cathedral (Down and Rule 1971)); one villa (Chilgrove villa II (Down 1979)); three locations at Fishbourne Palace (80 Fishbourne Road; under the Dolphin Mosaic; and Cunliffe's excavations (Cunliffe 1971)); and finally a possible source location (Fishbourne Harbour itself (Rudkin 1986)). Other local sites on which oysters have been found include Copse Farm enclosure E, where although the sample is very small a mussel was also found (Bedwin and Holgate 1985, 239).

Table 77 Marine shell analysed from other Romano-British sites in or near Chichester

Site	*Code*	*Date*	*Oysters*					*Other species*
			LV	*UMLV*	*RV*	*UMRV*	*MNI*	
Fishbourne Helmet	F.Helmet		1	0	0	0	1	
Fishbourne Palace	FB/61–66	C1st–C3rd	16	2	8	3	18	45 carpet shells, 19 mussels, 1 great scallop, 4 hunchback scallops, 61 winkles, 1 razor shell, 28 cockles, 1 prickly cockle, 44 whelks
Fishbourne Harbour	FBH 82/3	late C1st–early C4th	59	18	39	12	85	16 cockles, 2 whelks, 2 winkles,1 saddle oyster
Chichester Cathedral	CH 66 M	Late C1st–early C2nd	9	9	8	7	18	1 cockle, 1 whelk, 7 winkles
Chilgrove Villa	C2/65–68	Roman	3	0	6	0	7	2 whelks, 2 cockles
East Street, Chichester	CH/DG 87	Late C1st–C4th	27	1	20	1	28	
The Hornet, Chichester	C.H. H90	Roman	23	12	30	9	40	51 winkles, 1 small scallop, 1 whelk, 1 cockle
66 East Street, Chichester	C.H. E90	C4th	18	3	14	4	25	
Under the Dolphin Mosaic, Fishbourne	FB80	C1st	60	29	57	28	106	4 periwinkles, 3 mussels
80 Fishbourne Road, Fishbourne	FBW 87–88	C1st–C3rd	23	39	39	61	103	13 cockles, 2 whelks, 4 periwinkles, 1 limpet, 5 mussels

A sample of the material from each of these sites was analysed, the data from each site being treated as a single sample, a total of 460 shells being studied in detail. Similarities in size and infestation seem to indicate that although all the assemblages from these nine sites appear to originate from oyster beds in similar locations, only those shells from Chichester cathedral and possibly those from the Chilgrove villa are likely to have to have come from the same oyster bed as the Westhampnett examples.

Role of oysters in the diet and their disposal on site

The relatively low numbers of oyster shells retrieved from Westhampnett make it likely that they never formed a significant part of the diet but instead had a supplementary role. No areas of different uses could be discerned from the shells. The preparation and consumption of the shells appear to have taken place in the same locality, with about a quarter of the shells displaying cuts or notches. A few of the oysters (15) had somewhat large, roundish, holes in the centre of the shell and these are probably under-represented due to the increased likelihood of the shell breaking and becoming unmeasurable. These were also observed on later examples at Carisbrooke Castle, Isle of Wight (Wyles and Winder 2000), and it is possible they result from fork tines. These probably occurred when the shells were disposed of in the ditches as they did not result from excavation methods.

Intra-site variability within Area 3

Only 4% of the assemblage came from features other than the enclosure ditches. There are no significant biases between the occurrence of left versus right valves. The minimum number of individuals retrieved per cubic metre is less than ten in all instances. There was no intentional discard policy of shells into these features.

In Phase 1, the distribution of shell was one of a general fairly low presence except for the southern ditch terminal (30078), which had one of the highest shell densities. In Phase 2, the shell was concentrated in the northern ditch terminal (30097), in ditch section 30016 south of the entrance, and in ditch section 30166 on the north side of the enclosure, again near the entrance. Elsewhere around the enclosure ditch shell was recovered in lower numbers.

The same density pattern was produced when comparing primary/secondary fills with tertiary fills, although there were generally more shells retrieved from the tertiary fills. The only significant difference was the relatively high presence of shell in the primary and secondary fills in ditch sections 30040 and 30045, both at the southern end of the enclosure. This reflects the same trend as the animal bone.

There was a high incidence of flaky shells (an average of 50%) and a fairly high occurrence of worn shells (an average of 11%). This seems to indicate that the shells were heaped up into small temporary middens before being discarded in discrete areas in the ditches.

Conclusions

The oyster assemblage from Area 3 appears to have been a typical domestic assemblage, probably collected from a natural oyster bed nearby in Chichester or Langstone Harbours, with other contemporary sites of all categories in the vicinity exploiting the same or similar natural beds in the area. Oysters do not seem to have formed a significant part of the diet but rather supplemented it. The distribution of the shell does not shed any light on functional uses of areas of the enclosure.

There is no evidence of sites of differing status within the area exploiting particular oyster beds, or buying in oysters from the well established Romano-British oyster trade in Poole (Winder 1991; 1992b). Instead, there are a number of possible local sources for the oysters. These include Chichester Harbour and Langstone Harbour, both of which have evidence of oyster fishing industries that may have Romano-British origins (Fontana and Fontana 2000). A possible candidate is Stocker's Lake, the main marine channel in the centre of Chichester harbour, south of Thorny Island. Today it is surrounded by mud flats producing soft substrates and, having shallower waters than some of the channels, it may have had a shallow warm water environment, with a limited freshwater input provided by the numerous streams running into the harbour. Further afield, Portsmouth and Southampton Harbours today exist as fairly deep-water inlets, but the coastline along Selsey–Bracklesham Bay has altered considerably in the past two millennia and a location for oyster collection or farming in this area cannot be discounted.

Molluscs, by Sarah F. Wyles

The Phase 2 Romano-British enclosure ditch, like the Bronze Age penannular ditch was cut through the Lateglacial marls and calcareous gravels facilitating the preservation of mollusc shells. Although in places the base of the ditch cut through the Allerød phase buried soil, this was not the case in the sampled section (30020), on the eastern side of the enclosure.

The ditch sediments have been described following the terminology of primary, secondary and tertiary fills as defined by Evans (1972, 321–32) and Limbrey (1975, 290–300). A series of four samples was taken from section 30020, but the upper secondary fills were not sampled as these were considered in the field to have been deposits that had been deliberately dumped. The molluscs were analysed to determine the local Romano-British environment and land-use.

The results are presented in Table 78 and as standard histograms of absolute abundance owing to low shell numbers (Fig. 104). Some species have been grouped for this purpose and the nomenclature follows Kerney (1976). The amphibious group includes *Lymnaea truncatula* and *Anisus leucostoma*; the slum species include *Carychium minimum*, *Succinea putris*, *Oxyloma pfeifferi* and *Vertigo moulinsiana*; and Zonitides include *Vitrea crystallina*, V. *contracta*, *Aegopinella pura*, *A. nitidula*, *Oxychilus cellarius.*

One local landscape zone was recognised, but is divided into two sub-zones (Table 78), which reflect local changes in the ditch environment. Subzone 6a equates to the primary and the base of lower secondary fills while subzone 6b equates to the top of the lower secondary and tertiary fills (Fig. 104). The ditch fills were sampled in section 30020 and are described as follows:

Tertiary fill

0–0.04 m	30017	Dark brown (10YR 4/3) silt loam with moderate chalk flecks, occasional subrounded chalk and flint pieces.
0.04–0.23 m	30018	Dark brown (10YR 3/3) silt loam with moderate chalk flecks, occasional medium subrounded chalk pieces and flints.

Upper Secondary fill

0.23–0.27 m	30019	Yellowish brown (10YR 5/4) coarse sandy loam with frequent small chalk and flint pieces, occasional medium to large flint pieces and occasional chalk flecks. This is thought to be a deliberately dumped layer.

Lower Secondary fill

0.27–0.48 m	30030	Brown (10YR 5/3) coarse sandy loam with very frequent chalk/flint coarse (*c.* 5 mm) grit.

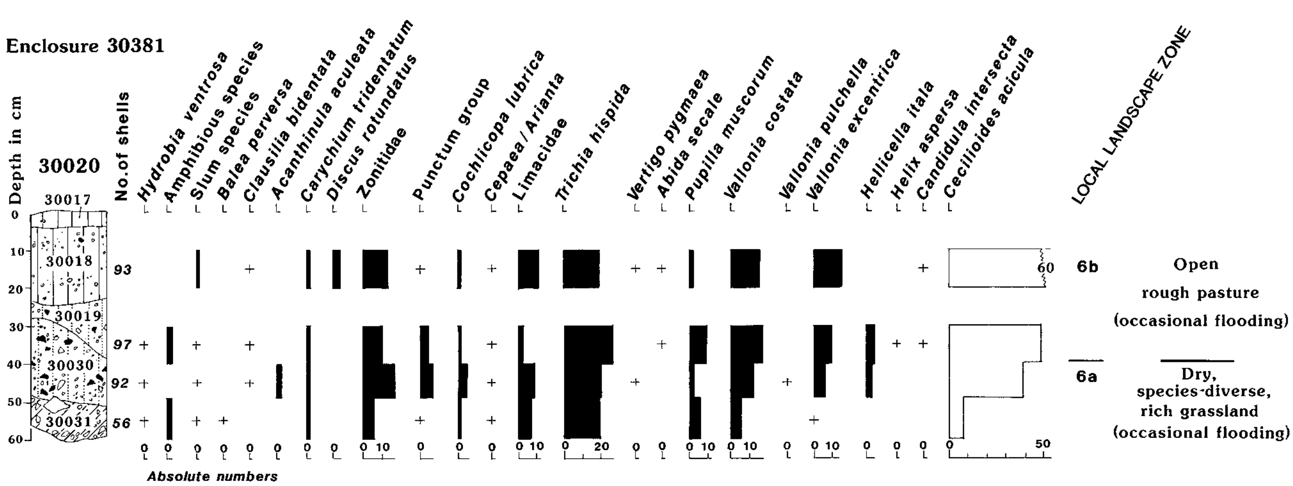


Figure 104 Area 3: mollusc diagram – Phase 2 Romano-British enclosure 30381, ditch segment 30020

Primary fill

0.48–0.60 m 30031 Pale brown (10YR 6/3) silty clay loam with *c.* 20% chalk grit, occasional medium to large chalk pieces and moderate chalk flecks.

Assemblages: Local Landscape Zones 6a and 6b

Although shell numbers were low, with less than 50 shells per kilogram, 2000 g of soil was processed. Shell preservation was fair, with thin, but fresh-looking, shells.

Local landscape zone 6

The assemblages are characterised by a consistent dominance of *Trichia hispida* with both *Vallonia costata* and *V. excentrica* increasing throughout the sequence. The Zonitides, Limacidae and *Pupilla muscorum* are the only other species in which more than ten shells are present. The occurrence of *Balea perversa* is surprising as this is a geophobic woodland species and it is rare in Postglacial assemblages (Evans 1972, 105, 112). The upper profile, local landscape zone 6b, is further characterised by the presence of *Abida secale* and the Introduced Hellicelid (Kerney 1966) *Candidula intersecta.* Five fresh and brackish-water species occur throughout the deposits. It is significant that the Hydrobias do not occur in the Lateglacial marls. All these shells were not excessively worn and appeared to be as well preserved as the rest of the terrestrial assemblage.

The few hand-picked shells were *Helix aspersa*, a synanthropic species, and were retrieved from contexts with oyster shell.

Interpretation

The Phase 2 enclosure ditch was dug in a dry species-diverse grassland (*Pupilla muscorum, Vallonia costata* and *Abida secale* with *Trichia* and the *Punctum group*). This dry environment was maintained throughout the Romano-British period, presumably by the occupation activity, and an open, dry environment existed into the medieval period, as indicated by the presence of the introduced Helicellid, *Candidula intersecta* (Kerney 1966). The open grassland (local landscape zone 6a) seems to be a rich species-diverse one, as indicated by the high mollusc species diversity and the taxa present (Table 78). Nearly 35% of the assemblages are classified as shade-loving and many of these species may live in this rich mesic grassland. However, *Balea perversa* generally lives in dry habitats, often away from the ground, on walls and tree trunks (Boycott 1934, 16) and may therefore have been on the timber used for the square timber structure 30200.

In the upper profile (local landscape zone 6b) the grassland is dry (*Abida secale)*, but relatively mollusc-species rich. The more open nature of this local environment may reflect the absence of the occupation,

Table 78 Area 3, molluscs from the Phase 2 Romano-British enclosure ditch

Ditch section	*30020*			
Local landscape zone	*6a*		*6b*	
Sample	*39111*	*39112*	*39113*	*39114*
Context	*30031*	*30030*	*30030*	*30018*
Depth (cm)	*49–60*	*40–49*	*30–40*	*10–20*
Wt (g)	*2000*	*2000*	*2000*	*2000*
MOLLUSCA				
Carychium minimum Müller	–	–	1	1
Carychium tridentatum (Risso)	2	2	2	1
Carychium spp.	–	–	–	1
Succinea putris (Linnaeus)	–	1	–	–
Oxyloma pfeifferi (Rossmässler)	–	–	–	1
Cochlicopa lubrica (Müller)	–	1	1	2
Cochlicopa spp.	2	4	1	–
Vertigo pygmaea (Draparnaud)	–	–	–	1
Vertigo cf. *moulinsiana* (Dupuy)	1	–	–	–
Vertigo spp.	–	1	–	–
Abida secale (Draparnaud)	–	–	+	1
Pupilla muscorum (Linnaeus)	6	3	10	3
Vallonia costata (Müller)	6	11	17	16
Vallonia pulchella (Müller)	–	1	–	–
Vallonia excentrica Sterki	1	6	9	15
Vallonia spp.	–	1	–	–
Acanthinula aculeata (Müller)	–	3	–	–
Punctum pygmaeum (Draparnaud)	1	3	2	–
Discus rotundatus (Müller)	–	–	–	4
Vitrina pellucida (Müller)	–	4	3	1
Vitrea crystallina (Müller)	1	2	2	–
Vitrea contracta (Westerlund)	–	3	2	1
Aegopinella pura (Alder)	–	–	1	1
Aegopinella nitidula (Draparnaud)	4	9	5	11
Oxychilus cellarius (Müller)	1	3	–	–
Limacidae	7	9	3	11
Euconulus fulvus (Müller)	–	1	1	–
Cecilioides acicula (Müller)	7	39	49	93
Clausilia bidentata (Ström)	–	1	1	1
Balaea perversa (Linnaeus)	1	–	–	–
Candidula intersecta (Poiret)	–	–	1	1
Helicella itala (Linnaeus)	–	3	4	–
Trichia hispida (Linnaeus)	19	20	26	19
Cepaea spp.	–	1	–	–
Cepaea/Arianta spp.	+	–	1	1
Helix aspersa (Müller)	–	–	+	–
Lymnaea truncatula	3	–	2	–
Hydrobia cf ventrosa	–	1	1	–
Hydrobia spp.	1	–	–	–
Anisus leucostoma	–	–	1	–
Taxa	15	22	22	19
Shannon Index	2.00	2.57	2.42	2.31
Total	**56**	**92**	**97**	**93**

Table 79 Areas 3 and 5, charred plant remains from features of Romano-British date

Area	*3*												*5*
Feature type	*Ditches*								*Pits*		*Postholes*		*Pit*
Feature	*30051*	*30048*	*30102*	*30097*	*30166*	*30078*	*30078*	*30356*	*30026*	*30062*	*30075*	*30075*	*50346*
Sample no.	*39008*	*39009*	*39012*	*39017*	*39024*	*39026*	*39028*	*39057*	*39000*	*39015*	*39021*	*39022*	*59014/5*
Sample volume (litres)	*15*	*10*	*10*	*10*	*10*	*10*	*12*	*10*	*10*	*15*	*10*	*10*	*>10*
Cultivated													
Triticum dicoccum – emmer													
grains	–	–	–	–	–	–	–	–	–	–	–	–	5
glume bases	–	–	–	–	–	–	–	–	–	–	–	–	5
Triticum cf *spelta* – spelt													
grains	1	–	–	–	2	3	–	–	–	–	–	1	300*
glume bases	–	–	–	–	–	1	–	–	–	–	–	–	111
Triticum dicoccum/spelta – emmer/spelt													
glume bases	–	–	–	—	2	–	–	–	–	–	–	–	176
Triticum cf. *aestivum* s.l. bread wheat – grains	–	–	–		–	–	–	–	–	–	–	–	2
Triticum sp. – indeterminate wheats – grains	–	–	–	4	2	–	–	–	–	–	2	–	–
Hordeum vulgare – hulled barley													
grains	–	–	–	–	–	–	–	–	–	–	7	–	5
rachis frags.	–	–	–	–	–	–	–	–	–	–	7	–	1
Avena sp. – oats – grains	–	1	–	–	1	–	–	–	–	–	–	–	70*
Cerealia indet. – indeterminate wheat frags	7	1	6	>20	>20	8	>10	9	1	10	5	>5	>25
Vicia faba var. *minor* – broad/field bean	–	–	–	–	–	1	–	–	–	–	–	–	>5
Arable, waste and grassland													
Urtica dioica L. – stinging nettle	–	–	–	–	–	–	–	–	–	–	–	–	–
Rumex sp. – dock	–	–	–	–	–	–	–	–	–	–	–	–	2
Malva sylvestris – common mallow	–	–	–	–	–	–	–	–	–	–	–	–	3
Stella media/neglecta – chickweed	–	–	–	–	–	–	–	–	–	–	–	–	1
Silene cf. *alba* – white campion	–	–	–	–	–	–	–	–	–	–	–	–	1
Vicia cf. *tetrasperma* – smooth tare	–	–	–	–	1	–	–	–	–	–	–	–	
Vicia hirsuta/tetrasperma – hairy/smooth tare	–	–	–	–	1	–	–	–	–	–	–	–	>6
Vicia/Lathyrus sp. – vetch/vetchling	–	2	–	–	–	–	–	–	–	–	–	–	2
Galium aparine – cleavers	–	–	–	1	–	–	–	–	–	–	–	–	–
cf. *Centaurea* sp – knapweed – calyx frags.	–	–	–	–	–	–	–	–	–	–	–	–	2
Arrhenatherum elatius ssp. *bulbosusum* – onion couch – tuber	–	–	–	–	–	–	–	–	–	–	–	–	1
Bromus cf. *secalinus* – rye brome	–	–	–	2	–	2	–	–	–	–	–	–	>50
Poaceae – small–seeded grasses	–	–	–	–	–	–	–	–	–	–	–	–	2
Woodland, wood margins and clearings													
Corylus avellana L. – hazel – nutshell frags	1	–	–	–	–	–	–	–	–	–	6	–	2
Unidentified	–	–	1	–	–	–	–	–	–	1	–	–	3

i.e. a change from a used or occupied site to one of open rough pasture.

Throughout the sequence a few amphibious and slum species are present. These species were not derived from the calcareous marls but may be allochthonous and indicate episodes of local higher winter groundwater or flooding. These species included *Oxyloma/Succinea*, *V. moulinsiana*, *Lymnaea* and *Anisus* and all occur in marshes and freshwater. The presence of *Hydrobia ventrosa* is particularly significant as this species has a specifically coastal distribution (Kerney 1976) as it is tolerant of brackish water in lagoons, estuaries and ditches. The ditch itself is, therefore, likely to have been wet for limited periods. If it had been permanently wet, it is probable that these species (excluding *H. ventrosa*) would be predominant.

Table 80 Areas 3 and 5, charcoal from Romano-British features

Sample	*Taxa* *Acer*	*Corylus*	*Ericaceae*	*Fagus*	*Fraxinus*	*Prunus*	*Quercus*
Area 3							
Ditches							
30102	–	–	–	1	–	–	–
30097	–	–	–	–	4	5	2
Pit/dump							
30026	2	–	?1	–	–	–	5s
Postholes							
30178	–	–	–	–	–	–	74h
30180	–	–	–	–	–	–	83h
Area 5							
Ditch							
50001	–	–	–	–	–	3	149sh
Pit							
50346	–	9	–	–	–	10	34rh

h = heartwood; r = roundwood; s = sapwood

Diatoms from Pit 30137, by Nigel Cameron

The humic silty fill was sampled for diatoms but there were only a few fragments. Intensive scanning of a slide revealed only two parts that could be identified to generic or specific level (*Fragilaria lapponica;* cf. *Stephanodiscus* sp.). Both of these are freshwater taxa, offering some support to the idea that there was standing water in the pit, or that water containing diatoms was transported there.

Charred Plant Remains, by Pat Hinton

Charred plant remains were recovered from a range of features in Area 3 but the samples contained only sparse charred remains (Table 79). The cereals are mainly very fragmentary but *Triticum spelta* (spelt) is identifiable among the better preserved grains and is confirmed by one glume base. *Avena* sp. (oats) appear in two ditch samples and *Hordeum vulgare* (hulled barley) in one posthole. There is one instance of *Vicia faba* (bean), a few common weeds and *Corylus avellana* (hazel) nutshell fragments.

Although these samples are probably no more than part of the constant background of charred fragments from fires they do illustrate the common crop species of the Roman period, when spelt was grown extensively. Spelt was the major cereal found in Roman contexts at Wickbourne Estate, Littlehampton, West Sussex (Arthur 1957).

The weed seeds are as found in earlier periods and in other areas and provide no evidence of any change in land use.

Charcoal, by Rowena Gale

Identifications are given in Table 80, and full details of the samples examined are included in the archive report.

The fill of section 30097 of the Phase 2 enclosure ditch included oak, ash and blackthorn mixed with bone, shell, and pottery. The dumped filling in pit 30026 in the upper fill of the Phase 2 enclosure ditch (section 30040), included burnt flint and stone, shell, pot sherds, nails and charcoal (oak, maple and ?heather). Evidence of *in situ* burning was apparent.

Two postholes (30178 and 30180) that may have been part of a well head around pit/well 30137 included large quantities of oak heartwood, and it is possible that these samples were the remains of the posts burnt *in situ*.

Discussion, by A P. Fitzpatrick

The deliberate incorporation and extension of the Phase 1 enclosure, which was probably built early in the 2nd century AD within the larger Phase 2 enclosure, perhaps early in the 3rd century, indicates that the two enclosures are likely to have performed some related function(s). Perhaps surprisingly for a site of Romano-British date, what these functions might have been is not readily apparent, and there are few germane parallels for the enclosures. In the immediate vicinity at Oldplace Farm, Westhampnett, approximately 2 km to the west of Area 3, a rectangular ditched enclosure of similar dimensions to the Phase 2 enclosure, has been identified in aerial photographs (Bedwin 1983a, fig. 4) and Romano-British pottery has been recovered from the ploughsoil over it. This, however, gives no further indication as to the function(s) of it or the site in Area 3.

Intra-site Patterning

Much of the finds assemblage from Area 3 might be regarded as typical of 'refuse' from domestic contexts: animal bone and oyster shell, pottery and such domestic items as spindlewhorls and fragments of querns. Yet the quantities of material from the Phase 2 enclosure ditch is difficult to reconcile with what appears to be a total absence of structural evidence for buildings within the enclosure. Although a Romano-British enclosure at Copse Farm was also virtually devoid of features and contained large quantities of pottery and animal bone (Bedwin and Holgate 1985, 236, fig. 2, 13) it formed part of a series of agricultural enclosures associated with a trackway, and there is nothing comparable to the Phase 1 enclosure. At Westhampnett the sole feature that might be regarded as domestic is pit 30185, which post-dates the uses of the enclosures on stratigraphic grounds, even if they were not separated much in time.

The survival of even quite shallow postholes at the northern end of the enclosure and at the possible Phase 2 entrance structure show that such features might reasonably be expected to have survived denudation and truncation. Their absence from the southern part of the enclosure would seem to reflect a genuine lack of structures. This suggests that the enclosure ditch did not delineate a settlement and that any settlement(s) from which the debris derived lay outside, but close to, the excavated area.

The distribution and associations of the principal categories of material were examined to try to identify any structured deposition. This was in order to examine the possibility that the enclosures had no domestic, settlement or agricultural function, but instead had a religious purpose, for instance as some form of shrine or ritual enclosure (see below). The analyses of the animal bone and, to a lesser extent, the oysters were directed to this possibility.

Although it was only possible to compare the distributions of finds within the primary and secondary fills of the whole of the Phase 2 enclosure (because of the variable survival of the tertiary fills), the lower fills are in any case more likely to have been deposited during the period of the enclosure's use. Comparing the quantities of different materials from the excavated ditch sections shows that not only were finds unevenly distributed across the site, but there was also considerable variation in the individual distributions of the different materials (Tables 81–2). For instance, while section (30016) yielded 62% of all the pottery from these fills it produced only 4% of the shell, whereas section (30097) yielded 27% of the shell but only 4% of the pottery. Such varied and localised concentrations of material may indicate the locations of different activities, or the separate dumping of different forms of refuse.

Table 81 Area 3, quantities (per 2 m of ditch) of animal bone and pottery (weight), and oyster shell (minimum number of individuals) in primary and secondary fills within sections of Romano-British Phase 2 enclosure ditch

Section	*Bone g/2 m*	*Pottery g/2 m*	*Shell mni/2 m*
North side			
30356	462	126	14
30116	892	4045	89
East side			
30097	195	544	56
30021	160	227	2
30016	420	9717	15
30020	1	18	–
30023	0	0	0
South side			
30040	514	492	33
30045	428	392	37
West side			
30037	66	3	6
30060	154	0	12
30301	271	65	17

Table 82 Area 3, quantities (per 2 m of ditch) of animal bone and pottery (weight), and oyster shell (minimum number of individuals) in tertiary fills within eastern sections of Romano-British Phase 2 enclosure ditch

Section	*Bone g/2 m*	*Pottery g/2 m*	*Shell mni/2 m*
North side			
116	127	1505	88
East side			
97	247	1743	79
21	328	2540	52
16	402	4178	57
20	123	348	–
23	584	2470	46

While dumping continued to fill the upper layers of the ditch, a different pattern is evident, at least in the eastern and north-eastern sections of the ditch where the survival of these fills allows some comparison. There are still localised concentrations of material, but the debris is more homogeneous, the different materials being concentrated largely in the same ditch sections. This distribution pattern, and the high organic content of the tertiary fills on the eastern side, may indicate that this later material, which contains abraded pottery of 1st–4th century date, derives from the clearance of material from a nearby midden. The coins would suggest that this was some time in the second half of the 4th century. The weight of the evidence is towards the materials being refuse in either primary or secondary contexts, perhaps deriving from an as yet unidentified settlement to the south or east. Undiagnostic later prehistoric pottery also occurs with this material but always in quantities proportionate to the Romano-British pottery, suggesting that it derived from a common source. The prehistoric pottery in the primary silts was always accompanied by later material, and as the earliest Romano-British pottery in the Phase 1 enclosure is probably 2nd century in date, there is insufficient evidence to suggest a prehistoric date for the enclosures, attractive though the idea may be.

Perhaps the key point, however, is the virtual absence of any form of find from the primary silts of either enclosure. Only one of the four sections through the Phase 1 enclosure ditch contained pottery in the primary fill. Of the eight sections of the Phase 2 enclosure and the extension to the Phase 1 enclosure in which the primary fills could be clearly identified, only one (30016) contained pottery: a total of three sherds weighing 39 g. Slightly larger quantities of animal bone and oyster were recovered from the primary fills, but the rarity of finds from these layers is consistent with the lack of features within the enclosures. Although hollow 30266, attributed here to the Phase 1 enclosure, yielded 29% of all the animal bone fragments from the site, most of this came from soil layer 30264 which may belong to Phase 2.

A Religious Site?

The Area 3 enclosures were in use at the same time as the Romano-British cemetery excavated in Area 2, only 300 m to the north-east, and this proximity raises the possibility that the enclosures may have had some religious or ritual roles. It is possible that the structures were funerary in purpose. However, the only confirmed funerary feature (grave 30270) has been shown to be Late Neolithic in date. It does not appear that burial or other mortuary practices were the purpose of the enclosures. The small number of artefacts found in the Phase 1 enclosure provide few indications of the functions of the site, although the fragment of what may be a seal box lid is interesting.

The only structure definitely associated with the interior of the Phase 1 enclosure was the square setting of postholes. Apart from the two larger postholes at the entrance, these do not appear to have held particularly substantial posts, and in the absence of any central structure they seem unlikely to have supported a roof. While the general shape and size of the enclosures finds parallels with domestic sites, there are few comparanda for the post-built structures, and these are on religious sites. The retention and enlargement of the Phase 1 structure so that it was sited at one end of the Phase 2 enclosure finds some parallels with Romano-Celtic temples, for example at Trogues, Indre-et-Loire, France (Faudet 1993, 47, no. 128). Perhaps the best parallel for the enlarged second phase structure is with a poorly recorded two-roomed 3rd century building, probably entirely of stone, associated with the Sheepen sanctuary at Colchester, Essex. It is possible that the building (building B), which was *c.* 17 m long by 10 m wide (Crummy 1980, 256, fig. 11.10), was a temple (Lewis 1966, 78) but in any case a religious association seems likely. In general, however, there are few exact or comprehensive parallels with Romano-Celtic or classical temples in either Sussex (Bedwin 1981b, 190–4; 1981c; Down 1988, 67–71), the rest of England (Lewis 1966) or continental Europe (Horne and King 1980; Faudet 1993; Trunk 1991). In the hinterland of Chichester the temples at Bow Hill (Bedwin 1981b, 191–2, fig. 10, b; Down 1988, 68) and Ratham Mill, Funtingdon (Down 1988, 68, fig. 54, a) appear to be of Romano-Celtic type, while at Bosham it is possible that there was a rural sanctuary with a theatre (Black 1985; Hingley 1985). Other rural temples in Sussex also seem to be of standard Romano-Celtic type (Bedwin 1981b, 190–4). Nonetheless, the recurrence of certain elements of the Westhampnett structures at temple sites in England is noteworthy.

Square post-built shrines are known from the British Iron Age, at Danebury, Hampshire (RS1), and at Uley where the Late Iron Age structure XVI was 8.2 m square (Woodward and Leach 1993, 30, 33–6, fig. 25). It is suggested that the Uley shrine was used until the end of the 1st or beginning of the 2nd century AD, and it is possible that a pit lying centrally within the shrine may have marked the presence of a pre-existing focus such as a standing stone or a tree. However, the Westhampnett Phase 1 example is both larger and later in date, and most of the relevant comparanda come from the counties of Sussex, Hampshire and Kent.

A comparable square post-built structure, suggested to be a shrine, is known at Slonk Hill *c.* 30 km to the east by Shoreham-by-Sea (Hartridge 1978) (Fig. 105). There, a *c.* 12 m square structure was erected over, and presumably around, the remains of a Bronze Age barrow. Such dating evidence as there is would suggest a late Romano-British date, although Rodwell has argued that the structure should be regarded as Late Iron Age, with the sanctity of the site being respected into the Romano-British period when it was enclosed. Rodwell speculated that the entrance to this enclosure would have been on the eastern side (1980, 216–18, fig. 10.3). As at Westhampnett there are few features that can be associated with domestic occupation within the enclosure. This might suggest that the debris found at the site derived from domestic occupation outside the excavation and/or from whatever activities were practised inside the enclosure. Rodwell argued that the finds were consistent with the site having been primarily

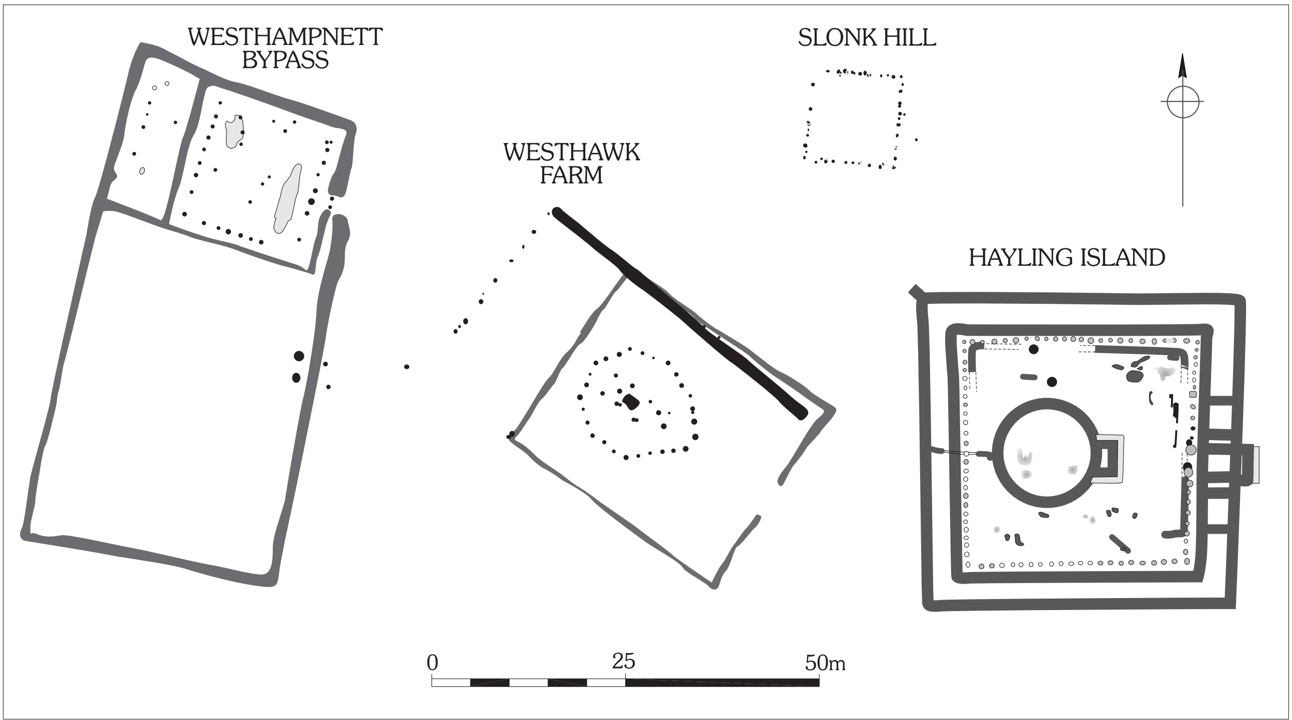


Figure 105 Comparative plan of Westhampnett Area 3 enclosure 30381 and related Romano-British enclosures

religious in character but they need indicate only that the enclosure was not a settlement enclosure. Although Rodwell's arguments were accepted by Woodward and Leach (1993, 305, 307, fig. 210), his conclusions are regarded here as being tentative. The possibility of a deliberate as opposed to fortuitous association between the sites of Romano-British temples with earlier barrows is strengthened by what appears to be the deliberate incorporation of barrows within *temenoi* at Stanwick, Northamptonshire (Neal 1989, 156–7) and at Haddenham, Cambridgeshire, where the probable shrine overlay a barrow. The second phase of the shrine is represented by a rectangular structure that appears to be open-ended (Evans and Hodder 1984, 33–4; Williams 1998a). In this regard it may be noted that the entrance to the Phase 2 enclosure at Westhampnett is directly opposite the Bronze Age penannular burial enclosure.

Lastly, at Westhawk Farm, Ashford, Kent (Fig. 105), a roughly octagonal-shaped post-built shrine was sited within a ditched *temenos*, which had a south-east facing, entrance. It is unlikely that the shrine was roofed and within it there was a large, central, pit that may have held a large post. There were few finds from the site, but most seem to be of 2nd century AD date (Booth and Lawrence 2000, 479–80; P. Booth, pers.comm.).

The post-built structures at Westhampnett also recall the marking of *temenoi* at two Romano-British temples. At Hayling Island (Fig. 105), *c.* 18 km to the west, where the *cella* is round, a series of timber posts within and running parallel to the 30 m square *temenos* was erected in the 2nd century AD (Downey *et al.* 1980, 298, fig. 14.2). The postholes were spaced approximately 1.5 m apart and the same distance in from the edge of the courtyard, and included two large postholes, probably supporting a timber superstructure, immediately behind the protruding entrance porch. At Lancing Down, West Sussex, where the *cella* is probably square, the *temenos* was marked by a post-built palisade (Bedwin 1981c).

The salient point is that the important element of Romano-British religious sites was not necessarily a temple in the form of an enclosed room or *cella*, but the *temenos* – a sacred precinct with defined limits. Nor should explicitly votive assemblages of finds be expected. The evidence from Westhampnett would be consistent with this. Space was clearly defined and access to it was confined and restricted, notably by the porch-like entrance to the Phase 1 post-built structure, which was only 0.8 m wide and extended more than 3 m from the entrance causeway. If the post-built entrance structure 30379 for the Phase 2 enclosure represented a drawbridge-like structure, this could have had a similar effect, in combination with a hedge bounding the ditch, of restricting access to the interior. If only a few people were allowed into the areas defined by the ditches this could also account for the rarity of finds from the ditches' primary fills. Both the Phase 1 and Phase 2 enclosures at Westhampnett, therefore, individually and in combination, could represent the ritual definition of discrete areas of space, each with its distinct entrance feature signifying the formal thresholds between the inside and the outside.

The only indications regarding the activities practised within the Phase 1 post-built structure are the two hollows. If the long hollow inside the entrance/porch on the eastern side was created by trampling, movement would appear to have been restricted to the front of the enclosure, possibly because some central feature, no trace of which survives, prevented movement forward but directed it sideways from the entrance. The other hollow, perhaps also indicating an area of localised trampling, was positioned midway along the north side of the Phase 2 expanded timber structure. The two postholes suggest that it may have incorporated a post-built superstructure although both posts cut the hollow.

It has been suggested at both Slonk Hill and Uley that the square enclosures were deliberately placed round a barrow and a standing stone or tree respectively, and other, more certain, identifications of wells and shafts within Romano-Celtic temples are known from continental Europe (e.g. Woodward and Leach 1993, 312–14). In Area 3 it is likely that the compaction of the fine chalk gravel with a manganese and iron pan within depression 30266 was caused by puddling, that is to say by standing water. It is possible that this indicates a spring at the base of the Norton–Brighton cliff-line, but the feature also straddles the south-western edge of the early Post-glacial palaeochannel which may have acted as a lavant or winter bourne. It may be, therefore, that water would have accumulated occasionally in these shallow depressions, which may have been natural in origin. The nearby feature 30329 was similar in plan and only 0.07 m deep, and was also considered likely to have been natural in origin. The siting of Romano-Celtic temples at or around springs is well known, for example in Great Britain at Springhead in Kent, at Bath, and at Coventina's Well next to the fort of Carrawburgh on Hadrian's Wall. At Bath the classical temple and pool of Silus Minerva enclosed the spring. It has been suggested that one of the Springhead temples enclosed an above ground pool (Lewis 1966, 92), although this is less certain (Rodwell 1980, 567). Coventina's Well was enclosed within a square structure with an entrance on the west. Although it is possible that the 19th century excavators failed to observe a *cella* (Rodwell 1980, 561), in view of the size of the surviving remains this seems unlikely (Allason-Jones and McKay 1985, 2–3, pls II–III). It is suggested the structure was open to the sky, as was the nearby shrine of the Nymphs and the Genius Loci (Allason-Jones and McKay 1985, 3; Lewis 1966, 87).

Although the focus of studies of religion in Roman Britain has traditionally been on Romano-Celtic religion (e.g. King 1990), the possibility of there being other influences should not be overlooked. Parallels for the square enclosure come from a small group of Roman period cult places in the Meuse–Demer–Scheldt region of southern Holland (Slofstra and van der Sanden 1987). These enclosures are characteristically between 20–45 m square, formed either by a ditch (sometimes with a bank) or a palisade. There is often a linear setting of posts within the enclosures. The enclosures have yielded comparatively few finds but many of these, such as bracelets or brooches, may be identified as votive offerings. The sites are interpreted as open-air sanctuaries, and it is possible that this was also the case at Westhampnett, perhaps with some of the postholes within the Phase 1 enclosure forming a north–south alignment across the enclosure.

The fact that many of the dedicants of the altars at Carrawburgh came from *Germania Inferior,* Batavians, Frisians, Cubernians, and also other Germans, should probably be regarded as simply reflecting the origins of the garrison which happened to be stationed at Carrawburgh at that time. There are some hints that the distribution of the cult was wider than presently known (Allason-Jones and McKay 1985, 5–6), but the evidence is slight.

Although the artefactual and faunal assemblage from the Phase 2 enclosure ditch would appear to be entirely domestic in character, a single finely carved fragment of Purbeck limestone either from an architectural moulding or an inscription (ON 37006), found in the southern terminal of the Phase 2 ditch, hints at the possibility of some more elaborate architectural feature in the immediate vicinity. This might be a religious inscription but it is as likely to be from a building and, as with the other material from the secondary and tertiary fills, it seems likely that it was introduced to the site as it passed out of use. The proximity of a secular building, or buildings, to the Phase 2 enclosure is further suggested by the recovery of Romano-British ceramic building material from features on Area 3. Of this, 48% (by weight) derived from the Phase 2 ditch section on the enclosure's north side (30116), with a further 24% from pit 30185 near its south-west corner. It seems unlikely that the post-built structures within the Phase 1 enclosure or its enlargement were roofed and this material could have originated from a secular building.

The bone assemblage, consisting predominantly of cattle and sheep, is to a certain extent biased against the main meat-bearing bones, in particular vertebrae and ribs, although this may be a factor of survival. Such a bias, if real, could point to the meat-bearing bones being taken away from the site after butchery. The corralling of animals was proposed as one of the main uses for some of the series of late 1st–2nd century AD Romano-British enclosures *c.* 350 m to the south, at Copse Farm. The narrow and restricted access to the Westhampnett enclosures would, however, suggest they were probably ill-suited for the easy movement of farm animals. It was suggested that the Copse Farm faunal assemblage, which also generally lacked meat-bearing bones, and which displayed evidence of butchery, might indicate that the site was supplying meat to the inhabitants of the town of Chichester (Bedwin 1983b, 92; Bedwin and Holgate 1985, 239). Westhampnett Area 3 lies only 3 km east of Roman Chichester, and only 400 m to the south of Stane Street, the Roman road between Chichester and London. The size and proximity of urban markets may have made it practicable to deliver carcasses from any adjacent site rather than live animals to the town.

In short, the interpretation of the Phase 1 and 2 enclosures remains uncertain. The restricted access, the enclosure and closure of space, the rarity of internal features and finds from the primary fills of the enclosure ditches, all suggest a non-domestic function. There is some support for this suggestion from the parallels for various structural elements from other certainly or possibly religious sites in the region but it cannot be regarded as conclusive. Nor can the suggestion that the hollows within the Phase 1 enclosure were springs or pools of sacred water be regarded as more than a possibility. Such absolute and relative dating evidence as there is from the stratigraphic evidence and the finds would suggest that the Phase 2 enclosure passed out of use after a relatively short period. The southern arm of the Phase 1 enclosure, which is presumed to have remained in use, was cut by pit 30185 and the finds from this pit are comparable with the earliest material in the secondary fills of the Phase 2 enclosure ditch. Thereafter an increasing quantity of apparently domestic refuse was deposited, initially in some places in discrete dumps but then in more mixed deposits, in the enclosure ditches. A few isolated features outside the enclosures may be associated with this activity. In some ways, the suggestion that most of the material within the enclosure ditches derives from a nearby settlement might be thought to be unsatisfactory. It may at least be said, though, to be consistent with the evidence from Area 7 for a nearby settlement and, tantalisingly, with the Romano-British cemetery in Area 2 passing out of use at about the same time as the Phase 2 enclosure.

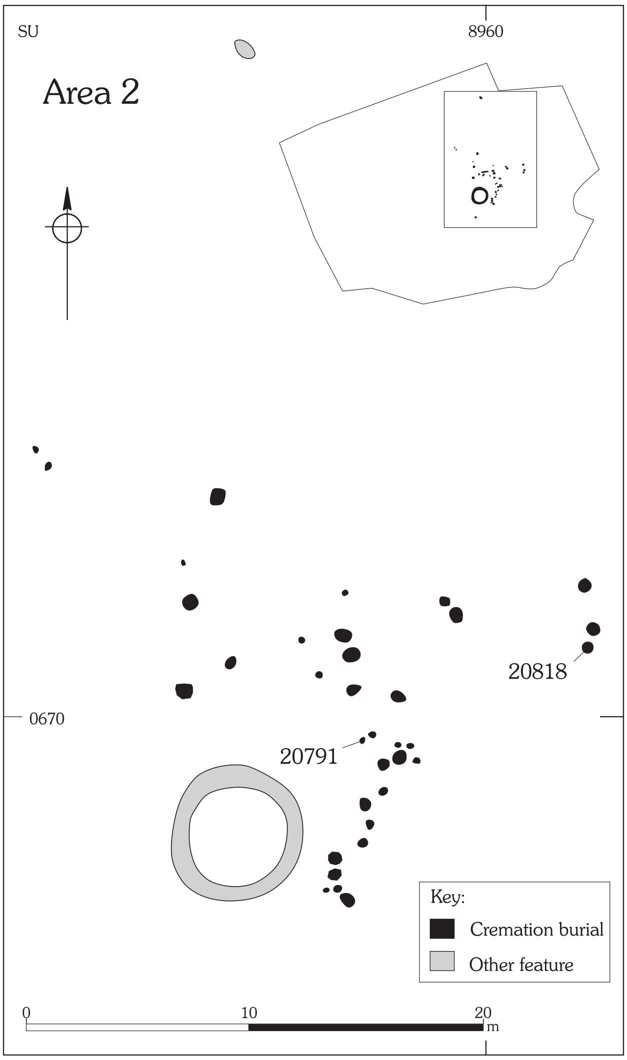


Figure 106 Area 2: plan of Romano-British cremation burial cemetery

Romano-British Cemetery (Area 2), and other Romano-British Features

Area 2 (Figs 106 and 107)

A small Romano-British cremation cemetery lay to the south-east of the Iron Age religious site in Area 2, apparently respecting the site (Vol. 2). The burials appeared to be focused on an undated ring ditch that echoed the circular space in the Iron Age religious site (Fig. 106), although the site appears to have been founded almost a century after the Iron Age one passed out of use. The presence of the round barrow, presumed to be of Bronze Age date (pp. 128–30 above), may also have influenced the siting of the cemetery (Williams 1998a).

In contrast to the wide range of features on the Iron Age site there was only a single Romano-British pyre site, and the 36 burials spanned a period of approximately 80 years (*c.* AD 70–150). It seems likely, therefore, that the cemetery was the burial ground for one–two families or a small community, as opposed to the communal nature of the Iron Age cemetery. Further contrasts with the Iron Age burials were that many of the burials were urned and contained more grave goods. A similar range of analyses were undertaken as for the Iron Age burials and these indicated a preference for placing the burial urn in the north of the grave (e.g. Fig. 107). In comparison with the cemeteries of the nearby *civitas* capital of Chichester, notably that at St Pancras which lies alongside Stane Street outside the eastern gate, the burials at Westhampnett appear to be better furnished.

Area 8

A single ill-defined shallow hollow (20404), measuring 0.65 m by 0.4 m and 0.07 m deep was found in Area 8.

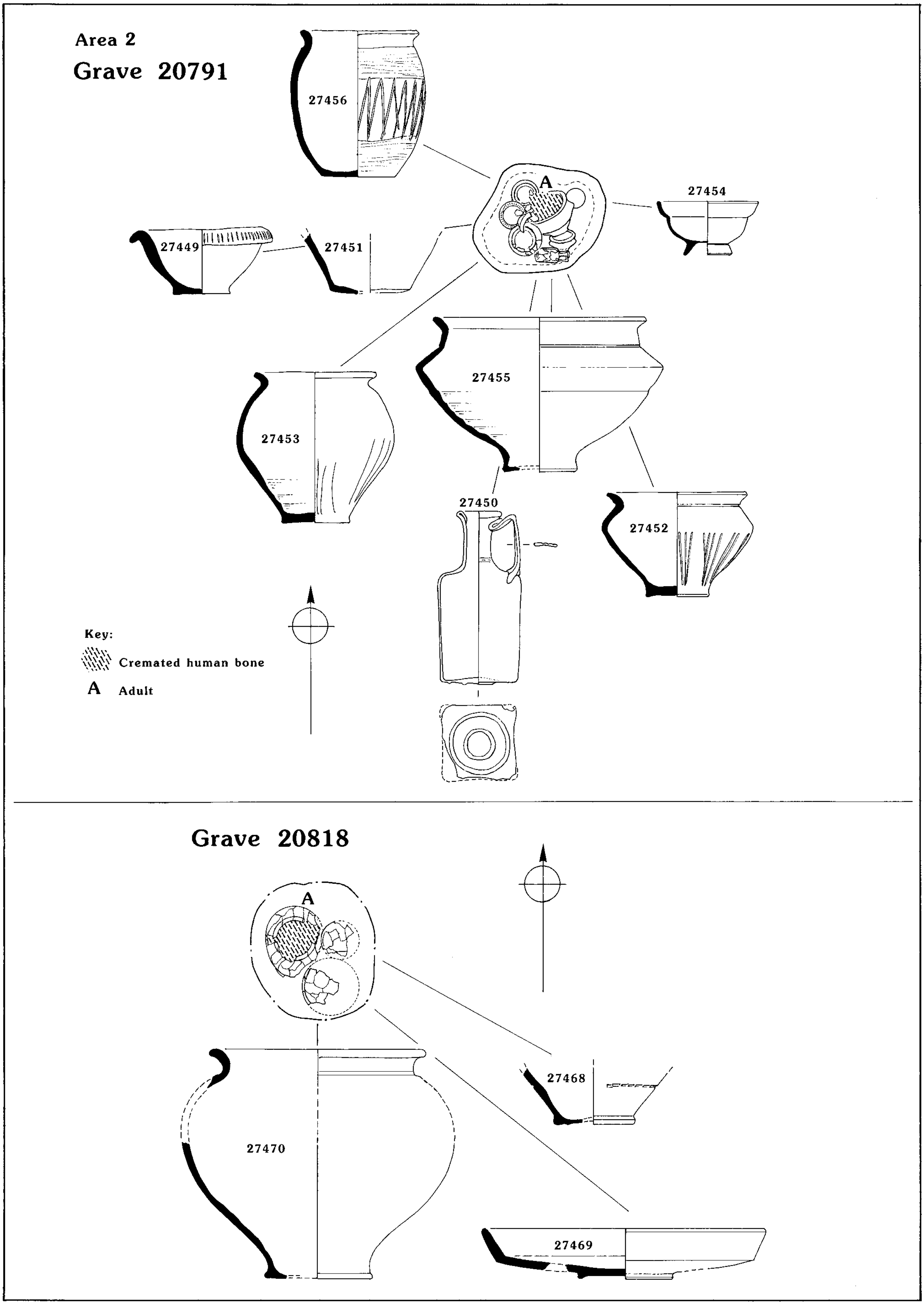


Figure 107 Area 2: plans of, and grave goods from, Romano-British cremation burials 20791 and 20818 (Vol. 2, fig. 155)

Its fill (20401) contained a single broken 1st century AD Romano-British pot, as well as charcoal. In view of these finds it is possible, given its proximity, that this feature is in some way related to the cemetery in Area 2.

Area 1

A sub-rectangular feature (10160), measuring 2 m by 0.7m, and oriented north–south was found initially in test pit 10015 (Fig. 108). The feature was cut through the relict argillic brown earth where it survived to the north of the excavation, and into the natural gravels. The main fill (10184) was a yellowish-brown clay loam that derived from the argillic brown earth through which the feature was cut. The upper fill (10159) was a dark yellowish-brown clay loam and contained a number of Mesolithic flints.

The shape and size of the feature (Fig. 108) give the impression of a grave and, although no bones were found, a coin of Gratian minted in Arles between AD 367–75 was found on the base of the feature near to the centre. This is approximately where the hip of an extended inhumation burial would have been and, after the mouth, this is the most common place in which coins are found in Roman graves (Philpott 1991, 212, table 44) and one need look no further than Chichester and the site of Eastgate-Needlemakers for a coin found in the skull of a late Roman inhumation burial (Down 1981, 94–5). The Anglo-Saxon inhumation burials about 125 m to the south in Area 2 were all aligned east–west rather than north–south, which strongly suggests that feature 10160 was a later Romano-British inhumation burial and that the skeleton had been destroyed by the acidic soils.

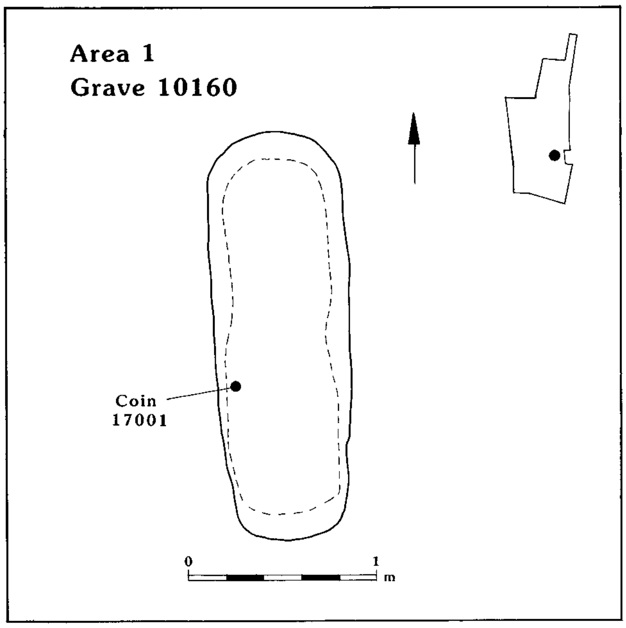


Figure 108 Area 1: plan of Romano-British grave 10160

No other graves were identified in Areas 1 or 6–8 so it appears that burial 10160 was either isolated or part of small group, perhaps located with respect to a field boundary rather than with regard to the low hill on which Area 2 lies.

Coin, by John A. Davies

1 Gratian AE3 AD 367–75
O DN GRAT [IANVUS AVGG AVG]
R GLORIA NO[VI SAECVLI]
ON 17001, context 10184, fill of grave 10160.

Areas 4 and 7

Glass and Pottery, by H.F. Beamish

Two glass beads were recovered from the ploughsoil over Area 4. One may be Anglo-Saxon and is considered below. The other is in a translucent green metal, is globular, with a diameter of 5 mm (ON 47518/2), and seems most likely to be Romano-British in date (Guido 1978, 70), being paralleled locally by an example possibly of the late 1st century AD at Chichester-Chapel Street (Charlesworth 1981, 296, fig. 15.3, 33). A later date cannot be excluded, however.

In addition, a quantity of Romano-British pottery was recovered from an Anglo-Saxon sunken-featured building in Area 7 (pp. 242, 244)

Discussion, by A.P. Fitzpatrick

Roman Foundations

As set out in Vol. 2 (pp. 8–9), it is likely that what became the Roman *civitas* capital of *Noviomagnus Regensium* had Iron Age origins, even though the precise character of that occupation remains uncertain. The ensuing military presence in Chichester and the harbour area of Fishbourne (Down 1978; 1988; Black 1993) and the early development of the palatial buildings at Fishbourne (Cunliffe 1971; 1991b; 1998; Cunliffe *et al.* 1996) are well established, and the building of the temple at Hayling Island has been associated with these developments (Downey *et al.* 1980). Whether Chichester was the initial base for the Plautian invasion force has been much debated recently (Bird 2000; Black 1998; Hind 1989), almost as much as the career of Tiberius Claudius Togidubnus (or Cogidubnus; Tomalin 1997) and his association with Fishbourne (Barrett 1979; Bogaers 1979).

In addition to these dramatic developments, inscriptions testify to early urban developments in Chichester in the form of the building of temples and perhaps the erection of an imperial statue, though the contemporary archaeological evidence for buildings and craft activities is rather more modest. In the countryside there was a period of precocious

Romanisation in the form of a series of very early, very large and presumably very wealthy villas such as at Angmering, Southwick and Pulborough (Cunliffe 1973, 74–9). It has been suggested that there may have been such a villa at Westhampnett. Restoration of the church in 1867 revealed quantities of Roman brick and tiles (Hills 1868) and some of the tiles are of a type (half-box) thought to pre-date *c.* AD 75–80. On this basis it has been suggested that if the materials do derive from a villa (rather than having come from Chichester), then their early date is consistent with an origin in the early group, as indeed are some relief-stamped tiles suggested to date to *c.* AD 99–110 (Black 1985, 356–8, fig. 2; 1987, 12–13, 157, no. 157, 209–18; Scott 1993, 193; Betts *et al.* 1997, 92, 96, dies 21, 22, U5; Rudling 1998, 44, 56). Stane Street, the road between Chichester and London, must have been established by the Flavian period (Down and Rule 1971; Down 1988, 48; Magilton 1996, 31).

The Romano-British Countryside

Most work on the Romano-British countryside around Chichester has, as was traditional, focused on villas, a group of which have been examined in the Chilgrove Valley, which is in the Downs 8 km north of Chichester (Down 1979) and which has been seen as the counterpoint to more modest villages on the chalk downland such as Chalton, Hampshire (Cunliffe 1976). In contrast although a large number of stray finds of Romano-British date are known from the Coastal Plain (Pitts 1979a; Aldsworth 1987), little is known about the types of sites from which they derive, unless these too could be shown to be probably from villas, or burials (Vol. 2, fig. 138).

It seems clear from the evidence of stray finds that villas did exist on the Coastal Plain (Fig. 109), though exactly how they are defined is a matter for debate (Black 1987; Scott 1993, 181–94) and they may be the source of the thin scatter of tiles found at these sites.

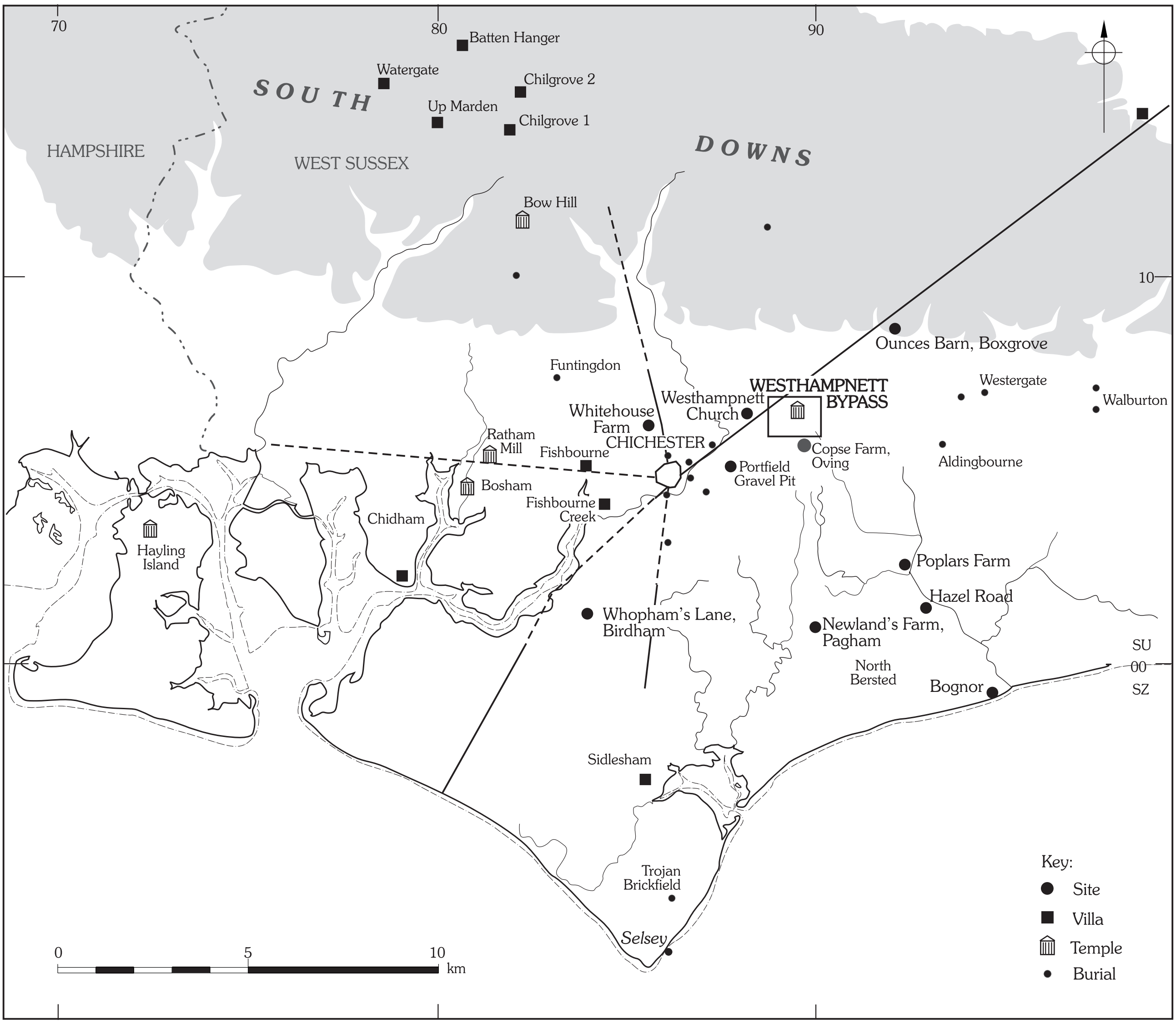


Figure 109 Selected Romano-British sites in the area

At Ounces Barn *tegulae*, *imbrices*, box flue tiles, *tegulae mammata* and flat tile or bricks were found (Bedwin and Place 1995, 90), a piece of relief-patterned tile from Morden (Black 1987, 159, no. 187), tile, some of which could be *tegulae*, from Copse Farm (Bedwin and Holgate 1985, M2:25), and *tegulae* from Westhampnett Areas 3, 5 and 7 (the latter suggested to be in an Anglo-Saxon context). It seems unlikely that all of these, and the fragment of worked marble from Area 3, were introduced from Chichester.

In consequence, rural settlement on the West Sussex Coastal Plain is poorly known with few sites having been examined by excavation – Ounces Barn (Bedwin and Place 1995) and Copse Farm enclosure 2 (Bedwin and Holgate 1985). Little can be said at present about sites such as Oldplace Farm, Westhampnett (Bedwin 1983a, 36) and Portfield Gravel Pit (Curwen and Frere 1947).

At Ounces Barn most of the activity was of 1st–2nd century AD date and was represented by ditched enclosures and gravelled areas, pits and postholes, but no buildings were certainly identified. At Copse Farm the Romano-British enclosures that were examined extensively (2 and 3) formed part of an extensive series of trackways or droveways and enclosures. Neither enclosure appeared to be for settlement though the quantity of refuse from enclosure 2 suggests the presence of a settlement nearby and this would be consistent with the dense scatter of fieldwalking finds (Pitts 1979a, 77, no. 94). A similar interpretation may apply to Area 5 at Westhampnett, in which only ditches and pits were identified in the excavated area but which contained a substantial assemblage of domestic refuse. Further to the south on the Coastal Plain a number of settlements have been identified in Bersted, at Chalcroft Lane, Hazel Road and Poplars Farm (Pitts 1979a, no. 105, 77, 76), at least one of which (Hazel Road) seems, like the nearby Iron Age site (Bedwin and Pitts 1978), to be associated with a field system.

The main period of activity at Copse Farm, Ounces Barn, Portfield Gravel Pit, and Westhampnett Area 5 is in the 1st–2nd centuries AD, though later activity is attested at Ounces Barn. The cemetery in Area 2, Westhampnett, was also used in the 1st and 2nd centuries. The possible shrine in Area 3 has a slightly different date range, perhaps being built in the early 2nd century and continuing to be used perhaps into the 3rd century, and it is the only site not to have been occupied during the Middle–Late Iron Age. The later material in the Phase 2 enclosure ditches in Area 3 has been interpreted as refuse dumped from an adjacent site. There is too little evidence to be able to suggest any changes in the settlement pattern in the hinterland of Chichester or the vicinity of the Roman road, but it may be noted that there is a high proportion of Claudio-Neronian samian from Portfield gravel pit which, along with sherds of Terra Nigra and Pompeian Red Ware, set the site apart from the others.

If the site in Area 3 is a shrine the worshippers also seem likely to have come from the surrounding countryside though the site may have been visible from the Roman road *c*. 500 m away. Apart from the single inhumation burial in Area 1, no evidence for activity was recorded along the route after the site in Area 3 had passed out of use and the ditches were filled with refuse, perhaps in the mid-4th century, until the 5–6th century Anglo-Saxon settlement in Area 7.

Roman Woodlands, by Rowena Gale

From the limited evidence we have, the character of the woody vegetation growing in the Roman landscape appears to have altered little from that of the Iron Age. Oak, ash and hazel were still an important source of wood and timber. Beech was established on chalkland in southern England by the Neolithic period (Godwin 1956) but its distribution may not have been widespread until the late 2nd millennium BC when grasslands were becoming a common feature of the landscape (Tittensor 1979). Its minimal occurrence in the charcoal at Westhampnett suggests that it was not common in the immediate locality of the site. Maple, birch, Pomoideae and *Prunus* were also identified. At Ounces Barn oak and hazel were dominant amongst the charcoals, suggesting their use for buildings and objects, but a wide range of twiggy material such as hawthorn, gorse, and blackthorn, used as kindling, may derive from hedges.

Pressure to make way for agriculture resulted in a gradual eradication of natural woodland. A regular source of wood and its by-products to service the community could only have been sustained by the maintenance of selected areas of woodland. In such an environment beech and maple were able to establish.

Woodlands in the vicinity of Westhampnett today include secondary colonisation that probably occurred sometime after the Roman occupation. The extent of woodland clearance prior to its reversion is unknown and comparison with the landscapes described above, to indicate the progression of natural and managed woodlands, would be spurious. However, a tract of land, north of the South Downs, now known as The Mens, has been wooded continuously from prehistoric times until the present day, although not as ancient wildwood (Tittensor 1978). In historic times The Mens has provided forage and a source of materials for domestic and industrial purposes (charcoal- and glass-making, and ironworking). Since the 18th century the dominant taxa have been more-or-less equal proportions of oak and beech; other species include ash, elm (*Ulmus*), holly (*Ilex*), hawthorn, wild service, sweet chestnut (*Castanea*) (an exotic probably introduced to Britain by the Romans), field maple and hazel. The high content of sodium and potassium in beech was particularly important for glass-making and may have contributed to the dominance of beech in the

Table 83 Relative proportions of fragments of animal bone from selected Romano-British rural sites on the West Sussex Coastal Plain

	Cattle	*Sheep/goat*	*Pig*	*Horse*	*Dog*	*Wild*	*Bird*	*Total*
Copse Farm (2)	47.6	18.9	7.5	22.4	3.3	0.1 (red deer)	0.1	114
Ounces Barn	70	17	7	6	–	1 (red deer)	–	1182
Area 3	43	30	11	11	6	1 hare	6	243

community. Iron Age and Roman woodlands at Westhampnett and The Mens may have been comparable in species content; both were working woods in that they supplied wood and fuel to local homesteads and industry. The difficulty in cultivating the heavy clay in The Mens, as opposed the lighter soils further south, probably safeguarded these woodlands from the extensive clearance that occurred at Westhampnett.

Roman Farming, by A.P. Fitzpatrick

The evidence that emerges from those sites that have been excavated is broadly consistent in demonstrating mixed farming but in which raising cattle may well have been important. The clearest, though badly preserved, evidence comes from Ounces Barn. This shows that spelt wheat, perhaps free-threshing bread wheat, and barley were grown. Chaff and weed seeds and the presence of querns suggest that the crops were processed on site (Bedwin and Place 1995, 95). Although it is possible that some of the charred plant remains from Area 5 may have been redeposited, they present a similar picture.

Although all the animal bone assemblages are small and not well preserved they share a common trend, with cattle dominating followed by sheep/goat and smaller quantities of pig and horse (which displayed butchery marks at Copse Farm) (Table 83). Dogs are present at all three sites (and there is an imprint of a cat's paw on a tile from Ounces Barn), and domestic fowl at two. Red deer is also present at two sites and hare at one.

This pattern is consistent with the small amount of data from Chichester (Levitan 1989) and at Copse Farm it was suggested that the large number of bones from the extremities of cattle in relation to meat-bearing bones could suggest that the farm was supplying dressed carcasses to Chichester. This would also be consistent with the trackways and enclosures, which would have been used as droveways and corrals. The evidence from Copse Farm suggests that the system of trackways and enclosures (Fig. 90) is Romano-British in date. Spindlewhorls from Areas 3 and 5 suggest textile preparation.

Both Copse Farm and Area 3 yielded oysters, and the occasional mussel, but the assemblage from Area 3 is significantly larger. Briquetage which contained salt, perhaps coming from the same source(s) as the oysters, has only been identified at Area 3. The querns from these sites will have been exchanged, and many may be from the Lodsworth quarries. There are also occasional finds from the Mayen quern industry, from Ounces Barn (Bedwin and Place 1995, 99) and there is a single fragment from an undated posthole in Enclosure 1 at Copse Farm, all the finds from which are of prehistoric date (Bedwin and Holgate 1985, 232–3, M1:38). If the find is an Iron Age rather than Romano-British import it is unique in Britain.

Other aspects of trade and exchange are evident in the pottery assemblages. These seemingly modest rural sites consistently include amphorae for wine, olive oil, either dried fruits or a liqueur wine, and fish-based products. Most of these commodities will be of 1st century date but there are later wine amphorae from Ounces Barn, and mortaria also, suggesting some adoption of Roman cuisine.

The distribution of amphorae to smaller settlements, even though they are within the immediate hinterland of Chichester, is consistent with the evidence from the cemetery in Area 2. Here, many of the burials are relatively well furnished in comparison to those from Chichester, and in this it forms part of a wider regional pattern (Millett 1987; Vol. 2, 285–6).

8. Anglo-Saxon and Medieval Activity (Areas 2, 7, 4 and 6)

A.P. Fitzpatrick

Introduction

Evidence for Anglo-Saxon activity was relatively sparse, but evidence for settlement and burials was recorded, mainly from towards the eastern end of the road corridor, in Areas 2, 7 and 4 (Fig. 110). In addition, Anglo-Saxon pottery was recovered from Area 5. Only a very limited amount of evidence for medieval activity was recorded (Area 6), while small numbers of post-medieval features were recorded in Areas 3 and 5.

The Anglo-Saxon Cemetery (Area 2)

A small Anglo-Saxon inhumation burial cemetery was found in Area 2, overlying part of the northern part of the Iron Age religious site (Fitzpatrick 1997, 287–95). Owing to the very acidic soil conditions no inhumed bone survived, but on the basis of a small number of grave goods, ten graves were identified (Fig. 111). The knives and a spearhead that were placed as grave goods and the canopy that was erected over one grave suggest that the cemetery was used between the 5–7th centuries AD. Three graves lay within a rectangular enclosure of a kind found occasionally on sites of 7th century AD date. An early 8th century sceat was also found during the initial clearing of the site but was not necessarily associated with one of the burials. The cemetery is one of the first of the period to be found on the West Sussex Coastal Plain (Fig. 117) and, like very many other early Anglo-Saxon cemeteries (Williams 1997; 1998b; Semple 1998) seems likely to have been placed next to a round barrow that is presumed to be of Bronze Age date in order to appropriate the past into the Anglo-Saxon present and future.

Anglo-Saxon Settlement (Area 7)

Sunken-featured Building

Evaluation trench 24 had revealed the south-west corner of a large flat-based feature (evaluation context 1069), with a posthole (1079) 0.24 m in diameter cut into its base. Romano-British and what was thought initially to be Iron Age pottery, fragments of tile including some *tegulae*, and charcoal were found. The subsequent excavation revealed the rest of the feature (70000), but also showed that, apart from two small features possibly associated with it, this was the only feature of archaeological interest in Area 7.

Feature 70000 was a large shallow sub-rectangular hollow, the eastern half of which was excavated (Fig. 112). It measured 3.8 m east to west, by 3.1 m north to south. It had a flat base and, on the north, a steep concave side; the southern and eastern sides were shallower, probably because it had been more severely truncated. A modern land drain cut through the eastern part of it. There were three small postholes along the eastern side, the most northerly (70011) situated inside the north-eastern corner, the central one (70006) cutting the eastern edge at approximately the mid-point, and the third (70004) just north of, and outside, the south-eastern corner. The recording, during the evaluation, of a fourth posthole inside the south-western corner, would indicate that there are likely to have been further postholes in the parts that remained unexcavated. For instance, the outward curve on the unexcavated western side would suggest the presence of a posthole or postholes corresponding to 70006 on the eastern side. This feature, therefore, appears to be a sunken-featured building with obvious similarities to *Grübenhauser* of Anglo-Saxon date.

The hollow was filled with a dark grey clay loam, the lower 0.15 m (70002) being darker than the upper 0.15 m (70001). Flecks of charcoal were recorded throughout the fill but artefacts were restricted to the upper fill (70001). This contained one fragment of Romano-British vessel glass, probably from the handle of a bottle, 3.3 g of cremated bone, a small quantity of Late Iron Age, Romano-British and early Anglo-Saxon pottery and Roman tile, including a fragment of *tegula*. Further pieces of tile and *tegulae* were found in a small concentration (70007) 2 m east of posthole 70004 (Fig. 112), apparently forming a post pad.

A shallow circular feature (70009) was recorded 12 m to the east of feature 70000. It was 0.6 m in diameter and 0.12 m deep and appeared to have been truncated by ploughing. Its fill (70008) contained charcoal, 7.3 g of cremated bone, and burnt soil (Fig. 113). Although strictly undated, it has been ascribed to the Anglo-Saxon period on the basis of its proximity to the sunken-featured building, with the presumption that the small amount of cremated bone derives from the adjacent Iron Age and Romano-British cremation burial cemeteries that are both uphill and upwind.

The Pottery, by Lorraine Mepham

Pottery was recovered from three stratified contexts within the sunken-featured building (1070/70001 and

1080), and comprised 81 sherds (1220 g), mostly of early Anglo-Saxon date with a small quantity of residual Late Iron Age and Romano-British material.

Methods

Analysis of the pottery from Area 7 followed the same methods as for the other assemblages, which is described more fully elsewhere (p. 210 above), and which was based on a detailed examination of fabrics and forms. The assemblage was divided into 12 separate fabric types on the basis of the range and size of inclusions. These fabric types fell into five broad fabric groups: Group G (grog-tempered); Group M (micaceous fabrics); Group Q (sandy fabrics); Group V (organic-tempered fabrics) and Group E ('established' wares, i.e. fabrics of known type or source). Fabrics were coded within the overall pottery fabric series for all Westhampnett sites. Pottery was quantified, both by number and by weight, by fabric

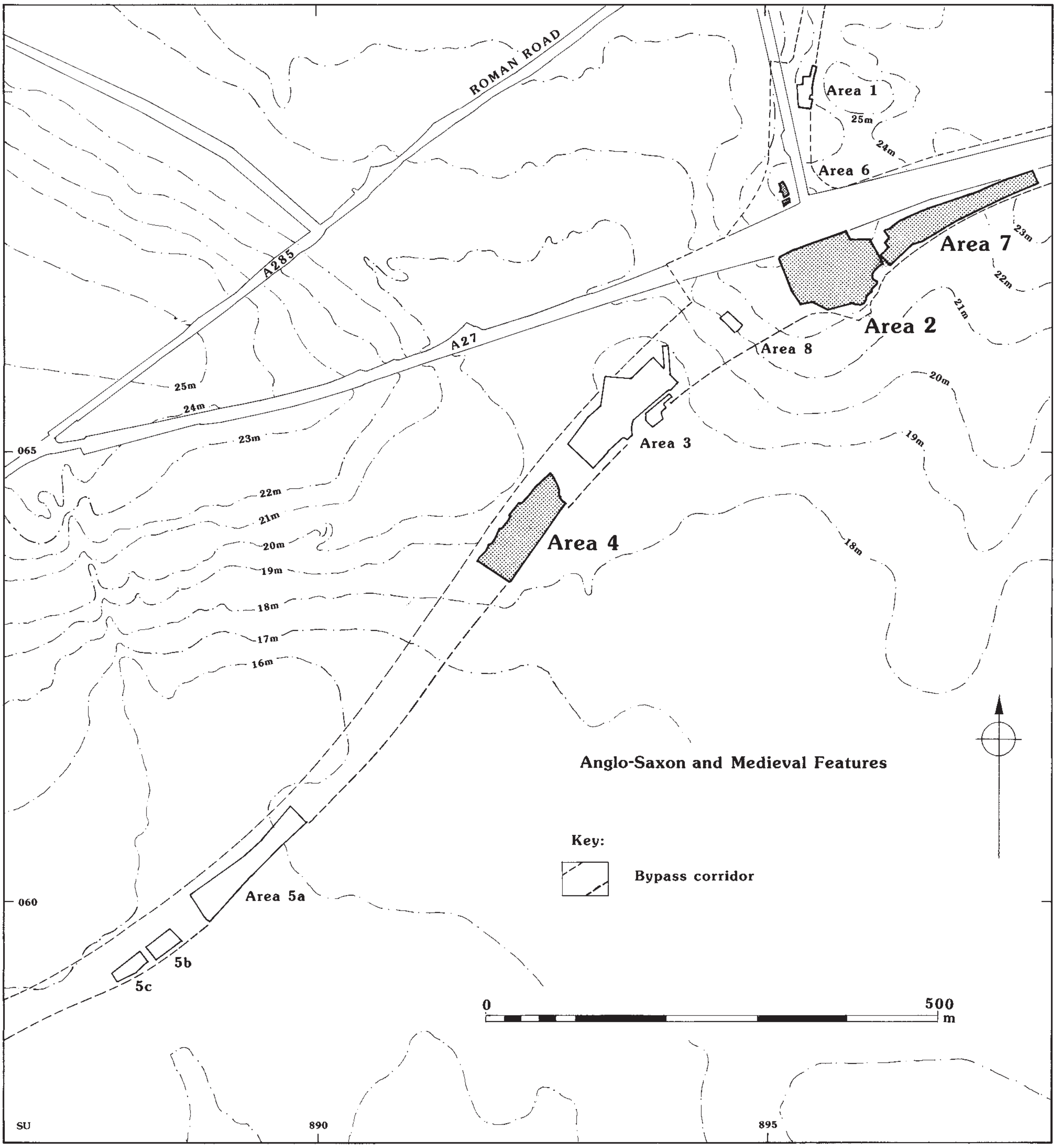


Figure 110 Excavation areas with features of Anglo-Saxon and medieval date

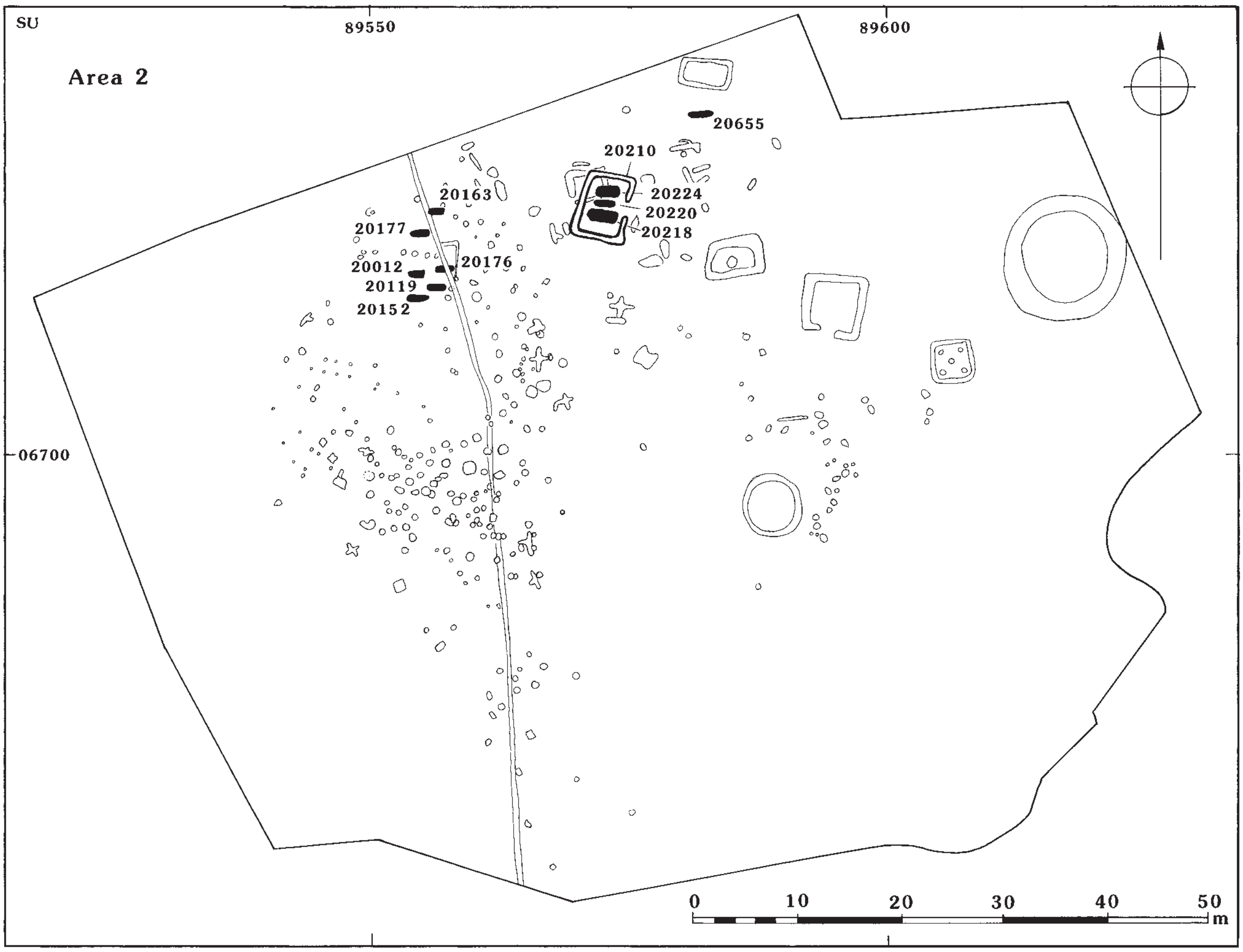


Figure 111 Area 2: plan of Anglo-Saxon inhumation burial cemetery, (Vol. 2, fig. 168)

type within each context. Details of sherd type (rim, base, body etc.), vessel form where known, rim/base diameters, surface treatment, decoration and manufacturing technique were also recorded, and can be found in the archive.

Overall totals for the 12 fabric types identified are given in Table 84. Six fabrics are of Late Iron Age or Romano-British date (samian, New Forest colour-coated ware, fine micaceous whiteware (M100), Rowlands Castle type greyware (Q100) and coarse greywares of unknown source (Q107), coarse grog-tempered ware (G1)). These are not considered further in this report; all occur in greater quantities elsewhere at the Romano-British sites and they are described more fully elsewhere (pp. 210–18; Area 3).

Fabrics and Forms

Within the early Anglo-Saxon assemblage, six fabric types were identified. In the fabric descriptions below, the terms used to describe the frequency of inclusions are defined as follows: rare (1–3%); sparse (3–10%); moderate (10–20%); common (20–30%).

Table 84 Area 7, Anglo-Saxon pottery fabric totals

Fabric type	*No. of sherds*	*Weight (g)*
Late Iron Age/Romano-British fabrics		
G1	4	27
Samian	2	86
New Forest	1	34
M100	1	6
Q100	2	62
Q107	4	32
Sub-total	14	247
Early Anglo-Saxon fabrics		
Q410	30	459
Q411	3	33
Q412	26	378
Q413	6	85
Q414	1	7
V400	1	11
Sub-total	67	973
Total	**81**	**1220**

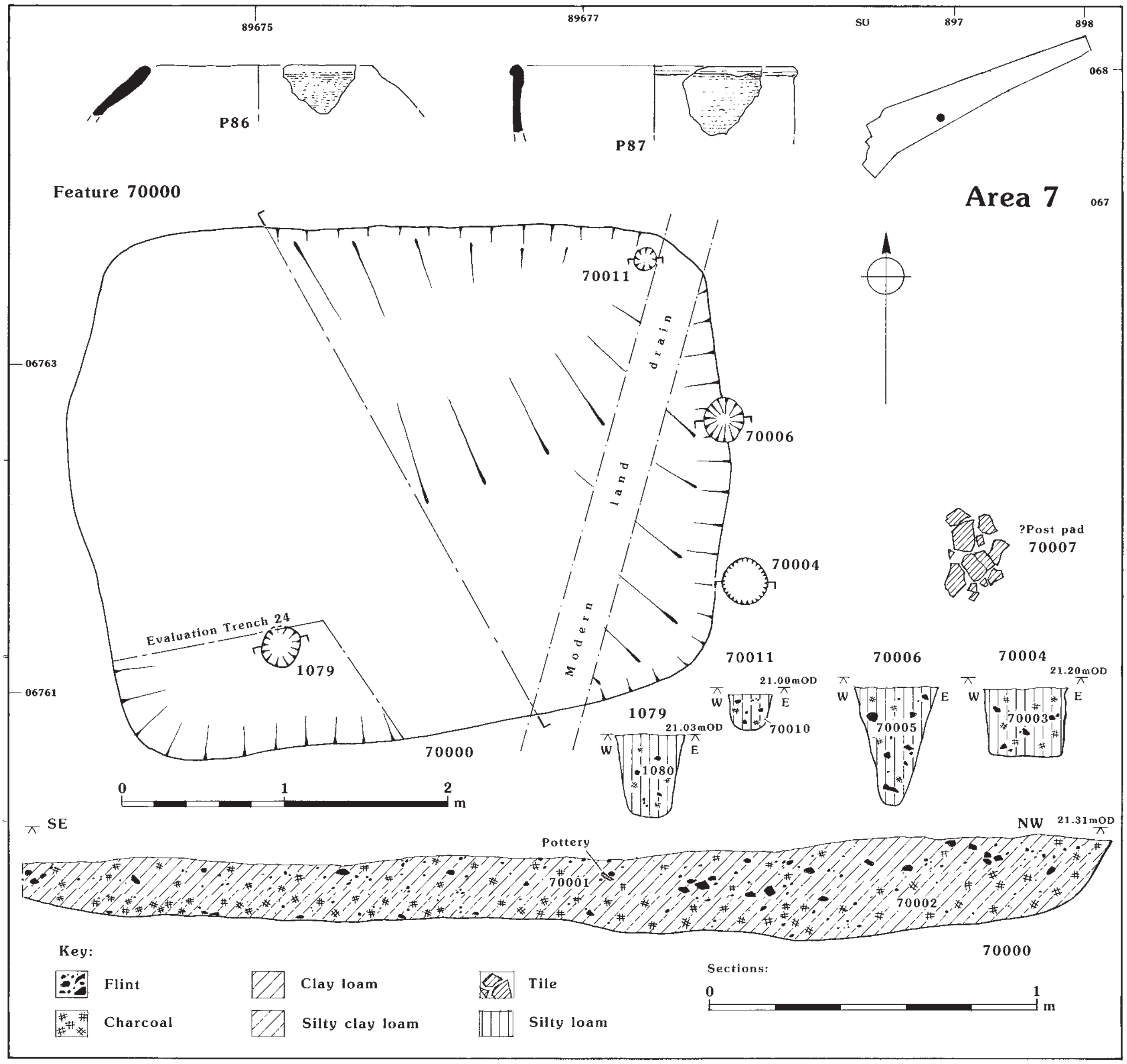


Figure 112 Area 7: plan and section of Anglo-Saxon sunken-featured building 7000 and associated pottery

Q410 Soft, moderately fine matrix; moderate to common, poorly sorted, subrounded quartz <1 mm; rare iron oxides. Handmade; unoxidised with patchily oxidised (red-orange) surfaces.

Q411 Soft, moderately coarse, micaceous matrix; moderate, poorly-sorted, subrounded quartz <0.5 mm; rare subangular flint <2 mm. Handmade; unoxidised (black). Possibly a finer version of fabric Q412.

Q412 Soft, moderately coarse matrix; sparse to moderate, poorly sorted, subrounded quartz <1 mm; sparse, poorly sorted, subangular flint <2 mm; sparse, poorly sorted, subangular mica <2 mm; rare iron oxides. Handmade; unoxidised with patchily oxidised (red-orange) exterior.

Q413 Soft, moderately coarse, laminar matrix; common, fairly well-sorted, subrounded quartz <0.5 mm; sparse organic material <4 mm; rare mica <0.5 mm. Handmade; unoxidised with patchily oxidised (brown-orange) exterior.

Q414 Soft, moderately coarse matrix; common, well-sorted, subrounded quartz <0.25 mm. Handmade; unoxidised.

V400 Hard, moderately fine, laminar matrix; moderate, poorly sorted, subrounded quartz <1 mm; sparse to moderate organic material <4 mm. handmade; unoxidised with patchily oxidised (red-orange) exterior.

Some initial difficulty was encountered in dating this small assemblage, owing to the broad similarity of some fabric types (e.g. Q414) with the Middle and Late Iron Age fabrics. Visually, however, the main distinguishing feature is the presence of the markedly micaceous fabrics Q411 and Q412. These two fabrics were examined by Dr David Williams (University of Southampton). Both fabrics were found to contain felspar and biotite mica, and fabric Q412 also contained a few fragments of granite. A source in a region of granitic rocks should be sought for both fabrics.

Four rim sherds are present, and two of these are too small to be identified to vessel form. Of the others, both in fabric Q410, one is from a jar with inturned rim (Fig. 112, P86), and the second from a straight-sided bowl with beaded rim (Fig. 112, P87); the latter is lightly burnished on the exterior and inside the rim. Two bases (fabrics Q410, Q412) are angled, while two more (fabric Q412) are rounded. Evidence of decoration or surface treatment is scarce: one tiny body sherd in fabric Q410 has close-spaced incised horizontal lines, while one small body sherd in fabric Q411 shows traces of the coarse-slipping technique known as *Schlickung*. No other instances of surface treatment or decoration were noted.

Discussion

This assemblage is a small but significant addition to the evidence for early Anglo-Saxon activity in the area, particularly since certain characteristics of the assemblage, such as the range of fabric types and the presence of the coarse-slipped *Schlickung* type sherd, indicate an early date within this period. The technique of coarse-slipping is well known in continental Europe in 5th century AD contexts (e.g. van Es 1967), and a growing number of sherds are now known from early Anglo-Saxon sites in London (Blackmore 1993; 1997). At Mucking, Essex, coarse-slipped sherds are concentrated in the area of 5th to early 6th century occupation (Hamerow 1993, 37). The fabric types themselves cannot be closely dated, but it is now becoming clear that several early Anglo-Saxon settlement assemblages from the London area which contain 'early' elements such as *Schlickung* type sherds, or carinated and biconical vessel forms, or which are dated by association with other artefacts to the 5th and early 6th centuries, also contain non-local fabric types which could have a continental source (e.g. Laidlaw and Mepham 1996, 37).

The supposition is that early settlers may have brought pottery from their native country with them, supplementing and later replacing it with locally made wares, frequently organic-tempered. The significance of this small group of pottery from Westhampnett, then, lies in its tentative attribution to a date range (5th to early 6th century) which would associate it with the earliest phase of Anglo-Saxon settlement in West Sussex. As such it would appear to be earlier than the adjacent cemetery in Area 2.

Comparable pottery is not as yet known in this area; indeed, pottery of the period 5th–7th centuries AD is altogether scarce in West Sussex, and no detailed fabric analysis has yet been undertaken on any published assemblage. Where fabrics are broadly described, such as for the cemetery assemblage from Apple Down (Down and Welch 1990, 134–6), they appear to comprise the more commonly known sandy or organic-tempered wares. Chance finds of pottery in Chichester are dated no earlier than the 7th century (e.g. Down 1974, 50–1).

Illustrated sherds (Fig. 112)

P86 Jar with inturned rim, fabric Q410. PRN 1213, context 70001, sunken-featured building 70000.

P87 Straight-sided bowl with beaded rim, fabric Q410. PRN 1214, context 70001, sunken-featured building 70000.

Ceramic Building Material, by Lorraine Mepham

A total of 62 fragments (13,490 g) of ceramic building material was recovered from Area 7. Forty fragments (5029 g) came from the main fill (70001) of the sunken-featured building, but 22 fragments (8461 g) were from the possible post-pad 70007 to the east of this structure. All of this material, which includes six identifiable *tegula* fragments, is of Romano-British date, but the possible post-pad is regarded as having been laid in the Anglo-Saxon period.

Charred Plant Remains, by Pat Hinton

Two samples, one from the upper fill (70001) of the sunken-featured building, the other from shallow pit 70009), although including only small amounts of cereals, indicate the presence of spelt, probable *Triticum aestivum* (bread wheat), hulled barley and oats. A few weed seeds and hazel shell fragments were also found.

Charcoal, by Rowena Gale

Charcoal flecks were noted throughout the fill of the sunken-featured building and a sample from the upper fill (70001) contained oak, hazel, ash, Pomoideae and *Prunus*, a content similar to samples from the earlier phases of occupation.

Area 4

Two features in Area 4 contained Anglo-Saxon pottery. Feature 40344 (Fig. 39) was a shallow and irregular hollow 2.2 m long and 1.5 m wide, and 0.15 m deep. It contained a single fill of dark yellowish-brown loamy clay, containing charcoal flecks, burnt and worked flint, two sherds of Iron Age pottery and one of Anglo-Saxon date.

Feature 40372 (Fig. 39) was also an irregular shallow hollow, approximately 1.6 m wide and 0.06 m deep, filled with a pale greyish-brown clayey silt (40373) containing charcoal, burnt flint, burnt clay, an iron nail, one Iron Age sherd and 11 of Anglo-Saxon date (Fig. 114, ON 47509). Immediately to the south

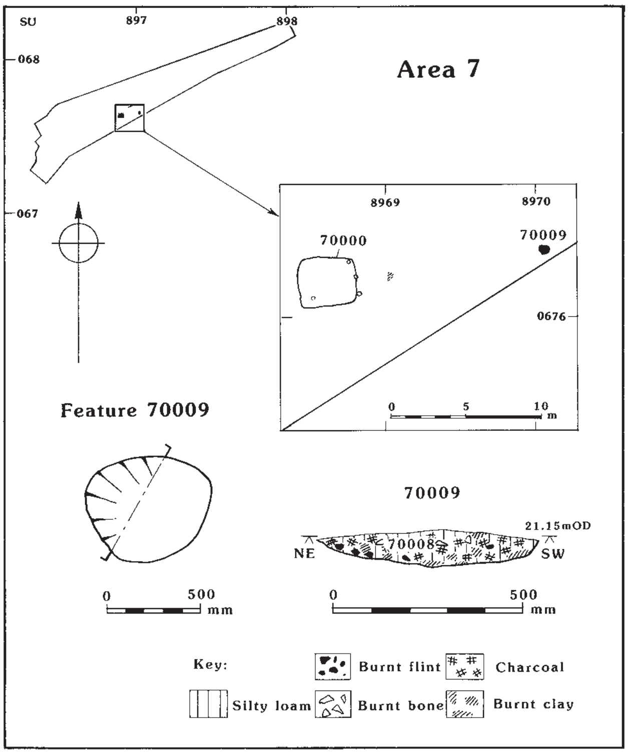


Figure 113 Area 7: plan and section of Anglo-Saxon feature 70009

and west were two undated postholes, 40375 and 40377, sited 1.6 m apart. Feature 40375 was 0.45 m in diameter and 0.13 m deep, while feature 40377 was 0.3 m wide and 0.13 m deep. They had similar clayey silt fills (40376 and 40378) containing charcoal flecks. As so few postholes were found in this part of the excavation area, it seems likely that they were associated with the hollow and that they represent the very heavily truncated remains of another sunken-featured building.

This evidence, albeit slight, raises the possibility that other features in the area are also of Anglo-Saxon date. Feature 40422 (Figs 31, 33), which contained a quantity of flints of Mesolithic date, was a shallow oval hollow, 3.2 m long, 2 m wide and 0.08 m deep. It was filled with a yellowish-brown silty clay (40419) containing flecks of charcoal and burnt clay, and small fragments of burnt flint. An undated posthole (40223) cut its western side. Two postholes were also associated with the rather amorphous feature 40277 (Fig. 31) which also only contained worked flint of Mesolithic date.

Lastly, feature 1139, which was first identified in the north-eastern end of Evaluation Trench 33, produced three sherds of Romano-British pottery. During the subsequent excavation the feature was identified as 40398, a 0.1 m deep layer of mid greyish-brown clayey silt in a shallow depression measuring approximately 10 m by 5 m (Fig. 115). This layer (and the cleaning layer over it – layer 40397) contained charcoal, and worked and burnt flint, two further Romano-British sherds, and a ceramic bead or possibly spindlewhorl (ON 47009). In the west end of the depression there was a shallow oval depression (40402), measuring 0.9 m by 0.7 m and 0.08 m deep. It had a dark brown silty clay fill (40399) which contained small quantities of charcoal, burnt flint, burnt clay and two tiny fragments (2 g) of burnt bone, possibly antler. As the feature is the only one in the area to contain Roman pottery and is close to two features which have similarities to sunken-featured buildings, it is possible that it too is of Anglo-Saxon date.

It is possible that all the flint from these and other comparable features is redeposited. To be weighed against this is the irregularity of the features which, even allowing for extensive plough damage, still contrasts with the regularity of sunken-featured buildings recorded on brickearths elsewhere (e.g. Andrews 1996), and the absence of finds of Anglo-Saxon date. Consequently those features have been attributed to the Mesolithic period.

The Pottery, by Lorraine Mepham

A small quantity of pottery from Area 4 (36 sherds; 264 g), from two features and from the fieldwalking assemblage, was identified as early Anglo-Saxon on the basis of fabric types.

Five fabric types are represented amongst this small group; fabric totals by context are given in Table 85. Four of these fabrics occur in the sunken-featured building in Area 7 (above). The fifth may be described as follows:

V401 Soft, moderately coarse matrix; moderate, fairly well-sorted organic temper represented by linear voids <10 mm long; rare subrounded quartz <1 mm; sparse iron oxides. Handmade; irregularly fired.

Two rim sherds are present, both plain rims, probably from convex-sided bowls, one from feature 40372 (Fig. 114, P88) and one from fieldwalking.

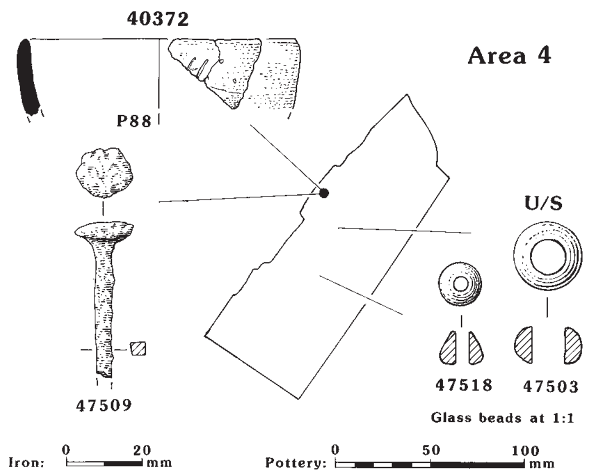


Figure 114 Area 4: finds certainly and possibly of Anglo-Saxon date

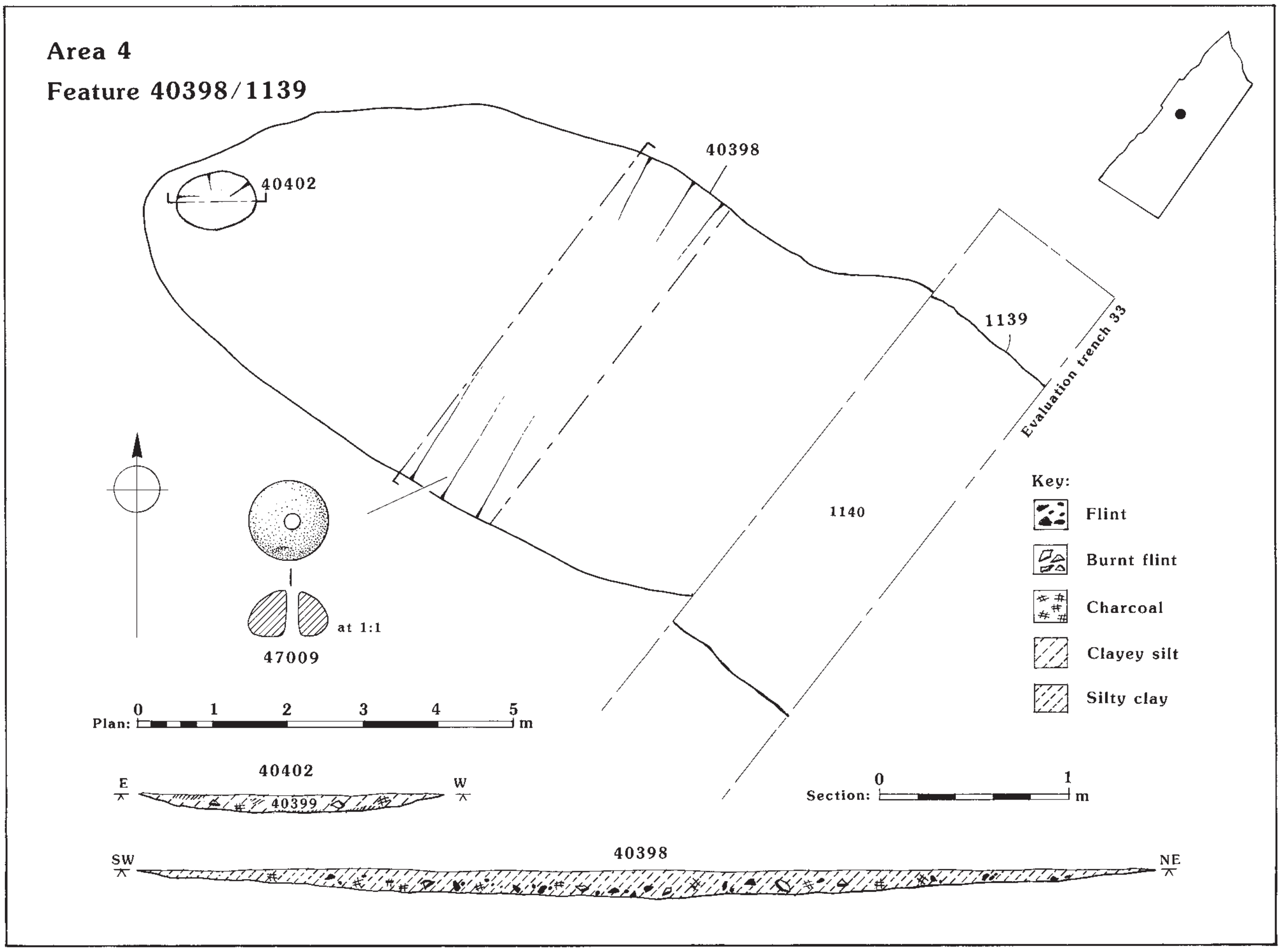


Figure 115 Area 4: plan and section of Anglo-Saxon feature 40398/1139 and associated ceramic bead

There is no evidence of any surface treatment or decoration, and no other diagnostic sherds were recognised.

Discussion

On the basis of similarity of fabric type with the small assemblage from Area 7, a date range in the 5th or early 6th century AD might be suggested. It should be noted, however, that features amongst the Area 7 assemblage which were suggestive of an early date, such as the distinctive non-local fabrics and the use of coarse-slipping, are not present within this small group. The sandy and organic-tempered fabrics from Area 4, and the bowl rims, have a potentially broader date range of 5th to 8th centuries. A similar range of fabrics and forms was recovered from Area 5.

Illustrated vessel (Fig. 114)

P88 Bowl rim, fabric Q413. PRN 577, context 40373, scoop 40372.

Glass, by H.F. Beamish

Three glass beads were recovered from Area 4. Two of them, ON 47503 (Fig. 114) from posthole 40210 in the southern part of Area 4, and ON 47518/1 from fieldwalking (Unit 41313), are in a translucent dark or cobalt blue metal, with diameters of 8 mm and 9 mm respectively. The third find (Fig. 114, ON 47518/2) is also from fieldwalking (Unit 41313) and is in a translucent green metal, with a diameter of 5 mm. While the latter bead finds parallels in Romano-British contexts, annular blue beads had a long currency in Britain, from the Iron Age to the post-Roman period (Guido 1978, 66–8). In view of the Anglo-Saxon pottery from Area 4, it is possible that ON 47518/1 may be of early Anglo-Saxon date, as indeed the other beads may be also.

Area 5

The Pottery, by Lorraine Mepham

A small quantity of pottery from Area 5 (27 sherds; 217g) was identified as early Anglo-Saxon on the basis of fabric type. This material derived mainly from two

Table 85 Area 4, Anglo-Saxon pottery fabric totals by context (by number/weight in grams)

Feature/context	*Q410*	*Q413*	*Q414*	*V400*	*V401*	*Total*
Hollow 40344	–	1/11	–	–	–	1/11
Hollow 40373	1/21	5/18	4/7	–	1/2	11/48
Fieldwalking	5/38	3/26	3/8	9/118	4/15	24/205
Total	**6/59**	**9/55**	**7/15**	**9/118**	**5/17**	**36/264**

Table 86 Area 5, Anglo-Saxon pottery fabric totals by context (by number/weight in grams)

Feature	*Q410*	*Q412*	*Q413*	*Q414*	*V400*	*V401*	*Total*
Ditch 50009	–	1/10	2/31	1/10	2/31	9/44	15/126
Ditch 50025	1/19	–	5/37	1/11	1/8	2/11	10/86
Posthole 50166	–	–	–	–	1/4	–	1/4
Posthole 51069	–	–	–	–	–	1/1	1/1
Total	**1/19**	**1/10**	**7/68**	**2/21**	**4/43**	**12/56**	**27/217**

features (post-medieval ditch 50009 and Romano-British ditch 50025), with one sherd each coming from postholes 50166 and 51069 respectively (Fig. 116).

Six fabrics are represented, and fabric totals by context are given in Table 86. Five of the six fabrics occur amongst the assemblage from Area 7, where they are described fully; the sixth, organic-tempered fabric V401, is described for the small Anglo-Saxon assemblage from Area 4.

Three diagnostic sherds were noted: a small everted rim (fabric V400) from posthole 50166, a plain rim (fabric Q414), probably from a convex-sided bowl, from ditch 50025 (Fig. 116, P89), and a body sherd (fabric Q414) with tooled decoration and exterior burnish from post-medieval ditch 50009 (Fig. 116, P90).

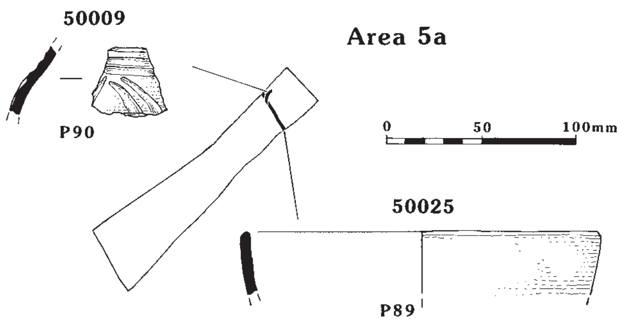


Figure 116 Area 5: Anglo-Saxon pottery from ditches

Discussion

A similar range of fabric types and rim forms was identified amongst the small assemblage from Area 4, and it is suggested that the material from Area 5 could be of a similar date range. Comparisons with the slightly larger assemblage from the sunken-featured building from Area 7 have already been made, on the basis of which the Area 4 material has been broadly dated to the 5th to 8th centuries AD. The same observations could apply to the pottery from Area 5, although the presence of a single sherd of the non-local fabric Q412, which might be indicative of an early date within this range (5th/early 6th century), should be noted.

Distribution

Of the 27 sherds recovered, 25 came from the two ditches 50009 and 50025, located at the north-eastern end of Area 5. Within ditch 50025, sherds came exclusively from the upper fills, where they occurred with Romano-British material; the lower fills contained only Romano-British sherds. Anglo-Saxon sherds in ditch 50009, which cut ditch 50025, dated to the post-medieval period on the basis of other artefacts, are likely to have been incorporated from the latter ditch. The single sherds from postholes 50166 and 51069 are too small and isolated to be taken as firm dating evidence for these features.

Illustrated sherds (Fig. 116)

P89 Bowl rim, fabric Q414. PRN 773, context 50100, upper fill of ditch 50025.

P90 Decorated body sherd, fabric Q414. PRN 1659, context 50012, ditch 50009.

Early Anglo-Saxon Settlement

The evidence for early Anglo-Saxon settlement is small, scattered, and significant. A single sunken-featured building in Area 7 (70001), a second, probable, example in Area 4 (40372), and a hollow in Area 4 (40344) are the only settlement features which can certainly be ascribed to the early or middle Anglo-Saxon period. However, it is possible that other features in Area 4, notably 40277, 40422 and 40398, are also of this date.

Anglo-Saxon pottery was also identified in Area 5 in the upper fills of Romano-British features, and one of the glass beads from Area 4, and perhaps Area 3 (p. 208, above), might also be of this date. In addition to the small inhumation cemetery excavated in Area 2, it is possible that the suggested inhumation burial in Area 1, ascribed to the Romano-British period (above), may also be of this date.

Evidence for the Anglo-Saxon settlement of Sussex has always been more abundant in East Sussex (Welch 1983, 33–5) (Fig. 117). As such, the evidence for settlement from Westhampnett – largely based on pottery identifications – is noteworthy, and suggests that further settlements on the Coastal Plain await recognition. Most of the evidence currently identified is in the form of stray finds from in and around Chichester, and at Selsey (Welch 1983, 34). In view of the Anglo-Saxon settlements known in eastern Hampshire, with sites like Portchester and especially Chalton, and the discovery of the Apple Down cemeteries, settlement on the Downs above Chichester was anticipated. Although the evidence remains modest, evidence for such settlement was identified subsequently (Levitt 1990; Drewett *et al.* 1986; Down and Welch 1990, 221).

Sunken-featured buildings are tolerably well known in East Sussex, while they are much less frequent in West Sussex (e.g. M. Gardiner, 1990, 222–6, 239–41, figs 5–7). In the western part of the county the only example near to Westhampnett yet published is from North Marden (Drewett *et al.* 1986; Down and Welch 1990, 221) though another two examples have recently been excavated at Claypit Lane, Westhampnett (Chadwick in press). What other forms of building, halls for example, might be anticipated remains uncertain, particularly as it seems likely that several different episodes of activity are represented on the A27 Westhampnett Bypass. The preferred dating for the pottery from Area 7 is 5th to early 6th century AD and a similar date is possible for the material from Area 5. A slightly broader date range of 5th–8th century is suggested for the material from Area 4.

In the case of Area 7, sunken-featured building 70000 is likely to be earlier than the inhumation cemetery on the low hill in Area 2. Although the dating of the cemetery is suggested to lie within the 5th–7th centuries, for a variety of reasons a date in the latter part of that range seems likely. The absence of cremation burials (which are found from the 5th and early 6th centuries at Apple Down), the east–west orientation of the graves, the rarity of grave goods, and the parallel for the canopy over one of the graves in burials of 7th century date, are all consistent with the Westhampnett cemetery having been used in the 7th century. A sceat from Area 2 also suggests activity in the 8th century. It should be reiterated that certain features in Area 2, such as the large barrow, while ascribed to the Bronze Age, are strictly undated.

Slight though all of this evidence from Westhampnett is, its essential importance is that it provides some of the first evidence for Anglo-Saxon settlements and burial yet identified on the Coastal Plain. Other discoveries will surely follow.

Medieval Activity, by A.P. Fitzpatrick

Area 6

A 2 m wide ditch was recorded in the northern trench in Area 6 (Fig. 118). Feature 60006 ran for 5 m east to west across the trench continuing beyond the trench in both directions, and curving slightly towards the north. It had shallow irregular sides, and a flat base, and an average depth of 0.3 m. Its fill consisted of a dark greyish-brown silty loam (60005), containing pottery of 13th–14th century date, as well as 31 (1581 g) fragments of medieval tile, an iron nail, a small quantity of charred grain and fragments of charcoal.

The Pottery, by Lorraine Mepham

Ditch 60006 produced 244 sherds (2905 g) of pottery. While this small assemblage was recorded using the standard Wessex Archaeology guidelines (Morris 1994), it has not been analysed in the same detail as the larger collections of prehistoric and Romano-British pottery from the project. The pottery was divided into two broad fabric groups (sandy and flint-gritted) according to the dominant inclusion type. These two groups were then subdivided into seven fabric types according to the frequency and coarseness of these macroscopic inclusions. Detailed subdivision was not attempted due to the small size of the assemblage. Several of these seven fabric types cover a fairly wide range of variation in size and frequency of inclusions, as well as colouring, and are thus likely to include wares from more than one source.

Full details of the seven fabric types can be found in the archive, but they can be summarised as follows:

Q400 Moderately fine oxidised sandy fabric, generally glazed.
Q401 Moderately fine, pale-firing oxidised sandy fabric (Surrey white ware?).
Q402 Very hard-fired, unoxidised sandy fabric, glazed.
Q403 Moderately coarse oxidised sandy fabric.
Q404 Moderately coarse sandy fabric with flint inclusions.
Q405 Moderately coarse flint-gritted sandy fabric.
F400 Coarse flint-gritted fabric.

A restricted range of vessel forms is represented. As might be expected, the finer sandy fabrics

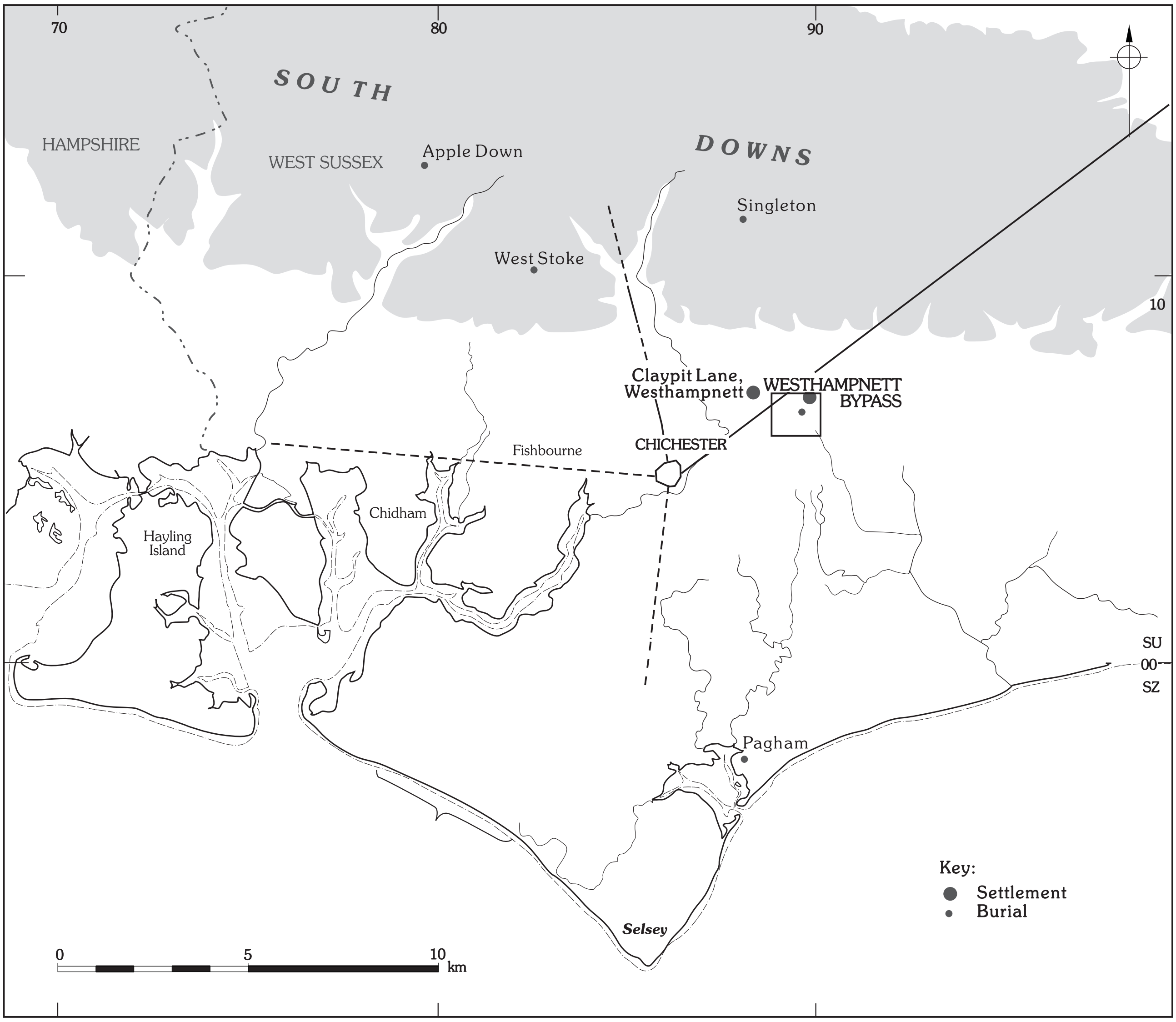


Figure 117 Selected Anglo-Saxon and medieval sites in the area

(Q400–Q402) are frequently glazed, and these fabrics were used almost exclusively for jug forms. Thumbed bases and stabbed rod handles are present, as well as body sherds decorated with combed, incised and stamped motifs. The coarser fabrics (Q403–Q405, F400) are more frequently found in cooking pot and bowl forms. One bowl in fabric Q403 has curvilinear combing on top of the rim. There are, however, examples of a thumbed jug base and a pulled jug spout in the coarse flint-gritted fabric F400.

The majority of the medieval assemblage from Westhampnett is likely to derive from a fairly local source. Medieval kilns have been located in Chichester at Orchard Street, Southgate and Eastgate (Adcock's Kiln) (Down and Rule 1971; Down 1978), all of which were producing a similar range of sandy and flint-gritted fabrics in the 13th and 14th centuries, comparable to the Westhampnett material (Down and Rule 1971; Down 1978). Not all of the Westhampnett vessel forms, however, can be paralleled amongst the Chichester kiln products, in particular the rod-handled jugs, which would suggest a closer affinity with the West Sussex type jugs produced, for example, at Binsted (Barton 1979). Binsted, to the south of Westhampnett, also provides a parallel for the comb-decorated bowl rim (*ibid.*, 178). The stamped motifs (Fig. 118, P91) are likewise unknown in Chichester, and are similar to examples from Rye (*ibid.*, 242), although Rye fabric types have not been noted amongst the Westhampnett material. The single sherd defined as fabric Q401 is comparable to the white wares of the Surrey/ Hampshire industry.

In summary, while it is likely that some at least of the pottery found at Westhampnett came from kilns in Chichester, other sources such as Binsted are almost certainly also represented. A date range of 13th to 14th century may be suggested for the assemblage.

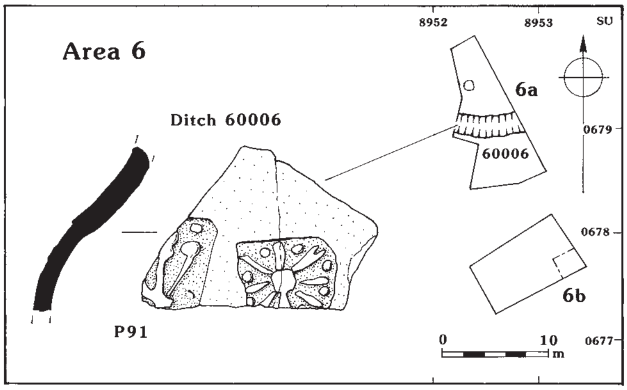


Figure 118 Area 6: medieval ditch 60006 and associated pottery

Illustrated sherd (Fig. 118)

P91 Stamped body sherd from glazed jug, fabric Q400. PRN 1674, context 60005, ditch 60006.

Area 3

Two linear ditches aligned approximately at a right angle were recorded in Area 3, one at the eastern corner of the area, the other at the southern corner (Fig. 8). That to the east (30004) was traced for 47 m running in a straight line northwards, and three 2 m sections were excavated, representing a 13% sample. Although the profiles varied slightly, the ditch was between 0.7 m and 1.1 m wide and up to 0.35 m deep, with steep to vertical sides and a flattish base. In the two southern sections single fills, consisting of a brown, sandy, gravelly soil, were recorded. In the northern section (30102), although a sherd of New Forest fineware was found in the upper fill (30056), a fragment of medieval ceramic building material was found in the secondary fill (30068), suggesting a medieval or later date for the ditch. Charcoal was present, albeit sparsely, in the upper fill of section (30102). The fragments were small but a single piece identified as beech was the sole representative of this taxon from Area 3, where the activity is largely of Romano-British date. Beech timber is versatile and valuable and its paucity at the site suggested that the beech was either uncommon or absent in the area in the Roman period.

The ditch to the south (30296) was aligned approximately east to west, but was recorded for less than 8 m. The single section (30051) excavated through it showed that it had moderately steep sides with a flattish base, and contained a brown clayey soil. While no dating evidence was recovered from the ditch, its resemblance to ditch 30004 suggests that it may be of the same date. Both ditches are probably field boundaries.

Discussion

Evidence for medieval activity from the excavated areas is notably limited. A single ditch in Area 6 contained material such as tile fragments and domestic pottery that suggest that there was a building in the vicinity. One, possibly two, ditches of medieval date were also recorded in nearby Area 3. This general absence of evidence suggests a significant change in settlement patterns after the early Anglo-Saxon period, perhaps associated with the development of the pattern of modern villages.

9. Conclusion

(Pl. 28)

A.P. Fitzpatrick

At the beginning of this report it was argued that the principal contributions of the present project were, firstly, to confirm that the apparent rarity of sites of prehistoric date on the West Sussex Coastal Plain was, as suspected, largely due to difficulties in identifying archaeological sites and, secondly, to reveal a range of sites spanning 11,000 years within a very short transect across the Coastal Plain.

As noted on p. 15, indications that the Coastal Plain was extensively utilised and settled in prehistory were increasingly evident from the 1970s. Other road improvements elsewhere along the A27 on the Coastal Plain in the 1980s also pointed to the same conclusion; the Mesolithic and Late Bronze Age occupations at Knapp Farm, Bosham, to the west of Chichester (Gardiner and Hamilton 1997), the Mesolithic activity at Fishbourne (Cunliffe *et al*. 1996), and further to the east the Bronze Age burnt mound at Potlands Farm, Patching (Stevens 1997). It is the quantity, not necessarily the quality, of the evidence from the Westhampnett Bypass that is striking.

In contrast, work on the A27 to the east on the chalklands around Brighton has also yielded important archaeological discoveries (Rudling 2002), but there the evidence can be accommodated within what has become a relatively well-established and understood context, one which has been able to build on generations of work on the Sussex Downs.

But elsewhere our understanding of prehistoric activity on the Downs is less sure. The density of ploughed-out sites and monuments revealed in two pipelines leading to the Lavant Reservoir on the lower slopes of the Downs around Goodwood, immediately to the north of Westhampnett (Turner 1997), is in many ways closer to that now seen on the Coastal Plain than the Downs.

Perhaps the important conclusion that can be drawn from this image of increasing utilisation and settlement in the prehistoric period is that there no longer seems a compelling reason to see the Coastal Plain as subsidiary to the high Downs rather than as simply different. Where intermediate areas of lower

Plate 28 An aerial view, from the north of the eastern end of the A27 Westhampnett Bypass route, with Area 2 in the centre. Areas 1, 3, 7 and 8 are also visible. Reproduced with permission of Steve Patterson. (Vol. 2, pl. 2)

slope exist, their archaeological record may prove to be different again.

Turning to the chronological range of the sites represented, it might be thought at first that this provides the opportunity to discuss the sequence and continuity of settlement. Continuity has been an enduring theme of settlement studies. Yet at Westhampnett, the fine-grained detail is instead of discontinuity; of large periods of disuse amongst the use and occupation of the changing landscape.

In Area 3 the Late Upper Palaeolithic ground surface (*c.* 11,000 BC), the Middle Bronze Age burial (*c.* 1500 BC) and the Romano-British shrine (*c.* AD 200) are separated by millennia. Even the more closely dated Iron Age and Romano-British settlements in and adjacent to Area 5 are separated by a period of as much as 200 years. Perhaps only the Neolithic and Bronze Age activities in Area 4 provide a sequence of activity in a single area. Yet here the changes are representative of many of the themes of the prehistory of southern England; isolated pits of Neolithic date containing either refuse or, more likely, special deposits are associated with short-lived settlements. The Early Bronze Age evidence may relate to a rather slower variation on this theme. Only with the Middle Bronze Age is there what might be taken as established, perhaps permanent, settlement. Yet here the excavated evidence is badly plough damaged and incomplete so that there can be no certainty. Either side, in chronological terms, of these settlements lie the Early Mesolithic and Anglo-Saxon occupations.

Only in the Iron Age is there a greater emphasis on bounding and perhaps draining the landscape. But part of this interpretation rests on the greater susceptibility of enclosed settlements of this date to aerial photography and the significance of enclosure may be as much symbolic as practical. Elsewhere within the British Iron Age many settlements oscillate between being enclosed and open. At Westhampnett the Iron Age settlement in Area 5 was unenclosed, as was the one on the southern slopes of the Downs at Lavant Reservoir (Kenny 1993b).

Amongst this pattern of shifting settlement there is also evidence for clear changes in the environment. The strongest evidence comes from Area 3 where the change from the wet conditions of the Late Glacial to the dry, possibly grazed grassland of the Bronze Age and perhaps Romano-British period is clearly defined. In Area 1 two episodes of soil run off both perhaps caused by clearance of vegetation, firstly in the Neolithic and latterly in the later prehistoric period, quite probably in the Late Iron Age, caused significant change to the physical topography of a low-lying landscape. But the evidence from the project as a whole is too slight to be able to be able to do more than echo Bedwin's earlier concerns about our understanding of the local environment (1983a, 43) or to add more than local detail to the increasingly well-established patterns of environmental change in British prehistory.

Having emphasised the typical and the disjointed nature of the evidence from the A27 Westhampnett Bypass it may seem contrary to conclude with the atypical, but this comes from what – today at least – appears distinctive of the land and the place. The project examined what was by most standards an astonishing density of 'sites' (Pl. 28) but there are compelling historical reasons why this should be the case.

It is probable the Early Mesolithic sites in Areas 1 and 4 were sited in order to make use of the slightly higher ground above the wetlands of the now lost watercourses that breached it. Similar transects across the former watercourses of the current Coastal Plain might produce related results, and much of what was the contemporary Plain is now submerged. However, the significance of the Norton–Brighton cliff-line in providing both higher ground and a greater ecological diversity may prove to have been distinctive in making that place. This may have some bearing on why the still rare Allerød soil seen in Area 3 is the only one currently known that has evidence for contemporary human activity.

The higher ground was clearly important in the continued selection of the low but prominent hill on which Area 2 was located for funerary and ritual uses, and the making of monuments. The earliest monument on the hill is likely to be the presumptively Bronze Age ring ditch and this may have provided the focus of, and perhaps inspiration for, the presently unique Late Iron Age religious site. In Volume 2 it was argued that the ring ditch did not obviously influence the structure and disposition of the Iron Age cemetery, which instead has its own logic. It was suggested instead that the hill was selected for the values ascribed to it by the Iron Age peoples, for example that it may have had a sense of place, or been numinous, that is possessed of spirit (Vol. 2, 229). Elsewhere more might be said on the origins of the later prehistoric roundhouse and its preferred south-easterly orientation in relation to round ritual and funerary monuments such as henges and barrows and the distribution of burials to the south-east of some Deverel-Rimbury barrow cemeteries. How such values might have been ascribed, at which point history or indeed landscape becomes myth, or how a place become numinous are also topics for further discussion, but it may at least be said that the repeated use of the hill as a burial ground by different societies and peoples over two millennia points to a veneration of the space and place. But there is also a circular Bronze Age funerary monument on the lower ground in Area 3. This may never have been a substantial monument but, like the ring ditch or barrow in Area 2, it may have been sited close to a Lavant or seasonal watercourse whose history has been traced here to the Late Glacial period. Whether this watercourse still flowed or rose as a spring in the Romano-British period when the unique shrine in the hinterland of the *civitas* capital of Chichester was created is not known with certainty; but the juxtaposition of culture and nature is compelling.

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Abbreviations

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by Susan Vaughan

NOTE: figures in *italics* denote illustrations.

Five main excavations and a number of smaller ones were undertaken in advance of the construction of the A27 Westhampnett Bypass near, Chichester, West Sussex, in 1992. This volume presents the evidence for settlement and related evidence that spans 11,000 years from the Late Upper Palaeolithic to the medieval.

The sites examined included a Late Upper Palaeolithic palaeosol, two early Mesolithic residential base camps, isolated Early and Late Neolithic pits, an Early Bronze Age barrow and a Middle Bronze Age settlement, a Middle Iron Age settlement, an unusual Romano-British enclosure of unknown function, perhaps a shrine, and an Anglo-Saxon Sunken-Featured building.

These excavations provide the first archaeological transect across part of the West Sussex Coastal Plain and provide a useful contrast to the well-explored Sussex Downs immediately to the north.

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